September 11, 2025

SOLICITATION

FOR THE

OLIVER GARAGE EMERGENCY BATTERY BACKUP MODERNIZATION

PUBLIC PARKING AUTHORITY OF PITTSBURGH
232 Boulevard of the Allies
Pittsburgh, PA 15222

David G. Onorato, CAPP
Executive Director

FORM OF ADVERTISEMENT

PUBLICATION DATE: **September 11, 2025**

1. The Public Parking Authority of Pittsburgh ("Authority") shall accept sealed bids for the performance of the work described below (the "Work") at its office at 232 Boulevard of the Allies, Pittsburgh, Pennsylvania, 15222, until **10:00 a.m.** local time on **Tuesday, October 7, 2025.**

2. DESCRIPTION OF WORK: The Project entails the Oliver Garage Emergency Battery Backup Modernization.

3. The Instructions to Bidders, including the Form of Bid, Form of Agreement, General Conditions, Plans and Specifications, and meeting information will be made available after **3:00 p.m.** local time on **Thursday, September 11, 2025,** via email request to the Authority's Project Management Department at projectmanagement@pittsburghparking.com.

4. A **Mandatory** pre-bid conference will be held on-site at the Oliver Garage located at 350 Oliver Avenue, Pittsburgh, Pennsylvania, 15222, at **10:00 a.m.** local time on **Friday, September 19, 2025.** The purpose of the pre-bid conference is to provide additional detail regarding the Work. The information provided at the pre-bid conference will be essential in preparing a bid to perform the Work. Persons or entities that intend to submit bids to perform the Work are required to attend the pre-bid conference with at least one representative who will understand the information presented at the pre-bid conference in a manner that allows such information to be incorporated in the preparation of the bid to perform the Work. It is expected that the representative who attends the pre-bid conference will be experienced in construction matters and employed by the bidder in a supervisory capacity. **In person Pre-bid attendance is mandatory, and each attendee must sign in on the project sign-in form.**

5. Sealed bids must be dropped off to the Public Parking Authority of Pittsburgh at 232 Boulevard of the Allies, Pittsburgh, PA 15222, no later than **10:00 a.m. on Tuesday, October 7, 2025**. Bids received prior to the deadline will be publicly opened and read **at that time.**

6. Each bid submitted must be accompanied by a bid guaranty of ten percent (10%) of the proposed bid in the form of a bid bond, certified cashier's or treasurer's check payable to the Authority.

7. The Authority reserves the right to in its sole discretion, (i) change, at any time prior to the bid deadline at **10:00 a.m.** local time on **Tuesday, October 7, 2025** the Contract Documents; (ii) waive any defect, irregularities, or informality in any or all submitted bids; and (iii) reject any or all submitted bids.

David G. Onorato
Executive Director

INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

Each bidder ("Bidder") interested in bidding to perform the Work (as defined in the Agreement (the 'Agreement") to be entered into by and between the Public Parking Authority of Pittsburgh (the 'Authority") and the successful Bidder for the performance of and payment for the Work, the form of which Agreement is attached as Exhibit B to these Instruction to Bidders must submit its bid ("Bid") to perform the Work in accordance with these Instruction to Bidders.

1. **Site Of Work.**

   Oliver Parking Garage
   350 Oliver Avenue
   Pittsburgh, PA 15222

2. **Contract Documents.**

   The following contract documents (hereinafter the "Contract Documents") are provided by the Authority to the Bidders with these Instructions to Bidders and are hereby incorporated herein:

   i. the Form of Advertisement;
   ii. these Instructions to Bidders
   iii. the Form of Bid;
   iv. the Performance Bond;
   v. the Labor and Material Bond;
   vi. the Warranty Bond;
   vii. any Addenda issued prior to the execution of the Form of Agreement
   viii. the Form of Agreement;
   ix. the General Conditions;
   x. the Special Conditions, if any;
   xi. the Plans;
   xii. the Specifications;
   xiii. the Contractor Waiver of Liens

   The Bidder must review the Contract Documents to ensure that the Bidder fully understands and can comply with the rights and duties described therein.

3. **Defined Terms.**

   All capitalized terms not otherwise defined herein shall have the meanings ascribed to them in the Form of Agreement and General Conditions and are incorporated herein and made a part hereof.

4. **Prevailing Wage Act.**

   Each Bidder is hereby put on notice that, if awarded the Contract (If the Contract exceeds a value of $25,000) the Bidder will be required to pay to the workers employed in the performance of the Contract the general prevailing minimum wage rates, including

contributions for employee benefits, as shall have been determined by the Secretary of Labor and Industry of the Commonwealth of Pennsylvania ("Secretary"). The Contractor shall, and shall require all Subcontractors and Sub-subcontractors to: (i) pay no less than the wage rates as determined in the decision of the Secretary; (ii) comply with all conditions of the Pennsylvania Prevailing Wage Act, 43 P.S. §§ 165-1 - 165-17, as amended (the "Act"), and the regulations issued pursuant thereto (the "Regulations") to assure the full and proper payment of said rates; and (iii) submit certified payrolls in accordance Section 28.2(e) of the General Conditions. The Contract shall be read so as to include any provision required by the Act or the Regulations to be inserted in the Contract and not so inserted.

5. Pre-bid Conference.

A **Mandatory** pre-bid conference will be held in on-site at the Oliver Garage located at 350 Oliver Avenue, Pittsburgh, Pennsylvania, 15222, at **10:00 a.m.** local time on **Friday, September 19, 2025.** The purpose of the pre-bid conference is to provide additional detail regarding the Work. The information provided at the pre-bid conference will be essential in preparing a bid to perform the Work. Persons or entities that intend to submit bids to perform the Work are required to attend the pre-bid conference with at least one representative who will understand the information presented at the pre-bid conference in a manner that allows such information to be incorporated in the preparation of the bid to perform the Work. It is expected that the representative who attends the pre-bid conference will be experienced in construction matters and employed by the bidder in a supervisory capacity. **In person Pre-bid attendance is mandatory, and each attendee must sign in on the project sign-in form.**

6. Receipt Of Bids.

The Authority will receive sealed and separate Bids at its office at 232 Boulevard of the Allies, Pittsburgh, Pennsylvania, 15222, until **10:00 a.m.** local time on **Tuesday, October 7, 2025**. Each Bid shall be delivered to the Authority in a blank opaque sealed envelope marked with the name of the project and appropriate contract number. Bids received after **10:00 a.m.** local time on **Tuesday, October 7, 2025**, will not be considered by the Authority.

7. Qualifications Of Bidders.

The Bidder shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications. The Authority may request the Bidder to submit a list of five projects in which work similar in size and scope to that specified was successfully completed. This list shall contain the following for each of the projects:

a. Project Name
b. Owner of Project
c. Owner's Representative, Address, and Telephone Number
d. Brief Description of Work
e. Cost of Portion of Work Similar to that Specified in this Section
f. Total Restoration Cost of Project
g. Date of Completion

The Authority shall review each Bid and evaluate each prospective Bidder. The final Selection of the Bidder for the performance of the Work shall be based upon the following factors: (i) the ability to meet the requirements set forth in the Contract Documents; (ii) the cost of the Work to the Authority; and (iii) the completeness of the Bidder's Bid. In addition, if a Bidder has previously performed construction work for the Authority, the Authority shall consider in its evaluation the quality of the prior construction work, including, without limitation, the ultimate cost to the Authority of the prior work.

The Authority shall also consider the following with regard to the City of Pittsburgh (the "City"). If the successful Bidder(s) is subject to the business privilege tax as specified in Chapter 243 of the Pittsburgh Code, failure to register with the City shall cause a Bidder to be disqualified from consideration for an award of the Contract. (Each Bidder should contact the City's Department of Finance to determine whether it is liable for the payment of the business privilege tax.) No contract will be awarded to any Bidder, who is from any cause, in arrears to the City (other than arrears which are the subject of a good faith dispute pursuant to which the Bidder has instituted appropriate legal action and has posted all necessary bonds and security) or who has failed in any former contract with the City to perform work satisfactorily, either as to the character of the work or the time consumed in its completion.

FAILURE OF A BIDDER, FOR ANY REASON WHATSOEVER, TO SUBMIT THE INFORMATION REQUIRED BY THESE INSTRUCTIONS OR A DULY SIGNED FORM OF BID (INCLUDING WITHOUT LIMITATION THE MBE/WBE FORMS), OR FAILURE TO QUALIFY AS A RESPONSIBLE BIDDER IN THE SOLE JUDGEMENT OF THE AUTHORITY, SHALL CONSTITUTE SUFFICIENT GROUNDS FOR REJECTION, OF THE BIDDER'S BID.

8. Inspections Of Site, Premises, and Contract Documents.

a. It is crucial that Bidders visit the Work Site and fully inform itself as to the location, performance, completion and cost of the Work. Each Bidder is invited to tour the Work Site upon request with the Authority and consulting the Engineer. In addition, each Bidder should carefully examine the Contract Documents.

b. Any failure of the successful Bidder to acquaint itself with all available information concerning the Work, the Work Site or the Contract Documents will not relieve it from sole responsibility for estimating properly the difficulty or cost of successfully performing the Work.

9. Addendum.

a. No oral requests will be accepted, and no oral interpretations will be given to any Bidder, as to the meaning of the Contract Documents. If a written request is received, a written interpretation will be **e-mailed** to all Bidders in the form of an addendum and all such addenda shall become part of the Contract Documents. No written requests will be accepted after **3:00 p.m.** local time on **Wednesday,**

September 24, 2025. No addendum will be made after five (5) days before Bids are due. **No change to or clarification of the Contract Documents shall be effective unless in writing and sent to all Bidders via e-mail.**

b. Each Bidder shall acknowledge the receipt of each addendum as set forth in the Form of Bid. **Failure to acknowledge receipt of an addendum may disqualify the Bidder from consideration.**

10. Errors Or Omissions.

Should a Bidder find errors in, or omissions from the Specifications and/or Plans, or have doubt as to their meaning, it should, before submitting a Bid, notify the Authority. Should a Bidder fail to give such notice, it shall, if awarded the Contract, be responsible for the results of such errors or omissions and the cost of rectifying same.

11. Bid Guaranty.

a. No Bid will be considered unless accompanied by a Bid bond, or a certified check, bank cashier's check or treasurer's check payable to the Authority in the amount specified in the Form of Bid.

b. With the exception of the Bid bond, certified, or bank check accompanying the Bid of the successful Bidder, all bonds and checks serving as Bid guaranties will be returned within thirty (30) days following the award of the contract.

c. If the award is deferred longer than thirty (30) days after the opening of the Bids, all Bid guaranties except those of the three lowest responsible Bidders will be returned.

d. Should no award be made within sixty (60) days, or longer if extension has been mutually agreed to, each Bid will be rejected and all guaranties returned.

e. The Bid guaranty of the successful Bidder will be returned to it at the time it furnishes acceptable bonds as required in Section 12 of these Instructions to Bidders and executes the Form of Agreement.

12. Bonds Required.

a. The Bidder to whom the Contract is awarded shall, within ten (10) days after the award, furnish a surety performance bond (the "Performance Bond"), in the amount of one hundred percent (100%) of the Contract Price and in form satisfactory to the Authority, guaranteeing security for the faithful performance of all covenants and agreements contained in the Contract.

b. The Bidder to whom the Contract is awarded shall, within ten (10) days after the award, furnish an additional bond (the "Labor and Material Bond") in the amount of one hundred percent (100%) of the Contract Price and in form satisfactory to the Authority, guaranteeing that the Bidder will promptly pay for all materials furnished and labor supplied or performed in the execution of the Work.

c. The Bidder to whom the Contract is awarded shall, within ten (10) days after the award, furnish a warranty bond (the "Warranty Bond"), in the amount of one hundred percent (100%) of the Contract Price and in form satisfactory to the Authority, guaranteeing the performance and quality of the Work.

13. Bids.

a. Each Bid shall be delivered to the Authority in blank opaque sealed envelopes marked with the name of the project and appropriate contract number.

b. Bids will be publicly opened and read at **10:00 a.m. local time on Tuesday, October 7, 2025 in person at the Authority's office at 232 Boulevard of the Allies, Pittsburgh, Pennsylvania, 15222.**

c. All Bids shall conform strictly with all requirements set forth in these Instructions to Bidders, including, without limitation, the Form of Bid.

14. Irregular Bids.

A Bid may be rejected if it shows any omission, alteration of form, additions or deductions not called for, conditional or uninvited alternate bids or proposals, or other irregularities of any kind.

15. Withdrawal Of Bids.

No Bidder may withdraw its Bid for a period of sixty (60) days after the date set for the opening of Bids.

16. Award Of Contract.

a. The Authority reserves the right to, in its sole discretion, (i) change, at any time prior to the Bid deadline of **10:00 a.m.** local time on **Tuesday, October 7, 2025,** the Contract Documents; (ii) waive any defect, irregularities, or informalities in any or all submitted Bids; and (iii) reject all submitted Bids.

b. If any award is made by the Authority, it will be to the lowest responsible Bidder, within sixty (60) days from the date of the opening of Bids, unless this time is extended by the written consent of the lowest Bidder.

17. Execution Of Contract.

The Bidder to whom the Contract is awarded shall properly execute and deliver the Form of Agreement and all other items required thereunder to be delivered within ten (10) days after notice of the award is sent to such Bidder. No Bids or awards shall be binding upon the Authority unless and until the Form of Agreement is properly executed.

18. Failure To Provide Information, Etc. Or Execute Contract.

If the Bidder to whom the Contract is awarded fails to give or complete, as the case may be, any or all bonds, forms, documents, insurance or information within the time

stipulated or requested by the Authority, the amount of its Bid guaranty shall be forfeited to the Authority, not as a penalty, but as liquidated damages, and the Authority shall have the right to award the Contract to the next lowest responsible bidder.

19. Schedule & Deadlines

EVENT	TIME AND/OR DATE
Solicitation Issued	Thursday September 11, 2025
Mandatory Pre-Bid Conference (To be held On-Site)	Friday, September 19, 2025 at 10:00 AM EST
Additional Site Visits	Upon request with Authority and consulting the Engineer
Deadline for Respondents to Submit Questions and Requests for Clarification/Interpretation/ Modification ("Request for Clarification Due Date")	Wednesday, September 24, 2025 by 3:00 PM EST
Projected date that the Authority will respond to Request for Clarifications (“Final Addendum)	Friday, September 26, 2025 By 3:00 PM EST
Deadline for Receipt of Bids ("Bid Due Date")	Tuesday, October 7, 2025 At 10:00 AM EST
Public Bid Opening	Tuesday October 7, 2025 At 10:00 AM EST
Anticipated Board Action	Thursday, October 16, 2025

Exhibit A
Form of Bid

(see attached)

FORM OF BID

Project:	Oliver Garage Emergency Battery Backup Modernization
Project No:	OliverEmg - 211
Contract No:	PM090825

PUBLIC PARKING AUTHORITY OF PITTSBURGH

1. The undersigned, on behalf of _____ (the "Bidder"), hereby certifies that the Bidder has carefully examined all available information relating to the work, generally described as: and further described in the Plans and Specifications provided to the Bidder (the "Work"), and the Bidder has fully examined the Contract Documents (as detailed in Section 2 of the Instructions to Bidders), which the successful Bidder shall enter into with the Public Parking Authority of Pittsburgh (the "Authority") for the performance of and payment for the Work.

2. Bidder by submitting this Form of Bid (the "Bid"), offers and agrees to provide all labor, equipment, materials, services, and anything else necessary to fully perform the Work to the satisfaction of the Engineer and the Authority, including, without limitation, the furnishing of the Performance Bond, the Labor and Material Bond and the Warranty Bond (as defined in the Instructions to Bidders), for the following amount (such amount is referred to herein as the "Base Bid"):

Unit Prices for Base Contract (Work Installed)

1. GENERAL CONDITIONS:

The General Conditions shall include general project costs that are not specifically enumerated elsewhere in this Bid Proposal Form including, but not limited to, project management, supervision, permits mobilization/demobilization (including Specification Section 01 11 00, Part 1.03A), shoring, miscellaneous costs including those defined in Specification Section 01 11 00, Part 1.03C. The General Conditions shall be billed by the Contractor proportionally to the amount of work complete.

LUMP SUM = $_____

2. Electrical:

Perform all work associated with the Electrical drawings. Refer to E-Series drawings as required.

LUMP SUM = $_____

TOTAL BASE CONTRACT AMOUNT $_____

The Base Contract Amount covers all work in the Contract Documents and based on a TBD construction start date. Base contract will utilize the approved schedule submitted by the Contractor based on the Bid Documents and assumes 40-hour work weeks.

The bidder agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed", and proposes to complete all Base Contract work within **90 calendar days** or no later than **TBD**, whichever is earlier, for the Base Contract from and after date of Notice to Proceed.

1. All capitalized terms not otherwise defined herein shall have the meanings ascribed to them in the Form of Agreement and General Conditions and are incorporated herein and made a part hereof.

2. Bidder understands and agrees that the Authority reserves the right to determine whether it shall contract for all or a portion of the Work or any one or more alternates described in the Plans and Specifications and, pursuant to such determination, to award the Contract on the basis of the Base Bid alone or on the basis of the Base Bid and any combination of alternate bids.

3. The undersigned hereby certifies that Bidder is the only person(s) interested in this Bid as principal, and that the Bid is made without collusion with any person, firm or corporation.

4. The undersigned hereby certifies that enclosed is a Bid bond, certified check, bank cashier's check or treasurer's check drawn to the order of the "Public Parking Authority of Pittsburgh" in an amount not less than ten percent (10%) of the total amount of the Base Bid.

5. The undersigned hereby certifies that enclosed is a completed experience questionnaire (the form of which is attached as Schedule 1 to this Bid) and the most current financial statement of the Bidder. The undersigned further certifies that the information contained in the Bidder's experience questionnaire and financial statement is true and correct. The undersigned agrees that, in the event the Authority requests additional information, the Bidder shall supply such information when and as requested by the Authority. The undersigned further understands that failure to submit such information when and as requested by the Authority may disqualify the Bidder from consideration to perform the Work.

6.

(a) The undersigned states on the Bidder's behalf and on behalf of any subcontractors used to complete the Work:

(1) that applicants for employment are hired without regard to their race, color, religion, gender, ancestry, national origin, place of birth, disability, age or sexual orientation;

(2) that employees are treated without regard to their race, color, religion, gender, ancestry, national origin, place of birth, disability, age or sexual orientation;

(3) that the No Discrimination provisions in Section 38 of the General Conditions shall be strictly adhered to; and

(4) the Bidder proposes to attempt to provide that there will be minority group representation in all trades and in all phases of their operations in accordance with the applicable provisions of the Form of Agreement.

(Bidders are invited to consult with the Mayor's Commission on Human Relations, Contract Compliance Division, for information, advice and assistance in the preparation of their Bid.)

(b) The undersigned understands and agrees that the Mayor's Commission on Human Relations, or its representative may direct that any Bidder shall submit, as part of its Bid, a statement in writing, signed by an authorized officer or agent on behalf of any labor union or any agency referring workers or providing or supervising apprenticeship or other training, with which the Bidder, with supporting information, to the effect that the signer's practices and policies do not discriminate on the grounds of race, color, religion, gender, ancestry, national origin or place of birth, and that the signer will cooperate affirmatively in the implementation of the policy and provisions of the Contract in accordance with the purposes and provisions of the Contract. In the event that the union, or the agency, shall refuse to execute such a statement, the Bidder shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the Mayor's Commission on Human Relations may require.

(c) The undersigned understands and agrees that the Contract will not be awarded to any corporation, firm or individual which has failed to perform satisfactorily any prior undertaking to insure minority group representation as required by the Mayor's Commission on Human Relations or which has not satisfied the Mayor's Commission on Human Relations that it has established and will carry out personnel and employment policies in compliance with the provisions of the Contract.

7. The undersigned agrees that if awarded the Contract, within ten (10) days after notice of the award, it shall furnish to the Authority: (1) Certificates of insurance evidencing that the insurance required under Section 31 of the General Conditions has been obtained. (2) The schedule of values described in Section 28.1 of the General Conditions, and (3) The construction schedule described in Section 6 of the General Conditions.

8. If awarded the Contract, the undersigned agrees to execute and deliver the Form of Agreement and complete the Work or provide the materials, equipment or items under the Contract in accordance with the time schedule set forth in the Contract, with respective work or provision of materials, equipment or items to commence only after Contract is signed and notification is received from the Authority to proceed with the same.

9. If awarded the Contract, the undersigned agrees to commence the Work within fourteen (14) days of notification by the Authority to do so and complete the Work within ninety (90) days as listed in the Form of Agreement.

10. (The following is to be completed only if addenda are issued):

The undersigned acknowledges receipt of the addenda hereinafter listed and agrees that the said addenda shall become a part of the Contract. (List below the number and the issuing dates of each addenda received).

_____ Date _____

_____ Date _____

_____ Date _____

11. The undersigned hereby certifies that the Bidder has taken all necessary action, whether a person, corporation or other entity, required for due authorization, execution and delivery of this Bid, Bidder is qualified to do business in the Commonwealth of Pennsylvania and that Bidder is legally bound to comply with the terms and conditions of this Bid if awarded the Contract.

_____

Name of Bidder

By: _____

Signature of Authorized Officer, Partner or Individual (as applicable)

_____

Print Name of Person Signing

_____

Title of Authorized Officer or Partner (if applicable)

_____

Bidder's City of Pittsburgh Tax I.D. Number

_____

Bidder's MWDBE Certification Number (if applicable)

Schedule 1
Experience Questionnaire
(see attached)

Schedule 1

Experience Questionnaire

Bidders' Name _____

Primary Contact
Person's Name _____

Phone No. _____

No. Years
in Business _____

Aggregate Amount (In Dollars)
of Work Completed Within Last Twelve Months $_____

Bonding Company
(include address) _____

_____

_____

_____

Phone No. _____

Bonding Limit $_____

List Three Architect and/or Engineer References

1. _____

Phone No._____

2. _____

Phone No._____

3. _____

Phone No._____

List the Last Three Projects Completed by Bidder:

1. Project Name: Name, Address and Phone No. of Owner

_____ _____

Contract Amount: _____ _____

Date Project Completed: _____ _____

Description of Project:

_____

_____

2. Project Name: Name, Address and Phone No. of Owner

_____ _____

Contract Amount: _____ _____

Date Project Completed: _____ _____

Description of Project:

_____

_____

3. Project Name: Name, Address and Phone No. of Owner

_____ _____

Contract Amount: _____ _____

Date Project Completed: _____ _____

Description of Project:

_____

_____

Schedule 2

Environmental Best Practices

(see attached)

SCHEDULE 2

ENVIRONMENTAL BEST PRACTICES

1. Environmentally Preferred Purchasing
   a. The Contractor shall use commercially reasonable efforts to comply with Section 161.39(c) ("Environmentally Preferred Purchases") of the City of Pittsburgh Code of Ordinances ("Code").

2. Diesel Emissions Reduction Strategies
   a. The Contractor shall use commercially reasonable efforts to use clean diesel practices for all on-road and off-road vehicles and equipment. The following are examples of such practices:
      i. Reduce unnecessary idling through the use of auxiliary power units, electric equipment and strict enforcement of idling limits.
      ii. Incorporate emissions-reducing technology such as hybrid drives and specific fuel economy standards in construction equipment.
      iii. Use verified diesel emission control technology ("VDCE"), including verified diesel particulate filters ("DPFs") or diesel oxidation catalysts ("DOCs").
      iv. Use cleaner fuels, such as ultra-low sulfur diesel ("ULSD"), biodiesel, liquid petroleum gas, or compressed natural gas.
      v. Replace older engines with newer, cleaner models.
      vi. Practice good engine maintenance to meet original standards, and properly train operators to run equipment efficiently.
      vii. Maintain equipment according to manufacturers' specifications.
      viii. Restrict idling of construction equipment and on-road heavy-duty trucks to a maximum of 5 minutes when not in use.
      ix. Where applicable, work with City officials to improve traffic flow by signal synchronization.
      x. Configure construction parking to minimize traffic interference.
      xi. Prepare haul routes to minimize traversing through congested streets.
      xii. Schedule construction activities that affect traffic flow on the arterial system to off-peak hours.
      xiii. Use electric power in lieu of diesel power, where available.

3. Smart Energy Practices
   a. The Contractor shall use commercially reasonable efforts to use smart energy practices during project design, construction and operation. The following are examples of such practices:
      i. Use energy efficient products and practices.
      ii. Purchase renewable energy from local utilities.
      iii. Install on-site renewable energy or combined heat and power.

4. Green Construction Practices
   a. The Contractor shall use commercially reasonable efforts to use green construction practices. The following are examples of such practices:

i. Reuse and/or recycle construction and demolition debris.
ii. Reuse industrial materials in construction projects (such as concrete).
111. Require, at a minimum, compliance with all municipal, county, state and federal laws, rules and regulations concerning construction activities and their economic impact, with particular attention to:
    1. Noise - Code Section 917.02, and
    2. Air quality - Code Section 917.04

b. For any project likely to have a substantial adverse effect on air quality, as determined by the Authority in its sole discretion, the Authority may require the Contractor to adopt mitigation measures, which may include, but are not limited to, the following:

i. The use of alternative technologies, including toxic air control technologies;
ii. Controlling dust sources with paving, landscaping, or other means;
iii. Benning (earth sheltering), buffering and screening;
iv. Landscaping and/or retention of existing vegetation; and
v. A reduction in size or scope of the project or operation.

c. For any project likely to have a temporary adverse effect on noise, as determined by the Authority in its sole discretion, the Authority may require the Contractor to adopt mitigation measures, which may include, but are not limited to, the following:

i. Limiting the hours of construction;
ii. Specifying the time and duration of loud noise;
iii. Specifying a preferred type of construction impact; and
iv. Requiring sound buffering and barriers.

d. For any project likely to have a temporary adverse effect on drainage, as determined by the Authority in its sole discretion, the Authority may require the Contractor to adopt mitigation measures, which may include, but are not limited to, the following:

i. Sedimentation traps and filters;
ii. Sedimentation tanks or ponds;
iii. Oil separators; and
iv. Retention facilities.

e. For any project likely to have a temporary adverse effect on pedestrian circulation, as determined by the Authority in its sole discretion, the Authority may require the Contractor to adopt mitigation measures, which may include, but are not limited to, the following:

i. Covered sidewalks or alternate safe, convenient and adequate pedestrian routes; and

ii. Limits on the duration of disruptions to pedestrian flow.

f. For any project likely to have a temporary adverse effect on transportation, as determined by the Authority in its sole discretion, the Authority may require the Contractor to adopt mitigation measures, which may include, but are not limited to, the following:

i. A construction phase transportation plan which addresses the ingress and egress of construction equipment and construction worker vehicles at the project site;

ii. Traffic control and street maintenance in the vicinity of the construction site; and

g. Re-routing of public vehicular and pedestrian circulation in the vicinity of the construction site.

Schedule 3

Contact Information

(see attached)

Pittsburgh PARKING Authority
The Value Parking Network

CONTACT INFORMATION FORM

TITLE: _____

DUE DATE: _____ **ADVERTISING DATE:** _____

DESCRIPTION: Proposal to provide _____to the Public Parking Authority of Pittsburgh.

The undersigned hereby offers to finish and deliver the articles or services as specified in strict accordance with the RFP and scope of proposal, all of which are made a part of this request.

FULL LEGAL COMPANY NAME: _____

STREET ADDRESS: _____

CITY, STATE AND ZIP CODE: _____

AUTHORIZED SIGNATURE: _____

PRINT NAME: _____

TITLE OF AUTHORIZED SIGNER: _____

TELEPHONE #: _____

FAX #: _____

E-MAIL ADDRESS: _____

(OF CONTACT REPRESENTATIVE)

NOTE: THIS PAGE MUST BE SUBMITTED WITH YOUR PROPOSAL. ALL PAGES REQUIRE A LIVE SIGNATURE SIGNED IN BLUE INK.

FORM OF AGREEMENT

FORM OF AGREEMENT

THIS FORM OF AGREEMENT (this "Agreement") made as of the _____ day of _____, 2025 is by and between _____("Contractor"), located at _____ _____ and the Public Parking Authority of Pittsburgh ("Authority").

WHEREAS, the Authority solicited bids from contractors for the performance of the Work (hereinafter defined); and

WHEREAS, in response, the Contractor submitted to the Authority a Form of Bid (the "Bid"), a true and correct copy of which is attached to this Agreement as Exhibit A and made a part hereof ; and

WHEREAS, the Authority and Contractor desire to enter into this Agreement to set forth the terms and conditions, including those set forth in the General Conditions (the "General Conditions") which are attached as Exhibit B and made part hereof, under which the Contractor shall perform the Work.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, and intending to be legally bound hereby, the parties hereto covenant and agree as follows:

1. Work. The term "Work" as used in this Agreement means the construction related to the work at the Oliver Parking Garage, Pittsburgh, Pennsylvania, generally described as Oliver Garage Emergency Battery Backup Modernization, as further described in the Plans and Specifications provided to the Bidder, in conjunction with all of the terms and specifications in the Bid, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations under the Contract Documents (as defined below).

2. Definitions:

(a) The term "Contract Documents" means the documents listed below:

1. the Instructions to Bidders related to the Form of Bid;
2. the Form of Bid
3. this Agreement;
4. the Performance Bond;
5. the Labor and Material Bond;
6. the Warranty Bond;
7. any addenda issued prior to the execution of this Agreement;

8. the following modifications to the Contract issued after execution of this Agreement: (i) a written amendment to the Agreement signed by both parties, and (ii) a Change Order (as defined in the General Conditions);
9. the General Conditions;
10. the Special Conditions, if any;
11. the Plans (as defined in the General Conditions); and
12. the Specifications (as defined in the General Conditions).
13. the Contractor Waiver of Liens

(b) The term "Engineer" refers to the third party employed by the Authority to conduct the engineering duties or the employee of the Authority given the duty to conduct the functions of the Engineer. The Engineer will be acting as an agent of the Authority, and shall conform to the final decision of the Authority in any and all matters.

(c) The term "Labor and Material Bond" means the bond furnished by the Contractor prior to execution of this Agreement in the amount of one hundred (100%) percent of the Contract Price (hereinafter defined), guaranteeing that the Contractor will promptly pay for all materials furnished and labor supplied or performed in the prosecution of the Work.

(d) The term "Performance Bond" means the surety performance bond furnished by the Contractor prior to execution of this Agreement in the amount of one hundred twenty (120%) percent of Contract Price for the Work set forth in this Agreement guaranteeing security for the faithful performance of all covenants and agreements contained in the Contract Documents, including without limitation, coverage against any additional costs incurred by the Authority in the event that the Authority must complete Work.

(e) The term "Warranty Bond" means the warranty bond furnished by the Contractor prior to execution of this Agreement in the amount of one hundred percent (100%) of the Contract Price for the Work set forth in this Agreement, guaranteeing the performance and quality of the Work.

3. Scope of the Work: The Contractor shall execute, perform and complete the Work and shall do everything required by the Contract Documents. The Contractor understands and agrees that time is of the essence of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever.

4. Time of Completion: The Work shall be commenced within ten (10) days after notification by the Authority to commence the Work so and shall be completed within the time specified in the Construction Schedule as prescribed in the General Conditions. The time for completion of the Work set forth in the Construction Schedules, as amended from time to time by Change Orders executed in accordance with the General Conditions, shall hereinafter be referred to as the "Contract Time."

5. The Contract Price: The Authority shall pay the Contractor _____ _____ ($_____) in immediately available funds for the execution, performance and completion of the Work. The price to be paid

by the Authority for the execution, performance and completion of the Work under this Section 5, as modified from time to time by Change Orders executed in accordance with the General Conditions, shall hereinafter be referred to as the "Contract Price."

6. Payment: Payment shall be made in accordance with the applicable provisions of the General Conditions.

7. Examination of Work Site. Execution of this Agreement by the Contractor is a representation that the Contractor has carefully examined the Contract Documents, visited the Work Site, become familiar with the location and field conditions under which the Work is to be performed and incorporated personal observations with the requirements of the Contract. Any failure of Contractor to acquaint itself with all available information concerning the Work will not relieve it from performing the Work within the Contract Time or for the Contract Price.

8. Liquidated Damages. If the Work is not completed to the satisfaction of the Authority within the Contract Time or as may be extended in accordance with the Contract, or the Contractor violates a Contract provision, which specifies the applicability of Liquidated Damages, the Authority shall, at its option:

(i) in the event that actual damages are speculative and difficult to ascertain, deduct from payments due and owing the Contractor, or the Contractor shall pay directly to the Authority, the sum of ONE THOUSAND FIVE HUNDRED AND NO/100 DOLLARS ($1,500) for:

(a) each calendar day of delay until the Work is completed to the satisfaction of the Engineer and the Authority; or

(b) each calendar day until the Contract violation is resolved to the satisfaction of the Authority; or

(ii) deduct from payments due and owing the Contractor, or the Contractor shall pay directly to the Authority, the sum of the actual damages sustained by the Authority due to the delay of completion of Work or Contract violation (hereinafter "Liquidated Damages").

9. Contractor Waiver of Liens. Contractor agrees that it will execute a Waiver of Liens, as provided by the Authority (the "Contractor Waiver of Liens"), whereby the Contractor will ensure that no mechanics' liens or claim or other lien or claim of any kind shall be filed against the Premises or the Authority. The Contractor shall not be permitted to commence the Work until the Waiver of Liens has been fully executed and properly recorded.

IN WITNESS WHEREOF the parties hereto have executed this Agreement the day and year first above written.

CONTRACTOR

ATTEST:

_____ By: _____

Name: _____

Title: _____

PUBLIC PARKING AUTHORITY OF PITTSBURGH

ATTEST:

_____ By: _____

Name: _____

Title: _____

Exhibit B

General Conditions

(see attached)

Exhibit C

General Conditions

(see attached)

TABLE OF CONTENTS

GENERAL CONDITIONS

GENERAL CONDITIONS

1. **General Definitions.**

(a) The term "Agreement" shall have the meaning set forth in Section 1 (e) below.

(b) The term "Authority" shall have the meaning set forth in the Form of Agreement (the "Agreement") by and between the Authority and the Contractor providing for performance of and payment for the Work and to which these General Conditions are attached as Exhibit C.

(c) The term "Change Order" means an agreement signed by the Authority, the Engineer and the Contractor, stating their agreement as to (i) a change in the Work; (ii) the amount of the adjustment in the Contract Price, if any; and (iii) the extent of the adjustment in the Contract Time, if any.

(d) The term “Construction Schedule” means a report that sets forth the proposed dates for the commencement and completion of each phase of the Work, including a description of each line item and estimated dollar amounts per line item that will commence or be completed during each phase. Each phase described shall include readily identifiable milestones from which progress can be gauged.

(e) The term "Contract" means the Contract for the performance of the Work, which consists of all of the Contract Documents. The intent of the Contract Documents is to form the Contract and include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and what is required by one shall be as binding as if required by all. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreement, whether written or oral.

(e) The term "Contract Documents" shall have the meaning set forth in the Agreement.

(f) The term "Contract Price" shall have the meaning set forth in the Agreement.

(g) The term "Contract Time" shall have the meaning set forth in the Agreement.

(h) The term "Contractor" shall have the meaning set forth in the Agreement.

(i) The term "Plans" means the graphic and pictorial portions of the Contract issued by the Engineer, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including drawings, elevations, sections, details, schedules and diagrams.

(j) The term "Emergency" means an event endangering the immediate safety of persons or property.

(k) The term "Engineer" shall have the meaning set forth in the Agreement.

(l) The term "Form of Bid" means the Form of Bid required to be submitted by all contractors bidding to perform the Work.

(m) The term "Inspector" means the duly authorized representative of the Authority.

(n) The term "Labor and Material Bond" shall have the meaning set forth in the Agreement.

(o) The term “Overhead” means all costs not directly attributed to the completion of the Contract, and shall include without limitation, administrative costs incident to the management, supervision, or conduct of the Contractor (Subcontractor(s), Sub-subcontractor(s), or Suppliers) associated with completing the Contract.

(p) The term "Performance Bond" shall have the meaning set forth in the Agreement.

(q) The term "Reasonable Time" means the amount of time which a reasonably prudent person, aware of the obligations imposed by the Contract that the Work be completed within a specified time, would deem to be reasonable under the circumstances existing at the time. For example, if a Change is requested which will affect the progress of the Work, then Reasonable Time shall be a shorter length of time than in the case where the progress of the Work is not affected.

(r) The term "Specifications" means the portion of the Contract consisting of the written requirements issued by the Engineer for the materials, equipment, construction systems, standards and workmanship for the Work and performance of related services.

(s) The term "Subcontractor" means a person or entity that has a direct contract with the Contractor to perform a portion of the Work.

(t) The term "Sub-subcontractor" means a person or entity that has a direct contract with the Subcontractor to perform a portion of the Work.

(u) The term “Substantial Completion” means when the Work is sufficiently completed in accordance with the Contract so that the applicable governmental authority can and does issue a permanent Certificate of Occupancy (if applicable), and the Authority may occupy and/or fully use the Work for its intended use, as evidenced by a certificate to such effect from the Engineer.

(v) The term “Supplier” means a person or entity that is to furnish materials or equipment fabricated to a special design to perform any portion of the Work.

(w) The term "Warranty Bond" shall have the meaning set forth in the Agreement.

(x) The term "Work" shall have the meaning set forth in the Agreement.

2. **Contract Documents.** The Contract Documents shall not be construed to create a contractual relationship of any kind between (i) the Engineer and Contractor, (ii) the Authority and a Subcontractor or Sub-subcontractor, or (iii) any persons or entities other than the Authority and the Contractor.

3. **Engineer.**

(a) The Engineer will provide for the administration of the Contract as described in the Contract. The Engineer will have authority to act on behalf of the Authority only to the extent provided in the Contract, unless otherwise modified by written instrument signed by the Authority. The Engineer has authority to stop the Work whenever such stoppage may be necessary to insure the proper administration of the Contract and compliance with the Contract.

(b) In the event that no Engineer is retained by the Authority for the Work, the Authority shall perform the functions of the Engineer under this and every other section of the Contract.

4. **Inspector.**

(a) An Inspector may be put upon the Work by the Authority. The Inspector's duty will be to observe whether the Work is being performed according to the Plans and Specifications, and such other duties as the Authority may assign.

(b) The Inspector, the Authority and any of its other representatives, shall at all times have access to and the right to inspect the work site and the Work. If the Inspector, Authority or any other representative of the Authority observes any irregularities in the performance of the Work or any portion of the Work, he shall so notify the Engineer who shall take appropriate action as provided in the Contract.

(c) The Inspector shall in no case act as foreman, superintendent or project manager for the Contractor, nor interfere with the management of the Work by the Contractor.

5. **Subcontractors and Suppliers.**

(a) No more than eighty percent (80%) of the Work may be performed by Subcontractors or Sub-subcontractors. Further, Contractor shall not hire any Subcontractor or Sub-subcontractor who is listed on the most recent list as of the date of the Agreement produced by the Commonwealth of Pennsylvania's Department of Labor and Industry and listing persons or entities in violation of the Pennsylvania Prevailing Wage Act.

(b) As soon as practicable after the award of the Contract and before awarding any subcontracts, the Contractor shall provide the Engineer and the Authority with a listing of the Subcontractors and Suppliers proposed to perform any portion of the Work, by completing the Subcontractor/Supplier Information Sheet, attached as Exhibit D and made part of this Exhibit hereof. The Subcontractor/Supplier Information Sheet must be completed in full. The Engineer will reply within ten (10) days to the Contractor in writing stating whether or not the Authority

or Engineer has reasonable objection to any such proposed Subcontractor or Supplier. The Contractor shall not contract with any Subcontractor or Supplier to whom the Authority or Engineer has a reasonable objection and shall promptly supply the Engineer with an acceptable alternative Subcontractor or Supplier. Failure of the Engineer to reply within ten (10) days of receipt of any list shall constitute notice of no reasonable objection.

(c) Once the names of the Subcontractors and Suppliers are submitted, Subcontractors or Suppliers may not be changed nor may the dollar value of work/supplies be reduced, without prior written approval of the Authority. If the Contractor fails to obtain written approval from the Authority for any such change or reduction, the Authority shall have the option, at its sole discretion, to select one or more of the following remedies: stop the Work in accordance with Section 21 hereof, until the matter is resolved to the Authority's satisfaction; have the Contractor pay Liquidated Damages in accordance with Section 8 of the Form of Agreement; or terminate the Contract in accordance with Section 34 hereof.

(d) Notwithstanding the existence of any Subcontractor, Sub-subcontractor, or Supplier, Contractor shall be liable to the Authority for performance under the Contract as if no Subcontractor, Sub-subcontractor, or Supplier exists. No subcontract, sub-subcontract, or supply contract shall create any contractual relationship between any Subcontractor, Sub-subcontractor, or Supplier and the Authority or any obligation of the Authority to any Subcontractor, Sub-subcontractor, or Supplier.

(e) The Contractor is responsible and liable for the acts and omissions of its Subcontractors or Suppliers and their direct and indirect employees (including, without limitation, Sub-subcontractors and their direct and indirect employees), to the same extent as it (he/she) is responsible for the acts and omissions of its employees.

(f) For convenience of reference and to facilitate the letting of subcontracts, the Specifications are separated into titled sections. Such separations shall not, however, operate to make the Engineer an arbiter to establish limits of the contracts between the Contractor and Subcontractors or Suppliers.

(g) The Contractor shall pay all Subcontractors or Suppliers who have provided services or materials related to the Work and to whom payment is due and owing within five (5) business days after the Authority makes payment to the Contractor. Failure to make such payment, absent a good faith dispute regarding the amount owed to a Subcontractor or Supplier (it being understood that quality of work shall not be a basis upon which Contractor may withhold payment to a Subcontractor or Supplier of any amount which Contractor has received from Authority for such work), shall constitute a material breach of the Contract and the Authority shall have the option, at its sole discretion, to select one or more of the following remedies: have the Contractor pay Liquidated Damages in accordance with Section 8 of the Form of Agreement; or terminate the Contract in accordance with Section 34 hereof. In the event of a good-faith dispute between the Contractor and a Subcontractor or Supplier, any amount <u>not</u> in dispute shall <u>not</u> be withheld by the Contractor from the Subcontractor or Supplier.

6. **Construction Schedule.**

(a) The Contractor, within fifteen (15) days after notice of award by the Authority, shall prepare and submit to the Authority and Engineer a detailed Construction Schedule, as defined in Section 1 hereof, for the Work. This schedule shall be used as a basis for monitoring project progress and reviewing the Contractor's Applications for Payment.

(b) The Contractor shall provide the Authority with a monthly status report regarding the Construction Schedule with every monthly Application for Payment, or in the event that an Application for Payment will not be made during a month, a status report shall be provided on the first (1st) day of that month (hereinafter "Construction Schedule Update"). A Construction Schedule Update dated and signed by the Contractor shall certify:

(i) that the Work, and each phase thereof, is on schedule;

(ii) that the cost of each line item is within the proposed cost estimates in the Construction Schedule;

(iii) that each milestone from the Construction Schedule has been met in a timely fashion;

(iv) that all Work performed subsequent to the prior Construction Schedule Update has been performed in conformity with the Construction Schedule and those changes approved in writing by the Authority; and

(v) that the Subcontractors and Suppliers, previously approved by the Authority, have been engaged in conformity with the Subcontractor/Supplier Information Sheet, and those changes as approved in writing by the Authority.

(c) In addition to the foregoing, the Contractor shall not revise the Construction Schedule, regardless of whether the Contract Time is extended, unless and until the Contractor receives prior written approval from the Authority for such change. A lack of response from the Authority shall be considered a rejection of the requested change. If the Contractor makes any such change without obtaining the necessary written approval, the Authority shall have the option, at its sole discretion, to select one or more of the following remedies: stop the Work in accordance with Section 21 hereof until satisfactory corrections are provided; have the Contractor pay Liquidated Damages in accordance with Section 8 of the Agreement; or terminate the Contract in accordance with Section 34 hereof.

(d) In the event that the Authority is not satisfied, in its reasonable discretion, with the form or substance of a Construction Schedule Update, the Contractor shall have five (5) days to revise the Construction Schedule Update to the satisfaction of the Authority. If the Contractor fails to revise the Construction Schedule Update to the satisfaction of the Authority within said five (5) day time period, the Authority shall have the right, at its sole discretion, to institute the remedy of Liquidated Damages in accordance with Section 8 of the Form of Agreement. In addition, the Authority may, at its sole discretion, delay the approval of the Contractor's Application for Payment in accordance with Section 28.2(d) hereof.

(e) In addition to Construction Schedule Updates, the Contractor shall immediately notify the Authority when the Contractor believes that the cost of a particular line item will or may exceed the estimated costs in the Construction Schedule or the total line item cost as provided in the Bid, See Exhibit A. Upon providing said notice the Contractor shall utilize the Change Order process in Section 27, to attempt to revise the Contract. If the Contractor fails to inform the Authority under this provision, the Authority shall have the option, at its sole discretion, to select one or more of the following remedies: stop the Work in accordance with Section 21 hereof until satisfactory corrections are provided; have the Contractor pay Liquidated Damages in accordance with Section 8 of the Agreement; or terminate the Contract in accordance with Section 34 hereof. In addition, the Contractor shall have no right to receive compensation for Work completed in excess of any line item estimate, unless the Contractor has received written permission to proceed from the Authority pursuant to the Change Order process.

7. Shop Drawings.

The Contractor shall submit to the Engineer a sufficient number of sets, as determined by the Engineer, in its sole discretion, in accordance with the schedule referenced below the Contractor's shop drawings, settings, schedules and such other drawings as may be necessary for the performance of the Work in the shop and in the field as required by the Plans, Specifications or Engineer's instructions. Deviations from the Plans and Specifications shall be called to the attention of the Engineer at the time of the submission of shop drawings and other drawings for approval. The Engineer's approval of any shop drawings shall not release the Contractor from responsibility for such deviations.

Shop drawings, etc. shall be submitted according to the following schedule:

(1) The requested number of shop drawings shall be submitted at least fourteen (14) days before the materials indicated thereon must be ordered in order to prevent delay of the Work, or earlier if required to prevent delay of the Work.

(2) The Engineer shall, within fourteen (14) days of the submittal of any shop drawings, return one copy to the Contractor marked with all corrections and changes.

8. Copies Furnished.

The Engineer will furnish to the Contractor a sufficient number of sets of Plans and Specifications (including a set for the Record Documents), as determined by the Engineer, to be necessary for the execution and completion of the Work, but in no case to exceed seven (7) sets. Additional copies requested by the Contractor will be furnished to the Contractor by the Engineer at the cost of reproduction.

9. Ownership of Plans and Specifications.

All Plans, Specifications and copies thereof furnished by the Engineer are the property of the Engineer. They are not to be used on other work, and with the exception of the set

accompanying the signed Agreement, are to be returned to the Engineer upon completion of the Work.

10. **Labor.**

Only competent and first class workers and mechanics, who will work in harmony with other trades and crafts at the Work site, or adjacent thereto, shall be engaged in the Work. Should the Authority deem anyone employed on the Work incompetent or unfit for their duties and so certify, the Contractor, Subcontractor or Sub-subcontractor shall remove such worker or mechanic from performance of the Work, and shall not again, without the Authority's permission, employ or otherwise engage such person in performance of the Work.

11. **Supervision.**

(a) The Contractor must give as much personal attention to the Work as is necessary to secure consistent, regular and prompt prosecution of the Work. The Contractor shall employ a qualified superintendent or project manager and necessary assistants, with the knowledge and experience necessary to professionally complete the Work, who shall be in attendance at the site during performance of the Work. If in the opinion of the Authority or the Engineer, the Contractor fails to provide satisfactory individuals, the Authority shall have the option, at its sole discretion, to select one or more of the following remedies: stop the Work in accordance with Section 21 hereof until satisfactory individuals are provided; have the Contractor pay Liquidated Damages in accordance with Section 8 of the Form of Agreement; or terminate the Contract in accordance with Section 34 hereof.

(b) The superintendent or project manager shall represent the Contractor, and communications given to the superintendent or project manager shall be as binding as if given to the Contractor.

(c) The Contractor shall carefully study and compare all Plans, Specifications, and the other Contract Documents and shall report immediately to the Authority any error, inconsistency or omission which he may discover, but he shall not be held responsible for their existence or discovery.

12. **Maintenance of Plans/Specifications.**

The Contractor shall maintain at all times one (1) copy of all Plans and Specifications in good order, on the work site, available to the Authority or its representative.

13. **Samples and Tests.**

(a) Wherever samples or tests of materials are called for in the Specifications, or where it is desired to substitute another material or article for that specified, the Contractor shall submit samples in triplicate to the Engineer with all freight charges prepaid prior to the incorporation of the material in the Work. One sample will be returned to the Contractor at its expense, with letter stating that it is approved or rejected; provided, however, samples which are of value after testing will all be returned to and remain the property of the Contractor. The

Contractor shall perform no portion of the Work requiring samples or tests until the materials subject to such requirements have been approved by the Engineer. Contractor shall be solely responsible for delays due to samples not being submitted in time to allow for proper time to complete sampling or tests. All materials used in completing the Work shall be equal to the approved sample in every respect.

(b) Materials or portion of the Work requiring tests are so specified in the Specifications. Other material may be tested at the discretion of the Engineer. Tests shall be made under the supervision of, as directed by and at such places as may be convenient to the Engineer.

(c) All sampling and tests shall be conducted by a properly qualified person or testing laboratory, approved by the Engineer, who shall furnish the Engineer with certified reports, showing the results of sampling or tests, as the case may be, and stating that they were made in accordance with the Specifications and calling attention to deviations from the Specifications on the laboratory report. All tests, as well as sampling and preparation of samples, shall be in accordance with the standard as of the date of the test adopted by the standards organization set forth in the Specifications, or, if no organization is so stated, the A.S.T.M.

(d) Costs of initial sampling or testing materials called for in the Specifications shall be borne by the Authority, unless otherwise stated, but the cost of furnishing and preparing these materials for sampling or testing shall be borne by the Contractor. Costs of sampling or testing of materials substituted for previously accepted materials and re-sampling or re-testing made necessary by the failure to comply with the requirements of the Specifications shall be paid for by the Contractor.

(e) All tests of the completed Work shall be made at the expense of the Contractor, who shall repair all damage resulting from these tests, if they show defects from some fault of the Contractor. The Contractor shall not make any tests upon portions of construction already completed except with the written consent and under the direction and control of the Engineer.

14. **Materials.**

Where certain makes or brands are called for and mentioned as "Standard", others of equal quality may be used provided that the substitute/alternative material is specified in the bid. Unless substitutions or alternates are requested, no such deviation from the Specifications may be allowed. No delay or extra time to complete the Work will be allowed on account of a request for substitute/alternative makes or brands.

15. **Temporary Equipment and Scaffolding.**

(a) The Contractor shall provide and maintain, as approved by the Engineer, temporary stairs, ladders, barricades, runways, hoists, chutes, etc., as required for the proper performance of the Work by all trades.

(b) Contractor shall provide all necessary scaffolding for the performance of the Work. All scaffolding shall be constructed to meet all the requirements of all applicable building codes and laws.

16. **Permits and Fees.**

The Contractor shall secure and pay for all building and other permits, and governmental fees, licenses and inspections necessary for proper execution and completion of the Work and shall post bond as required by the same. Contractor shall furnish receipts for any fees to secure the foregoing to the Authority.

17. **Taxes.**

The Contractor shall pay sales, business privilege, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor, Subcontractor and Sub-subcontractors.

18. **Royalties and Patents.**

The Contractor shall pay all royalties and license fees necessary for the Contractor's execution and completion of the Work and shall hold and save the Authority and its officers, agents, lessees, servants, and employees harmless from all costs, expenses, or liabilities of any nature or kind, including, without limitation, cost and expenses of defending legal actions, for or on account of the use of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Authority, unless otherwise specifically stipulated in the Contract.

19. **Compliance Required.**

The Contractor shall give all notices required by and comply with all laws, ordinances, rules, regulations and lawful orders of public authorities bearing on the performance of the Work. If the Contractor performs any portion of the Work contrary to such laws, ordinances, rules, regulations or lawful orders, it shall bear all costs and expenses arising therefrom. In addition, the Contractor shall enforce and comply with the Authority's instructions regarding signs, advertisements, fires and smoking.

20. **Warranty.** Contractor warrants to the Authority that:

(a) the materials and equipment furnished under the Contract will be of good quality and new, unless otherwise permitted by the Contract;

(b) the materials and equipment furnished under the Contract will be under warranty for replacement of parts and labor costs for a minimum of one (1) year from the date the Authority receives certification from the Engineer that the Work has reached Substantial Completion, unless otherwise permitted by the Contract, **OR** for a duration as defined in the technical specifications, whichever is longer. The Authority shall have, at its sole discretion, the authority to request the assignment of any and all manufacturer or distributor warranties. Any assignment of a manufacturer or distributor warranty shall not relieve the Contractor of the one-

year warranty provided in this Section 20(b). If the manufacture or distributor provides a warranty in excess of the one-year warranty provided by the Contractor, the Contractor shall assign the remainder of said warranty to the Authority upon the expiration of the one-year term noted above;

(c) the Work will be free from defects not inherent in the quality required or permitted;

(d) the Work will conform with the requirements of the Contract; and

(e) Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

21. **Authority's Right to Stop Work.**

If the Contractor fails to correct the Work or any portion of the Work that is not in accordance with the requirements of the Contract as required by Section 20 above or persistently fails to carry out the Work in accordance with the Contract, the Authority, by written order signed by the Authority, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. The Contractor may not claim any damages for injury caused by delay due to a stoppage of the Work in accordance with this Section 21.

22. **Authority's Right to Carry Out Work.**

If the Contractor defaults and neglects to carry out the Work in accordance with the Contract and fails within a three (3) day period after receipt of written notice from the Authority to commence and continue correction of such default or neglect with diligence and promptness, the Authority may after such three (3) day period give the Contractor a second written notice to correct such deficiencies within a second three (3) day period. If the Contractor fails to commence and continue to correct any deficiencies within such second three (3) day period, the Authority may, without prejudice to other remedies the Authority may have, correct such deficiencies. In such case the Authority shall deduct from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including, without limitation, the cost of the Engineer's or other professionals' additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Authority within thirty (30) days of notice from the Authority that such amounts are due and owing.

23. **Other Contracts.**

The Authority reserves the right to let other contracts in connection with the Work. The Contractor shall cooperate with the other contractors with regard to storage of materials and execution of their work, and shall properly connect and coordinate its work with theirs. If any part of the Work is dependent upon or is affected by the work of any other contractor, the Contractor shall inspect such work and promptly report to the Engineer any defects in the other contractor's work, including, without limitation, any discrepancy between the executed work and

the Plans or Specifications. Failure to so inspect and report defects shall constitute acceptance of the other contractor's work as satisfactory and proper for the reception of the Work, except as to defects which may develop in the other contractor's work after the execution of the applicable portion of the Work.

24. **Work Performed by the Authority or Other Parties.**

Wherever work being done by the Authority or its agents or by other contractors is contiguous to the Work, the respective rights of the various interests involved shall be established by the Engineer. The goal of the Engineer shall be to secure the completion of the various portions of the Work in general harmony.

25. **Delays and Extension of Time.**

If the Contractor is delayed in the performance and completion of the Work by an act or neglect of the Authority or Engineer, or an employee of either, or by fire, flood, or other causes beyond the control of the Contractor, or by other causes which the Engineer determines may justify delay, the deadline for the completion of the Work set forth in the Agreement may be extended by the Authority for a period equivalent to the actual number of calendar days lost by reason of any or all causes aforementioned if the request for extension is presented in writing to the Engineer within seven (7) calendar days after the commencement of the cause of the delay. The length of time of the extension shall be determined and fixed by the Engineer, subject to the approval of the Authority. The Contractor may not claim any damages for injury caused by a delay caused by an event described in this Section 25.

26. **Concealed or Unknown Conditions.**

If subsurface or other latent physical conditions are encountered at the Work site which (i) differ materially from the conditions expressly represented in the Contract; or (ii) if no express representation is made in the Contract, differ in such an extreme and unusual nature from what reasonably could have been anticipated, then notice by the Contractor shall be given to the Engineer promptly before conditions are disturbed and in no event later than fourteen (14) days after first observance of the conditions. The Engineer will promptly investigate such conditions to determine whether they differ materially from those conditions that were expressly represented in the Contract or which reasonably could have been anticipated, and shall notify the Contractor and the Authority of his or her determination. If the Engineer determines that the conditions at the work site are not materially different, the Engineer shall so notify the Authority and the Contractor in writing, stating his or her reasons. If the Engineer determines that the conditions at the work site are materially different and the Authority disagrees, the Authority shall promptly notify the Contractor and Engineer and the Authority, Contractor and Engineer shall attempt to reach a mutually agreeable determination. The Authority shall not be obligated to modify the Contract unless the parties reach such determination. If the Engineer determines and the Authority agrees that the conditions at the site are materially different and will materially affect the cost of performing the Work, the Contractor shall be entitled to a Change Order equitably adjusting the Contract Price or Contract Time, or both. In any request for a Change Order or other claim for an equitable adjustment in the Contract Price as a result of differing

work site conditions, the Contractor shall be required to document and substantiate the request or claim by producing the relevant portions of its bid sheets or estimates to show the amount he reasonably expected to pay for the Work based upon the conditions that were expressly represented in the Contract or which reasonably could have been anticipated.

27. **Change Orders.**

27.1 **Restrictions on Ability to Undertake Change.** Changes to the Work, including without limitation the increased cost of any line item in the Bid (Exhibit A) may be undertaken by the Contractor **only** upon receipt of a Change Order issued and executed by the Authority in accordance with Section 27. Notwithstanding the foregoing, in an Emergency, the Contractor, without obtaining a signed Change Order, may undertake only such changes to the Work as are necessary to alleviate the Emergency, after which time the Contractor shall immediately seek a Change Order pursuant to the procedures outlined in Section 27.2 (e) prior to undertaking any further changes to the Work. The parties understand and agree that the unit prices set forth in the Contract Documents shall be employed in determining whether to approve a Proposed Change Order.

27.2 **Procedure to be Followed when Change to the Work is Required.** The Authority, the Engineer and the Contractor shall follow the following procedures whenever a change to the Work is required.

(a) Notice of Change Required. Whenever any party determines that a change to the Work is required, that party shall immediately notify the Engineer in writing of the need for the change, describing in such notice in reasonable detail the nature and scope of the change required. It shall be the responsibility of the Engineer to notify the other parties of its receipt of any such notice.

(b) Preparation of Design and Proposed Change Order. Within a Reasonable Time after the Engineer receives the notice of change required, the Engineer shall evaluate the situation, prepare any needed designs for the requested change, and request that the Contractor prepare a Proposed Change Order which includes the Contractor's estimate of any additional costs, time required to complete the requested change and/or any extension of the Contract Time, or any credit to the Authority, based upon the design provided by the Engineer (the "Proposed Change Order"). Additional costs in the Contractor's Proposed Change Order must be limited to direct costs of any additional labor, materials, tools and equipment necessary to perform the change, plus a maximum amount of ten percent (10%) of the aforesaid additional costs to cover all other expenses to the Contractor, including without limitation insurance, bonding costs, Overhead, profit and taxes. If a Subcontractor or Sub-subcontractor will perform any of the Work included in the Change Order, the Subcontractor's and Sub-subcontractor's additional costs, including without limitation insurance, bonding costs, Overhead, profit and taxes, shall be limited to five percent (5%) of the cost of the Work to be performed by that Subcontractor or Sub-subcontractor.

(c) Submission of Proposed Change Order. The Contractor shall sign and submit to the Engineer the Proposed Change Order within a Reasonable Time following delivery of the design described in Section 27.2 (b).

(d) Review of Cost Estimate and Preparation of Change Order. If, in the Engineer's opinion, the amount of any additional costs and/or time requested by the Contractor in the Proposed Change Order is excessive or otherwise unreasonable, the Engineer shall have the right to request that the Contractor revise the Proposed Change Order before it is submitted to the Authority for approval.

(e) Process for Approval or Disapproval of Change Orders by the Authority. The following procedures shall be followed without exception whenever the approval of the Authority is required for a Change Order:

(i) Changes Less than $10,000 or 5% of Contract Price. The Director of Contract Management of the Authority shall be authorized to approve and execute or disapprove on behalf of the Authority Change Orders reflecting a change to the original Contract Price of an amount less than $10,000 or less than 5% of the original Contract Price, whichever amount is less; provided, however, that from and after the date that Change Orders have been approved on the Contract which, in the aggregate, total an amount equal to 10% of the original Contract Price, no additional Change Orders may be approved by the Director of Contract Management without approval of the Authority Board.

(ii) Changes Less than $25,000 or 10% of the Contract Price. The Executive Director and the Director of Contract Management of the Authority jointly shall be authorized to approve and execute or disapprove on behalf of the Authority Change Orders reflecting a change to the original Contract Price of an amount less than $25,000 or less than 10% of the original Contract Price, whichever amount is less; provided, however, that from and after the date that Change Orders have been approved on the Contract which, in the aggregate, total an amount equal to 10% of the original Contract Price, no additional Change Orders may be approved by the Executive Director and the Director of Contract Management without approval of the Authority Board. In the event of Change Orders approved under this Section 27.2(e)(ii), the signatures of both the Director of Contract Management and the Executive Director shall be required on the Change Order in order for it to be binding upon the Authority.

(iii) All Other Changes. The approval or disapproval of the Authority Board shall be required for (i) all Change Orders reflecting a change to the original Contract Price in excess of $25,000 or more than 10% of the original Contract Price, whichever amount is less; and (ii) all Change Orders requested from and after the date that Change Orders have been approved on the Contract which, in the aggregate, total an amount equal to 10% of the original Contract Price.

(iv) Execution of Change Order. In the event the Authority approves a Change Order in accordance with this Section 27.2(e), the appropriate officers of the Authority shall execute and deliver the Change Order. The Contractor and Engineer by their execution hereof

are hereby notified of the procedures contained in this Section 27.2(e) and understand that no Change Order shall be binding upon the Authority unless approval is obtained as required herein.

(f) Time in which Authority must act upon Change Order Requests. The Authority shall either approve or disapprove a Proposed Change Order in accordance with the following schedule:

(i) If the Proposed Change Order requires only the approval of the Director of Contract Management and/or the Executive Director, the Proposed Change Order shall be approved or disapproved within seven (7) days after submission to the Authority by the Engineer.

(ii) If the Proposed Change Order requires the approval of the Authority Board, the Proposed Change Order shall be approved or disapproved within fourteen (14) days after submission to the Authority by the Engineer.

In the event that a Proposed Change Order must be approved sooner than the times set forth above in order to avoid a delay in the completion of the Work, Contractor immediately shall so notify the Authority. In such notice, Contractor shall include a detailed explanation of the reasons that the completion of the Work shall be delayed without an expedited review process, a request for an expedited approval of the Proposed Change Order and the time within which approval is required in order to complete the Work within the Contract Time. The Authority shall use reasonable efforts to comply with the Contractor's request.

(g) Event of Disapproval of a Change Order as Submitted by the Contractor. In the event the Authority disapproves a Proposed Change Order prepared by the Contractor, the Authority shall have the right to select one of the following procedures:

(i) The Authority, with the assistance of the Engineer, shall prepare, execute and issue its own Change Order stating the amount of additional costs and/or time required to complete the requested Change, and the Contractor shall proceed promptly to undertake the change to the Work described therein. All changes in the Work pursuant to Change Orders issued by the Authority shall be performed under applicable provisions of the Contract Documents and shall not invalidate the Contract. The Contractor shall be deemed to accept the additional costs and/or time set forth in the Change Order issued by the Authority unless the Contractor notifies the Authority in writing within seven (7) days of its receipt of the Change Order that the Work is being performed under protest. Contractor's protest shall not excuse Contractor from promptly undertaking the change to the Work described in such Change Order. The Contractor shall be entitled to bring a claim against the Authority for an equitable adjustment to the Contract for any Change Order the Contractor is required to perform under protest, but in no event may the Contractor recover damages on any such claim that exceed the difference between the additional costs in the Change Order issued by the Authority and the additional costs requested in the Contractor's Proposed Change Order; or

(ii) If the Change Order increases the contract price more than 20% or constitutes a substantial change in the Work ("Substantial Change Order"), the Authority shall

have the right, if not the duty under the Authority's enabling statute, to terminate the Contract. The Contractor recognizes that the Authority, under state law, may be obligated to terminate and re-bid this Contract upon the occurrence of a Substantial Change Order. Contractor agrees not to hold the Authority responsible for any losses or damages that it may incur due to a termination under this provision.

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

28. **Payment.**

28.1 **Schedule of Values.** Upon notification of award, the Contractor must submit to the Engineer a schedule of values allocated to various portions of the Work, giving a complete breakdown of the price of the various items of the Work (the sum of which shall equal the total Contract Price) and otherwise prepared in such form and supported by such data to substantiate its accuracy as the Engineer may require. This schedule, unless objected to by the Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

28.2 **Application for Payment.**

(a) The Contractor shall submit to the Engineer once each calendar month an Application for Payment in accordance with the schedule of values for (i) operations completed as of the last day of the previous calendar month; and (ii) payments made on account of materials delivered and suitably stored and insured at the site for subsequent incorporation in the Work, provided such storage was approved in advance by the Authority. If approved in advance by the Authority, an Application for Payment may include payment for materials suitably stored off site at a location agreed upon in writing. "Suitably stored" as used in the preceding sentence shall mean that materials stored off site shall be stored in a bonded warehouse and clearly marked "Property of the Public Parking Authority of Pittsburgh." Notwithstanding anything to the contrary, in no event will the Authority pay more than eighty percent (80%) of Contractor's cost of stored materials (whether stored on or off site) until such materials are fully incorporated in the Work. An Application for Payment shall be supported by such data substantiating the Contractor's right to payment as the Engineer or the Authority may require.

(b) Applications for Payment may not include requests for payment of amounts that the Contractor does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason.

(c) The Contractor warrants that title to the portion of the Work covered by an Application for Payment will pass to the Authority no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all portions of the Work for which Certificates for Payment have been previously issued and payments received from the Authority shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, Sub-subcontractors, material suppliers, or other persons

or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

(d) Every Application for Payment must include a Construction Schedule Update. If the Contractor fails to provide a Construction Schedule Update or there is a discrepancy concerning a Construction Schedule Update, as described in Section 6(d) hereof, the Authority may, at its sole discretion, delay the approval of the Contractor's Application for Payment until the Construction Schedule Update is provided or the discrepancy is resolved to the Authority's satisfaction.

(e) Every Application for Payment must include an adequate partial release, satisfaction and waiver of liens, satisfactory to the Authority, from all Subcontractors, Suppliers or other parties having a right to file a mechanic's or materialman's liens, with respect to all work, materials and services for which Application for Payment proceeds are being requested. The failure to provide adequate waivers and releases will delay payment until waivers and releases satisfactory to the Authority are provided;

(f) Every Application for Payment must include a certified payroll in accordance with the Pennsylvania Prevailing Wage Act, 43 P.S. § 165-10, stating the amounts due to the Contractor, Subcontractor(s), and Sub-subcontractor(s) for wages. This report shall include the name of each person who is due wages and the amount due to each person respectively. A failure to provide a certified payroll or a discrepancy concerning the certified payroll, will delay payment until a certified payroll is provided or the discrepancy is resolved to the Authority's satisfaction.

28.3 **Certificates for Payment.**

(a) The Engineer shall, not later than ten (10) days after receipt of an Application for Payment from the Contractor either issue to the Authority a Certificate for Payment, with a copy to the Contractor, for such amount as he or she determines to be properly due, or notify the Contractor and Authority in writing of his or her reasons for withholding the Certificate for Payment in whole or in part as provided in Section 28.4.

(b) The issuance of a Certificate for Payment by the Engineer constitutes a representation by the Engineer to the Authority, based on the Engineer's observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.

(c) The Authority shall pay, no later than fifteen (15) days after receipt of the Certificate for Payment from Engineer, unless payment shall otherwise be withheld under the Contract, the amount specified in the Certificate for Payment, subject to the following:

(i) ten (10%) percent of the value of the Certificate for Payment shall be retained by the Authority until the Contractor submits an application, certified by the Engineer, that the Work has reached Substantial Completion: whereupon

(ii) the Authority shall pay over to the Contractor fifty percent (50%) of amounts previously retained by the Authority unless such amounts are being otherwise retained by the Authority as provided in the Contract: and thereafter

(iii) the Authority shall retain only five (5%) percent of the value of each Certificate for Payment until Final Payment.

All amounts retained by the Authority and not otherwise held by the Authority or previously paid over to the Contractor shall be included in the Final Payment (hereinafter defined). Upon receipt of the applicable payment by the Authority, the Contractor shall promptly pay each Subcontractor and Supplier in accordance with Section 5(e) of these General Conditions.

(d) Neither the Authority nor the Engineer shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may be otherwise required by law. Sections of this Contract that dictate payment by the Contractor to a Sub-contractor or Supplier are included to further the timely completion of the Work and shall not create or impose any liability upon the Authority or Engineer for said payments.

(e) No Certificate for Payment issued, nor payment made to the Contractor, shall constitute an acceptance of any portion of the Work that is not in accordance with the Contract.

28.4 **Decisions to Withhold Certification.**

(a) The Engineer may refuse to certify payment and may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Authority, if in the Engineer's opinion the representations to the Authority required by Section 28.3(b) cannot be made. If the Contractor and the Engineer cannot agree on a revised amount, the Engineer will promptly issue a Certificate for Payment for the amount which the Engineer is able to make such representation to the Authority.

(b) The Engineer may also refuse to certify payment and withhold a Certificate for Payment in whole or in part as may be necessary to protect the Authority from loss on account of:

(i) Defective work not remedied;

(ii) Third Party claims filed against the Authority or reasonable evidence indicating probable filing of such claims;

(iii) Failure of the Contractor to utilize the Subcontractor(s) and Supplier(s) indicated in the Construction Schedule;

(iv) Failure of the Contractor to make payment properly to Subcontractors or Suppliers for labor, equipment or materials in accordance with Section 5(g) hereof;

(v) A reasonable doubt that the Work can be completed (i) for the balance then unpaid, or (ii) within the Contract Time and the unpaid balance would be adequate to cover actual or liquidated damages for the anticipated delay;

(vi) Damage to the Authority or another contractor;

(vii) Payments improperly or incorrectly made to the Contractor; or

(viii) Persistent failure to carry out the Work in accordance with the Contract.

When the above problems recited are removed, payment shall be made for amounts withheld because of such grounds.

28.5 Closeout Submittals to the Authority.

A. Provide a set of Final Record Documents and Drawings, "As-Builts", that reflect actual construction conditions. Ensure the Record set of drawings is legibly marked.

1. Upon award of the Contract, secure from the Authority, at no charge, one complete set of all Contract Documents to be used to produce the Final Record Documents.

2. The purpose of the Final Record Documents is to record the detail of all visible and concealed construction changes to enable future modification or design to proceed without additional measurement, investigation and/or examination.

B. Provide Operation and Maintenance Manuals for all new products used in a bound manual.

1. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors per Specifications.

2. Provide original signed product warranty, bond or service/maintenance contract in separate packet.

28.6 **Final Payment.**

(a) Upon receipt of written notice from the Contractor that the Work is ready for final inspection and acceptance, upon receipt of the Final Record Documents, and upon receipt of a final Application for Payment, the Engineer shall promptly inspect the Work. When the Engineer finds the Work acceptable under the Contract and the Contract fully performed, the Engineer will promptly issue a Final Certificate for Payment, stating that to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract and the entire balance found to be due the Contractor and noted in said Final Certificate for Payments is due and payable. The Engineer's Final Certificate for Payment will constitute a further representation that conditions listed in Section 28.5 (b) below as precedent to the Contractor's being entitled to Final Payment have been fulfilled.

(b) Neither Final Payment nor any remaining retained amounts shall become due until the Contractor submits to the Engineer and the Authority (i) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Authority or the Authority's property might be responsible or encumbered (less amounts retained by the Authority) have been paid or otherwise satisfied; (ii) a certificate evidencing that insurance required by the Contract will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Authority; (iii) consent of surety, if any, to Final Payment; (iv) a final Construction Schedule Update; and (v) adequate releases, satisfactions and waiver of liens, satisfactory to the Authority, from all Subcontractors, Suppliers or other parties having a right to file a mechanic’s or materialman’s liens, with respect to all work, materials and services for which Final Payment proceeds are being requested, accompanied by the Contractor's affidavit to the effect that to the best of its knowledge and information the releases and receipts cover all labor and materials supplied and all payments due Subcontractors. A failure to provide adequate waivers and releases will delay payment until waivers and releases satisfactory to the Authority are provided. If any Subcontractor or Sub-subcontractor refuses to furnish a release or receipt in full, the Contractor may furnish a bond satisfactory to the Authority to guarantee payment of the claim of such Subcontractor.

(c) Further, in accordance with Section 165-10 (a) of the Pennsylvania Prevailing Wage Act, neither Final Payment nor any remaining retained amounts shall become due until the Contractor, each Subcontractor and each Sub-subcontractor, respectively, submit to the Engineer and the Authority a statement in writing, in form satisfactory to the Secretary of Labor and Industry of the Commonwealth of Pennsylvania (the "Secretary"), certifying to the amounts then due and owing from such Contractor, Subcontractor and Sub-subcontractor, respectively, filing such statement to any and all workers for wages due on account of the Work, setting forth therein the names of the persons whose wages are unpaid and the amount due to each respectively, which statement so to be filed shall be verified by the oath of the Contractor, Subcontractor or Sub-subcontractor, as the case may be, that he or she has read such statement subscribed by him or her, knows the contents thereof and that the same is true of his or her own knowledge.

(d) If, after the Engineer has determined that the Work has reached Substantial Completion, final completion of the Work is materially delayed through no fault of the

Contractor or by issuance of Change Orders affecting final completion, and the Engineer so confirms, the Authority shall upon application by the Contractor and certification by the Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under terms and conditions governing Final Payment, except that it shall not constitute a waiver of claims. If the remaining balance for the portion of the Work not fully completed or corrected is less than amounts retained by the Authority and not otherwise retained by the Authority as provided in the Contract, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Engineer prior to certification of such payment.

(e) Within thirty (30) days of receipt of the Final Certificate for Payment, if the Authority agrees that the Final Payment amount in the Final Certificate for Payment is true and correct, the Authority shall pay to the Contractor the balance stated to be due it in the Final Certificate for Payment ("Final Payment").

(f) Acceptance of Final Payment by the Contractor, a Subcontractor, Sub-subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of the final Application for Payment.

29. **Protection of Persons and Property.**

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

(b) The Contractor shall take all precautions necessary for the safety of, and shall provide protection to prevent damage, injury or loss to:

(i) its employees on the Work and other persons who may be effected thereby;

(ii) the Work and materials and equipment to be incorporated therein or used in connection therewith, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

(iii) other property at the site or adjacent thereto, including, without limitation, trees, shrubs, lawns, walks, pavements, roadways, structures and utilities.

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

(d) The Contractor shall erect and maintain, as required by existing conditions and the Contract, safeguards for safety and protection, including, without limitation, posting danger

signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

(e) When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel and in accordance with local, state and federal laws and regulations.

(f) The Contractor shall designate a responsible member of the Contractor's organization at the work site whose duty shall be the prevention of accidents.

(g) In case any direct or indirect injury is done to existing streets or underground structures, sewers, or mains, conduits, etc., or to any public or private property of any kind, by or because of the Work, or in consequence of any act or omission on the part of the Contractor, its employees, or agents, the Contractor, at its own cost and expense, shall restore such structures, property, materials, etc., to a condition equal to that existing before such damage or injury was done, by repairing, rebuilding, replacing, or otherwise, as may be required, or shall make good such damage or injury in a manner satisfactory to the owner of the damaged property.

(h) The Contractor shall, if requested, furnish proof to the Authority of the settlement of any suits or actions arising out of the performance of the Work and involving possible liability on the part of the Authority, its officers, agents, lessees, employees, or the Engineer before Final Payment is made by the Authority for the Work.

30. **Responsibility for Loss or Damage.** The Contractor will be responsible for the protection of its materials, equipment and work. Contractor shall immediately and at its own expense make good any loss or damage due to loss, theft, vandalism or any other cause.

31. **Assumption of Liability/Indemnification/Insurance.**

(a) Except for the gross negligence or willful misconduct of the Authority, Contractor shall indemnify and hold the Authority, its successors and assigns and its directors, officers, agents, lessees, employees and authorized representatives harmless from and against any and all loss, damage and liability and for any and all claims for damages on account of or by reason of: (i) bodily injury, including death, which may be sustained or claimed to be sustained by any person, including employees of Contractor; (ii) all contractual disputes or liability not directly attributable to the Authority's acts or failure to act; and (iii) any and all damages to property, including the property of the Authority, its successors and assigns, caused by or arising out of or claimed to have been caused by or to have arisen out of any act, error or omission in connection with this Contract or the performance of the Work, whether or not occasioned by the negligence of the Authority, Contractor, or their respective agents, servants or employees. For purposes of enforcing this provision, Contractor hereby waives any or all immunities it may have under the Pennsylvania Workers' Compensation Act or otherwise.

(b) The Contractor shall maintain at all times until completion of the Work, the following insurance:

(i)	Worker's Compensation	Statutory (in conformance with Pennsylvania Worker's Compensation Act)	
(ii)	Employers Liability	Each Accident Disease – each employee Disease – policy limit	$500,000.00 $500,000.00 $500,000.00
(iii)	Contractor's General Liability (Bodily Injury and Property Damage)	Per Occurrence	$1,000,000.00
		Fire Damage (any one fire)	$1,000,000.00
		Medical Expenses (any one person)	$10,000.00
		Personal Liability and Advertising Injury	$1,000,000.00
		Products and Completed Operations Aggregate Limit	$2,000,000.00
		General Aggregate Limit (per project)	$2,000,000.00
(iv)	Automotive Liability Property Damage and Bodily Injury (any auto, hired autos and non-owned autos)	Per Occurrence	$1,000,000.00
(v)	Builders Risk/Renovation	Per occurrence	Equal to Contractor's Contract price
		Aggregate	Equal to Contractor's Contract price
(vi)	Riggers Liability (if applicable)	Per Occurrence	$1,000,000.00
		Aggregate	$2,000.000.00
(vii)	Asbestos & Lead Abatement (if applicable)	Per Occurrence	$1,000,000.00
		Aggregate	$1,000,000.00
(viii)	Professional Liability	Per Occurrence	$1,000,000.00

	(if applicable)		
		Aggregate	$1,000,000.00
(ix)	Owners & Contractors Protective Liability	Per Occurrence	$1,000,000.00
		Aggregate	$2,000,000.00
(x)	Umbrella Liability		
Projects Under $100,000		Per Occurrence	$1,000,000.00
		Aggregate	$1,000,000.00
Projects Over $100,000.00 to Under $1,000,000.00		Per Occurrence	$5,000,000.00
		Aggregate	$5,000,000.00
Projects Over $1,000,000.00		Per Occurrence	$10,000,000.00
		Aggregate	$10,000,000.00

(c) The Contractor shall provide the Authority, upon execution of this Contract, with a copy of each insurance policy, evidencing the required coverage. All policies must include, a provision providing direct and timely, sixty (60) day, notice of cancellation, non-renewal, or amendment to the Authority. Each policy shall also provide a verification that the carrier is "A" rated or better by AM Best.

(d) Each insurance policy shall include the following provisions, unless otherwise specified:

(i) The Contractor shall at all times until the Work is completed, include the Authority, its successors, assigns, officers, directors, agents, lessees, employees and authorized representatives as an "Additional Insured" on the insurance listed in Sections 31 (b) (iii), (v), (vi) and (vii) above. Upon reviewing any policy, the Authority may require that additional language be added to a policy to ensure that the Authority is adequately protected as an Additional Insured;

(ii) For insurance listed is Sections 31(b)(iii) and (x) the policy should indicate the aggregate limit is per location / per project or designate construction project general aggregate. Policy should also indicate that it includes contractual liability and coverage includes damages caused by explosion, collapse and underground causes;

(iii) A Waiver of Subrogation clause; and

(iv) To the extent that the Contractor is a joint venture, all such insurance policies shall be specifically endorsed to provide coverage for the joint venture.

(e) The Contractor shall provide the Authority with evidence of payment in full of any subsequent premiums at least 20 days prior to the expiration date of each policy.

(f) The Contractor shall obtain and maintain such other insurance as may be required from time to time by the Authority. The amounts, coverage and other terms and conditions of the insurance policies shall at all times be to the satisfaction of the Authority, in its sole discretion.

(g) If the Contractor shall not at any time comply with the insurance requirement terms of this Section, the Authority shall have the option, at its sole discretion, to select one or more of the following: cure such non-compliance and may purchase such insurance as it may elect whereupon Contractor shall reimburse the Authority on demand for any costs incurred by the Authority in connection with any such actions; stop the Work in accordance with Section 21 hereof until satisfactory insurance is provided; have the Contractor pay Liquidated Damages in accordance with Section 8 of the Form of Agreement; or terminate the Contract in accordance with Section 34 hereof.

(h) Contractor is responsible for requiring each of its subcontractors to obtain insurance of the same type and amount required of Contractor as stated above. Contractor is responsible for obtaining copies of insurance policies from each of its subcontractors, and shall make said copies available to the Authority upon demand.

(i) By specifying the above minimum insurance requirements, The Authority does not represent that coverage and limits will necessarily be adequate to protect Subcontractor, and such coverage limits will not be deemed as a limitation of Subcontractor's obligations hereunder.

32. **Claims and Arbitration.**

(a) All claims hereunder shall be submitted to and decided by an Arbitrator, in Pittsburgh, Pennsylvania until the aggregate amount of claims for damages hereunder reaches $75,000. From and after the date that the aggregate amount of claims for damages exceeds $75,000, all claims shall be handled in accordance with Subsection 32(e) hereunder. The Arbitrator shall be selected in accordance with Subsection 32(b) hereunder. The arbitration proceeding shall be conducted in accordance with the AAA Construction Industry Arbitration Rules, except that the "Expedited Procedures" shall not apply if either party notifies the Arbitrator, in writing with a copy to the other party, of its election to opt out of the "Expedited Procedures" within 10 days after the respondent's answering statement is due. The Arbitrator shall have no power to change the provisions of this Contract and the Arbitrator shall base his or her decision on the provisions of this Contract and, as appropriate, shall apply the law of the Commonwealth of Pennsylvania. The parties shall be permitted to conduct reasonable discovery in accordance with the Pennsylvania Rules of Civil Procedure on any claim or defense, and the failure of any party to respond to a reasonable discovery request shall be grounds for the arbitrator to disallow any claim or defense made by the defaulting party. The Arbitrator shall have no power to award punitive, consequential or exemplary damages. The Arbitrator shall submit his/her decision in writing within the later of: fourteen (14) days of the Arbitration hearing; or thirty (30) days of the Arbitrator's appointment. The arbitration shall occur in the

City of Pittsburgh at a site chosen by the Arbitrator. The parties shall share the expense of the arbitration equally.

(b) The Contractor or the Authority shall each choose an impartial arbitrator (collectively, the "Initial Arbitrators") within ten (10) days of a written request from either party for arbitration and the two Initial Arbitrators shall choose a third impartial arbitrator within three (3) days of the date that both Initial Arbitrators are appointed (said third arbitrator shall be herein referred to as the "Arbitrator") who shall alone decide the matter and whose decision shall be binding on the parties, be final, and shall not be subject to appeal. If the two Initial Arbitrators fail to agree on the third arbitrator within the required period, then within three (3) days after such period, the parties shall so notify the Chief Judge of the United States District Court for the Western District of Pennsylvania (the "District Court") who will appoint the Arbitrator as soon as practicable but within five (5) business days of such notice. Should the Chief Judge not appoint the Arbitrator within such time period, then the parties shall immediately notify the Duty Judge then acting for the District Court, and the Duty Judge shall choose the Arbitrator. Should the Duty Judge not appoint the Arbitrator within five (5) business days after a request to do so, then the Arbitrator shall be appointed by such other judge of the District Court as the Initial Arbitrators shall agree (the "Judge"). Should the Initial Arbitrators not appoint a Judge or should such Judge not appoint the Arbitrator within five (5) business days of his or her appointment, then the Arbitrator shall be chosen in accordance with Section 14 of the Construction Industry Arbitration Rules. If any party fails to timely designate an Arbitrator, such dispute or disagreement shall automatically be deemed resolved by the single arbitrator appointed (who in such case shall be deemed the Arbitrator). The Arbitrator will have a minimum of ten (10) years experience in Pittsburgh, Pennsylvania, in the practice of construction law or in a profession related to the subject matter of the dispute and will use the then-prevailing Construction Industry Arbitration Rules of the American Arbitration Association (the "AAA Rules") to govern the proceeding.

(c) No demand for arbitration by the Contractor shall be considered timely unless made within one year from the date the cause of action accrued on the claim, and any failure by the Contractor to meet this requirement shall be a complete defense to the claim.

(d) The Contractor shall not cause a delay in the Work during or as a result of any arbitration proceeding, except with the express written agreement of the Authority.

(e) Any suit over any claim not subject to arbitration shall be filed and maintained only in a court of competent jurisdiction located within Allegheny County, Pennsylvania.

33. **Use of Site.**

(a) The Contractor shall provide the Authority, five (5) days prior to the end of each month, a listing of Subcontractors, Sub-subcontractors and Suppliers that shall need access to the site during the next month. Individuals not directly associated with the Contractor or reported to the Authority in the aforementioned list shall not be granted access to the site.

(b) The Contractor shall confine its apparatus, storage of materials and the operation of its workers to limits indicated by law, ordinances, permits or directions by the Engineer and shall not unreasonably encumber the Work site with its materials.

(c) The Contractor shall not load or permit any part of the Work site to be loaded with a weight that will endanger its safety during construction.

(d) The Contractor shall comply with and enforce the Engineer's directions regarding signs, advertisements and smoking.

34. **Authority's Right to Terminate Contract.**

(a) The Authority may terminate the Contract if the Contractor (i) persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials; (ii) fails to make prompt payment to Subcontractors for materials or labor in accordance with the respective agreements; (iii) fails to utilize the agreed to Subcontractor(s) or Supplier(s) in accordance with Section 5 hereof; (iv) fails to provide sufficient and qualified supervision of the Work in accordance with Section 11 hereof; (v) persistently disregards laws, ordinances, or the instructions of the Engineer; (vi) fails to obtain a required Change Order in accordance with Section 27 hereof; (vii) fails to notify the Authority of changes in line item cost estimates in accordance with Section 6 hereof; (viii) is adjudged bankrupt; (ix) makes a general assignment for the benefit of its creditors; (x) becomes insolvent and a receiver should be appointed on account of the Contractor's insolvency; or (xi) is otherwise guilty of a substantial breach of any provision of the Contract. In addition, the Authority may terminate the Contract upon the occurrence of a Substantial Change Order, in accordance with Section 27(g)(ii) hereof. Upon the certificate of the Engineer that any one of the above reasons for termination exists, the Authority may without prejudice to any other right or remedy and after giving the Contractor, and its surety if any, seven days' written notice, terminate the Contract and take possession of the premises and of all materials, tools and appliances thereon and finish the Work by whatever method the Authority may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

(b) If the unpaid balance of the Contract Price exceeds the expense to the Authority of correcting all defects and finishing the Work, including compensation for additional architectural, engineering or professional consultants, such excess shall be retained by the Authority. If such expense and the amount of any damages incurred through the Contractor's default shall exceed such unpaid balance, the Contractor shall pay the difference to the Authority. The amount to be paid by the Contractor to the Authority shall be certified by the Engineer. The obligation to make payment under this section shall survive termination of the Contract.

35. **Contractor's Right to Stop Work or Terminate the Contract.**

(a) If the Work should be stopped under an order of any court, or other public authority, for a period of thirty (30) days or longer, through no act or fault of the Contractor or of anyone employed or subcontracted by him, then the Contractor may, upon seven (7) days' written notice to the Authority and the Engineer, terminate this Contract and recover from the Authority: (i) payment for all of the Work executed as of the date of such termination, and (ii) any demonstrated unavoidable loss sustained due to damage to any materials, equipment, tools and machinery.

(b) Should the Engineer fail to issue any Certificate for Payment through no fault of the Contractor, within fifteen (15) days after the Contractor's formal request for payment or if the Authority should fail to pay to the Contractor within thirty (30) days of its receipt of the Certificate for Payment, the Contractor may, upon seven (7) days' written notice to the Authority and the Engineer, stop the Work, terminate the Contract and receive from the Authority the amounts listed in the preceding section.

36. **Registration with the City Finance Department.** The Contractor shall maintain registration with the Department of Finance at 412-255-2582 of the City of Pittsburgh, and shall pay all taxes due and owing to the City of Pittsburgh. The Contractor understands and agrees that its failure to maintain such registration or pay such taxes shall be a breach of the Contract and entitle the Authority to immediately terminate the Contract. Such termination shall become effective upon Contractor's receipt of written notice from the Authority of such termination.

37. **Requirements of the Pennsylvania Prevailing Wage Act.** For contracts exceeding a value of twenty-five thousand dollars ($25,000), the general prevailing minimum wage rates, including contributions for employee benefits, as shall have been determined by the Secretary must be paid to the workers employed in the performance of the Contract. The Contractor shall, and shall require all Subcontractors and Sub-subcontractors to, (i) pay no less than the wage rates as determined in the decision of the Secretary; (ii) comply with all conditions of the Pennsylvania Prevailing Wage Act, 43 P.S. §§ 165-1 - 165-17, as amended (the "Act"), and the regulations issued pursuant thereto (the "Regulations") to assure the full and proper payment of said rates; and (iii) submit certified payrolls in accordance Section 28.2(e) of these General Conditions. The Contract shall be read so as to include any provision required by the Act or the Regulations to be inserted in the Contract and not so inserted.

38. **No Discrimination**.

(a) The Contractor, Subcontractor(s) or any person acting on behalf of the Contractor or Subcontractor(s) will not discriminate against any employee or applicant for employment, who is qualified and available to perform the work to which the employment relates, because of race, color, religion, ancestry, national origin, gender, place of birth, disability, age or sexual orientation. The Contractor and Subcontractor(s) will take affirmative action in accordance with the terms outlined in the Form of Bid and the Contract to ensure that applicants are employed, and that employees are treated, without regard to their race, color, religion, ancestry, national

origin, place of birth, gender, or sexual orientation. The Contractor, Subcontractor(s) or any person acting on behalf of the Contractor or Subcontractor(s) shall not in any manner discriminate against or intimidate any employee hired for the performance of work under the Contract on account of race, color, religion, ancestry, national origin, gender, place of birth or sexual orientation.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, ancestry, national origin, place of birth, gender, or sexual orientation.

(c) The Contractor will send to each labor union or representative or workers with which he has a collective bargaining agreement or other contractor, a notice to be provided by the Authority, advising the labor union or workers' representative of the Contractor's commitments. In addition, the Contractor shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of the Fair Practices Ordinance, Ordinance No. 75, approved February 28, 1967, and of the rules, regulations and relevant orders of the City of Pittsburgh's Commission on Human Relations.

(e) If and when requested by the Authority or the Mayor's Commission on Human Relations, the Contractor shall file, and shall cause each of its Subcontractors to file, Compliance Reports with the Mayor's Commission on Human Relations. Compliance Reports shall contain such information as to the practice, policies, programs, and employment policies, programs and employment statistics of the Contractor and each Subcontractor, and shall be in such form as the Mayor's Commission on Human Relations may prescribe.

(f) The Contractor will furnish all information and reports required by this Contract, and by the rules, regulations and orders of the Mayor's Commission on Human Relations pursuant hereto, and will permit access to its books, records and accounts by the Mayor's Commission on Human Relations, or its representative, for purposes of investigation to ascertain compliance with this Contract and said rules, regulations and orders.

(g) In the event the Contractor fails to comply with the nondiscrimination provisions of the Contract, or with any of the rules, regulations or orders herein referred to, it is agreed that the Authority, at its sole discretion, may do any or all of the following:

(i) cancel or terminate the Contract in whole or in part, whereupon all the money due or to become due under the Contract may be forfeited by the Contractor;

(ii) suspend the Contract in whole or in part;

(iii) declare the Contractor ineligible for further Authority contracts;

(iv) recover from the Contractor, by set-off against the unpaid portion of the Contract Price, or otherwise pursuant to this Contract, the sum of $200 per day, as liquidated

damages and not as a penalty, for each day that the Contractor shall fail to comply with these provisions of the Contract, as determined by the Mayor's Commission on Human Relations, in accordance with its rules and regulations, the said sum being fixed and agreed upon by and between the Contractor and the Authority because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages which the Authority would sustain in the event of such a breach of contract, and said amount is agreed to be the amount of damages which the Authority would sustain; and

(iv) such other sanctions as may be imposed by the Mayor's Commission on Human Relations or remedies as may be provided by law.

(h) The Contractor will include the provisions of Subsections (a)-(f) of this Section in every subcontract, so that such provisions will be binding upon each Subcontractor used to perform the Work. The Contractor will take such action with respect to any subcontracts as the Mayor's Commission on Human Relations may direct as a means of enforcing such provisions, including sanctions against the Subcontractor for non-compliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor as a result of such direction by the Mayor's Commission on Human Relations, the Contractor shall notify the Authority so that the Authority may enter into such litigation to protect its interests if it so desires.

39. **Assignment.** Neither party to the Contract shall assign the Contract without the written consent of the other, nor shall the Contractor assign monies due or to become due him hereunder, without the previous written consent of the Authority.

40. **Gender.** Words used in the Contract, regardless of the gender specifically used, shall be deemed and construed to include the other gender, masculine, feminine or neutral, as the context requires.

41. **Notice.** Notice under the Contract shall be deemed to have been duly given if in writing and (i) delivered in person to the individual, a member of the firm or entity or an officer of the corporation for which it was intended, or (ii) sent by registered or certified mail to the last business address of the party receiving notice known to the party giving notice.

42. **Section and Other Headings.** The section and other headings contained in the Contract are for reference purposes only and shall not affect the meaning or interpretation of the Contract.

43. **Governing Law.** Any controversy, dispute or claim arising out of or relation to the Contract, or the breach thereof, shall be governed by the laws of the Commonwealth of Pennsylvania.

PREVAILING WAGES

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project Name:	Oliver Garage Emergency Battery Backup Modernization
General Description:	The work entails the modernization of the existing emergency battery backup system at Oliver Parking Garage
Project Locality	Central Business District (CBD
Awarding Agency:	Public Parking Authority of Pittsburgh
Contract Award Date:	10/16/2025
Serial Number:	25-08426
Project Classification:	Building
Determination Date:	9/8/2025
Assigned Field Office:	Pittsburgh
Field Office Phone Number:	(412)565-5300
Toll Free Phone Number:	(877)504-8354
Project County:	Allegheny County

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 25-08426 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	8/1/2024		$43.40	$29.51	$72.91
Asbestos & Insulation Workers	8/1/2025		$45.10	$30.31	$75.41
Boilermakers	6/1/2016		$40.90	$27.61	$68.51
Bricklayer	12/1/2024		$41.00	$25.59	$66.59
Bricklayer	6/1/2025		$41.50	$26.09	$67.59
Carpenters - Piledriver/Welder	1/1/2025		$43.38	$22.72	$66.10
Carpenters - Piledriver/Welder	1/1/2026		$44.63	$23.47	$68.10
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2024		$41.49	$19.93	$61.42
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2025		$43.34	$19.93	$63.27
Cement Masons	7/1/2024		$34.57	$25.09	$59.66
Cement Masons	6/1/2025		$35.52	$25.64	$61.16
Drywall Finisher	6/1/2024		$34.01	$24.63	$58.64
Drywall Finisher	6/1/2025		$35.16	$25.98	$61.14
Electricians & Telecommunications Installation Technician	12/27/2024		$50.86	$32.69	$83.55
Electricians & Telecommunications Installation Technician	12/26/2025		$54.16	$32.69	$86.85
Elevator Constructor	1/1/2024		$58.55	$43.87	$102.42
Elevator Constructor	1/1/2025		$61.07	$40.05	$101.12
Glazier	9/1/2024		$37.06	$31.89	$68.95
Glazier	9/1/2025		$38.70	$33.75	$72.45
Iron Workers	6/1/2024		$39.89	$36.47	$76.36
Iron Workers	6/1/2025		$41.50	$37.36	$78.86
Laborers (Class 01 - See notes)	1/1/2024		$26.82	$19.46	$46.28
Laborers (Class 01 - See notes)	1/1/2025		$27.32	$19.96	$47.28
Laborers (Class 01 - See notes)	1/1/2026		$27.82	$20.46	$48.28
Laborers (Class 02 - See notes)	1/1/2024		$26.97	$19.46	$46.43
Laborers (Class 02 - See notes)	1/1/2025		$27.47	$19.96	$47.43
Laborers (Class 02 - See notes)	1/1/2026		$27.97	$20.46	$48.43
Laborers (Class 03 - See notes)	1/1/2024		$29.97	$19.46	$49.43
Laborers (Class 03 - See notes)	1/1/2025		$30.47	$19.96	$50.43
Laborers (Class 03 - See notes)	1/1/2026		$30.97	$20.46	$51.43
Laborers (Class 04 - See notes)	1/1/2021		$23.57	$19.32	$42.89
Landscape Laborer (Skilled)	1/1/2025		$25.79	$18.78	$44.57
Landscape Laborer (Skilled)	1/1/2026		$26.79	$19.03	$45.82
Landscape Laborer (Tractor Operator)	1/1/2025		$26.09	$18.78	$44.87
Landscape Laborer (Tractor Operator)	1/1/2026		$27.09	$19.03	$46.12
Landscape Laborer	1/1/2025		$25.37	$18.78	$44.15
Landscape Laborer	1/1/2026		$26.37	$19.03	$45.40
Millwright	6/1/2020		$41.68	$20.32	$62.00
Operators (Class 01 - see notes)	6/1/2024		$41.69	$24.39	$66.08
Operators (Class 01 - see notes)	6/1/2025		$42.72	$24.79	$67.51
Operators (Class 01 - see notes)	6/1/2026		$43.74	$25.29	$69.03
Operators (Class 02 -see notes)	6/1/2024		$35.62	$24.39	$60.01

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 25-08426 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Class 02 -see notes)	6/1/2025		$36.67	$24.79	$61.46
Operators (Class 02 -see notes)	6/1/2026		$37.67	$25.29	$62.96
Operators (Class 03 - See notes)	6/1/2024		$32.83	$24.39	$57.22
Operators (Class 03 - See notes)	6/1/2025		$33.88	$24.79	$58.67
Operators (Class 03 - See notes)	6/1/2026		$34.88	$25.29	$60.17
Painters Class 6 (see notes)	6/1/2024		$32.14	$24.93	$57.07
Painters Class 6 (see notes)	6/1/2025		$34.16	$25.81	$59.97
Piledrivers	1/1/2025		$41.88	$22.72	$64.60
Piledrivers	1/1/2026		$43.13	$23.47	$66.60
Plasterers	6/1/2024		$33.14	$21.04	$54.18
plumber	6/1/2024		$51.75	$25.87	$77.62
plumber	6/1/2025		$54.95	$25.87	$80.82
plumber	6/1/2026		$58.05	$25.87	$83.92
plumber	6/1/2027		$61.15	$25.87	$87.02
Pointers, Caulkers, Cleaners	12/1/2024		$39.69	$21.61	$61.30
Pointers, Caulkers, Cleaners	6/1/2025		$40.66	$21.99	$62.65
Roofers	6/2/2024		$38.00	$20.67	$58.67
Roofers	6/1/2025		$39.91	$20.76	$60.67
Sheet Metal Workers	7/1/2024		$43.00	$33.96	$76.96
Sheet Metal Workers	7/1/2025		$45.00	$35.16	$80.16
Sign Makers and Hangars	7/15/2024		$32.32	$25.82	$58.14
Sign Makers and Hangars	7/15/2025		$33.48	$26.41	$59.89
Sprinklerfitters	7/1/2024		$45.38	$26.46	$71.84
Sprinklerfitters	1/1/2025		$44.79	$27.05	$71.84
Steamfitters	6/1/2024		$48.15	$29.57	$77.72
Steamfitters	6/1/2025		$50.20	$31.02	$81.22
Stone Masons	12/1/2024		$43.10	$24.22	$67.32
Stone Masons	6/1/2025		$43.60	$24.72	$68.32
Terrazzo Finisher	12/1/2024		$41.04	$18.72	$59.76
Terrazzo Finisher	6/1/2025		$41.73	$19.03	$60.76
Terrazzo Mechanics	12/1/2024		$40.39	$21.02	$61.41
Terrazzo Mechanics	6/1/2025		$41.13	$21.28	$62.41
Tile Finisher	12/1/2024		$32.51	$17.99	$50.50
Tile Finisher	6/1/2025		$33.24	$18.36	$51.60
Tile Setter	12/1/2024		$39.41	$22.44	$61.85
Tile Setter	6/1/2025		$40.15	$22.80	$62.95
Truckdriver class 1(see notes)	1/1/2025		$36.43	$23.21	$59.64
Truckdriver class 1(see notes)	1/1/2026		$37.93	$23.71	$61.64
Truckdriver class 2 (see notes)	1/1/2025		$36.89	$23.52	$60.41
Truckdriver class 2 (see notes)	1/1/2026		$38.39	$24.02	$62.41
Window Film / Tint Installer	10/1/2019		$25.00	$2.63	$27.63

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 25-08426 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter	1/1/2025		$41.35	$22.09	$63.44
Carpenter	1/1/2026		$42.60	$22.84	$65.44
Carpenter Welder	1/1/2025		$42.85	$22.09	$64.94
Carpenter Welder	1/1/2026		$44.10	$22.84	$66.94
Carpenters - Piledriver/Welder	1/1/2025		$43.38	$22.72	$66.10
Carpenters - Piledriver/Welder	1/1/2026		$44.63	$23.47	$68.10
Cement Finishers	1/1/2024		$35.14	$26.30	$61.44
Cement Finishers	1/1/2025		$35.94	$27.50	$63.44
Cement Masons	1/1/2020		$32.84	$21.10	$53.94
Electric Lineman	6/3/2024		$53.97	$31.05	$85.02
Electricians & Telecommunications Installation Technician	12/27/2024		$51.76	$31.80	$83.56
Electricians & Telecommunications Installation Technician	12/26/2025		$54.16	$32.69	$86.85
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2024		$39.89	$36.47	$76.36
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	6/1/2025		$41.50	$37.36	$78.86
Laborers (Class 01 - See notes)	1/1/2024		$32.20	$25.50	$57.70
Laborers (Class 01 - See notes)	1/1/2025		$33.70	$26.00	$59.70
Laborers (Class 01 - See notes)	1/1/2026		$34.70	$27.00	$61.70
Laborers (Class 02 - See notes)	1/1/2024		$32.36	$25.50	$57.86
Laborers (Class 02 - See notes)	1/1/2025		$33.86	$26.00	$59.86
Laborers (Class 02 - See notes)	1/1/2026		$34.86	$27.00	$61.86
Laborers (Class 03 - See notes)	1/1/2024		$32.75	$25.50	$58.25
Laborers (Class 03 - See notes)	1/1/2025		$34.25	$26.00	$60.25
Laborers (Class 03 - See notes)	1/1/2026		$35.25	$27.00	$62.25
Laborers (Class 04 - See notes)	1/1/2024		$33.20	$25.50	$58.70
Laborers (Class 04 - See notes)	1/1/2025		$34.70	$26.00	$60.70
Laborers (Class 04 - See notes)	1/1/2026		$35.70	$27.00	$62.70
Laborers (Class 05 - See notes)	1/1/2024		$33.61	$25.50	$59.11
Laborers (Class 05 - See notes)	1/1/2025		$35.11	$26.00	$61.11
Laborers (Class 05 - See notes)	1/1/2026		$36.11	$27.00	$63.11
Laborers (Class 06 - See notes)	1/1/2024		$30.45	$25.50	$55.95
Laborers (Class 06 - See notes)	1/1/2025		$31.95	$26.00	$57.95
Laborers (Class 06 - See notes)	1/1/2026		$32.95	$27.00	$59.95
Laborers (Class 07 - See notes)	1/1/2024		$33.20	$25.50	$58.70
Laborers (Class 07 - See notes)	1/1/2025		$34.70	$26.00	$60.70
Laborers (Class 07 - See notes)	1/1/2026		$35.70	$27.00	$62.70
Laborers (Class 08 - See notes)	1/1/2024		$34.70	$25.50	$60.20
Laborers (Class 08 - See notes)	1/1/2025		$36.20	$26.00	$62.20
Laborers (Class 08 - See notes)	1/1/2026		$37.20	$27.00	$64.20
Millwright	6/1/2024		$47.59	$23.72	$71.31
Millwright	6/1/2025		$49.72	$23.72	$73.44
Operators (Class 01 - see notes)	1/1/2024		$38.59	$24.03	$62.62
Operators (Class 01 - see notes)	1/1/2025		$40.39	$24.23	$64.62

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 25-08426 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Class 01 - see notes)	1/1/2026		$41.96	$24.66	$66.62
Operators (Class 02 -see notes)	1/1/2024		$38.33	$24.03	$62.36
Operators (Class 02 -see notes)	1/1/2025		$40.13	$24.23	$64.36
Operators (Class 02 -see notes)	1/1/2026		$41.70	$24.66	$66.36
Operators (Class 03 - See notes)	1/1/2024		$34.68	$24.03	$58.71
Operators (Class 03 - See notes)	1/1/2025		$36.48	$24.23	$60.71
Operators (Class 03 - See notes)	1/1/2026		$38.05	$24.66	$62.71
Operators (Class 04 - See notes)	1/1/2024		$34.22	$24.03	$58.25
Operators (Class 04 - See notes)	1/1/2025		$36.02	$24.23	$60.25
Operators (Class 04 - See notes)	1/1/2026		$37.59	$24.66	$62.25
Operators (Class 05 - See notes)	1/1/2024		$33.97	$24.03	$58.00
Operators (Class 05 - See notes)	1/1/2025		$35.77	$24.23	$60.00
Operators (Class 05 - See notes)	1/1/2026		$37.34	$24.66	$62.00
Operators Class 1-A	1/1/2024		$41.59	$24.03	$65.62
Operators Class 1-A	1/1/2025		$43.39	$24.23	$67.62
Operators Class 1-A	1/1/2026		$44.96	$24.66	$69.62
Operators Class 1-B	1/1/2024		$40.59	$24.03	$64.62
Operators Class 1-B	1/1/2025		$42.39	$24.23	$66.62
Operators Class 1-B	1/1/2026		$43.96	$24.66	$68.62
Painters Class 1 (see notes)	6/1/2022		$34.45	$22.82	$57.27
Painters Class 2 (see notes)	6/1/2024		$38.09	$24.93	$63.02
Painters Class 2 (see notes)	6/1/2025		$40.36	$25.81	$66.17
Painters Class 3 (see notes)	6/1/2024		$40.66	$24.93	$65.59
Painters Class 3 (see notes)	6/1/2025		$43.68	$25.81	$69.49
Painters Class 4 (see notes)	6/1/2019		$28.20	$20.06	$48.26
Painters Class 5 (see notes)	6/1/2019		$22.91	$20.06	$42.97
Pile Driver Divers (Building, Heavy, Highway)	1/1/2025		$62.82	$22.72	$85.54
Pile Driver Divers (Building, Heavy, Highway)	1/1/2026		$64.70	$23.47	$88.17
Piledrivers	1/1/2025		$41.88	$22.72	$64.60
Piledrivers	1/1/2026		$43.13	$23.47	$66.60
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2022		$48.43	$40.28	$88.71
Truckdriver class 1(see notes)	1/1/2025		$36.43	$23.21	$59.64
Truckdriver class 1(see notes)	1/1/2026		$37.93	$23.71	$61.64
Truckdriver class 2 (see notes)	1/1/2025		$36.89	$23.52	$60.41
Truckdriver class 2 (see notes)	1/1/2026		$38.39	$24.02	$62.41

BONDS

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____

as Principal, and _____

_____, as Surety, are held and firmly bound unto the Public Parking Authority of Pittsburgh (the "Authority"), its attorney, successors or assigns, in the sum of_____ ($_____) Dollars, lawful money of the United States, for the payment of which we bind ourselves, our legal representatives, heirs, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a Contract with the Authority dated _____, 2025, for the _____

_____

_____,

(herein called the "Contract"), which Contract, together with all related contract documents (the "Contract Documents"), shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly pay or cause to be paid all sums of money which may be due any person, co-partnership, association or corporation for all materials furnished and labor supplied or performed in the prosecution of the work under the contract, including rental for equipment and services rendered by public utilities, whether or not said material or labor entered into or became a component part of the work or improvement contemplated in the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

It is further agreed that any change, extension of time, alteration or addition to the terms of the Contract or Contract Documents or to the work to be performed or materials to be furnished thereunder and any forbearance by the Authority or the Principal to the other shall not in any way release the Principal or the Surety, or either of them, from their liability hereunder. The Surety does hereby waive notice of any such change, extension, alteration, addition or forbearance.

The Principal and Surety further jointly and severally agree with the Authority that every person, co-partnership, association or corporation, who, whether as subcontractor or otherwise, has furnished material or supplied or performed labor or rented equipment or furnished public utility services in the prosecution of the work and who has not been paid in full therefor before the expiration of a period of sixty (60) days after the date such payment was due, may sue in assumpsit on this Bond in the name of the Authority, for his, their or its use, prosecute the same to final judgement for such sums of money as may be justly due him, them or it, and have execution issued thereof, provided, however, that the Authority shall not be liable for the payment of any costs or expenses of any such suit. Suit and recovery by any such person, co-partnership, association or corporation hereunder shall be subject to the provisions of Section 11 of Act of General Assembly, approved June 5, 1947, P.L. 458, as amended, to the same extent as if said provisions were fully incorporated in the Bond.

It is further agreed that in case of default in and/or any action arising out of rights and liabilities secured by this obligation, any party hereto or any person claiming by or through either may use the purpose of establishing his, its or their claim a copy of this obligation, certified by the Authority and the action or actions, if any, arising on the within obligation, shall not be a bar

to any subsequent action that may arise through any liability incurred in any other action therein and based upon any other part of this obligation.

IN WITNESS WHEREOF, the Principal and Surety, intending to be legally bound, have executed this instrument and these presents have been duly signed by their undersigned representative pursuant to authority of their governing bodies.

(INDIVIDUAL PRINCIPAL SIGN HERE)

WITNESS:

_____ _____
(Individual Principal)

_____
(Business Address)

_____ _____
(Individual Principal)

_____
(Business Address)

(CORPORATE PRINCIPAL SIGN HERE)

ATTEST:

_____
(Corporate Principal)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

(SURETY SIGN HERE)

ATTEST:

_____
(Corporate Surety)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

The rate of premium on this Bond is _____ per thousand, total amount of premium charge, $_____.

(The above must be filled in by corporate surety).

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____

as Principal, and _____

_____, as Surety, are held and firmly bound unto the Public Parking Authority of Pittsburgh (the "Authority"), its attorney, successors or assigns, in the sum of _____ ($_____) Dollars, lawful money of the United States, for the payment of which we bind ourselves, our legal representatives, heirs, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a Contract with the Authority dated _____ _____, 2025, for the _____

_____, (herein called the "Contract"), which Contract, together with all related contract documents (the "Contract Documents"), shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall faithfully perform and keep all undertakings agreed by it to be performed and kept at the time and in the manner provided in the Contract and related contract Documents, as the same may be from time to time amended or altered, and shall indemnify and save harmless the Authority, its officers, agents and employees from any and all cost, damage, liens or demands by reasons of the Principal's failure to perform and keep its undertakings under the Contract, or by reason of the manner in which such undertakings are performed or kept, then this obligation shall be null and void; otherwise it shall remain in full force and effect. It is further agreed that any change,

extension of time, alteration or addition to the terms of the Contract or Contract Documents or to the work to be performed or materials to be furnished thereunder and any forbearance by the Authority or the Principal to the other shall not in any way release the Principal or the Surety, or either of them, from their liability hereunder. The Surety does hereby waive notice of any such change, extension, alteration, addition or forbearance.

Whenever the Principal shall be, and declared by the Authority to be in default under the Contract, the Authority having performed its obligations thereunder, the Surety shall: (i) promptly remedy the default; provided however that Surety shall not utilize Principal for such remedy without the approval of the Authority, which approval shall not be unreasonably withheld; (ii) promptly complete the Contract in accordance with its terms and conditions; provided, however, that Surety shall not utilize Principal to complete the Contract without the approval of the Authority, which approval shall not be unreasonably withheld; or (iii) promptly obtain a bid or bids for completing the work under the Contract in accordance with its terms and conditions and, upon determination of the Surety and Authority jointly of the lowest responsible bidder, make available as work progresses (even though there should be a default or a succession of default under the Contract or any contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion of the work under the Contract less the balance of the Contract Price (as defined in the Contract); provided, however, such funds shall not exceed the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price", as used in this paragraph, shall mean the Contract Price less amounts properly paid by the Authority to the Principal.

It is further agreed that in case of default in and/or any action arising out of rights and liabilities secured by this obligation, any party hereto or any person claiming by or through either may use the purpose of establishing his, its or their claim a copy of this obligation certified by the Authority and the action or actions, if any, arising on the within obligation, shall not be a bar to any subsequent action that may arise through any liability incurred in any other action therein and based upon any other part of this obligation. This Bond shall not be amended or modified by the parties hereto without the prior written consent of the Authority.

IN WITNESS WHEREOF, the Principal and Surety, intending to be legally bound, have executed this instrument this _____ day of _____2025, and these presents have been duly signed by their undersigned representatives, pursuant to the authority of their governing bodies.

(INDIVIDUAL PRINCIPAL SIGN HERE)

WITNESS:

_____ _____

(Individual Principal)

_____ _____

(CORPORATE PRINCIPAL SIGN HERE)

ATTEST:

_____
(Corporate Principal)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

(SURETY SIGN HERE)

ATTEST:

_____
(Corporate Surety)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

The rate of premium on this Bond is _____ per thousand, total amount of premium charge, $_____.

(The above must be filled in by corporate surety).

WARRANTY BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____

as Principal, and _____

_____, as Surety, are held and firmly bound unto the Public Parking Authority of Pittsburgh (the "Authority"), in the sum of _____ ($_____) Dollars, lawful money of the United States of America, to be paid to the Authority, or its successors and assigns, to the payment of which sum well and truly to be made, do bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a Contract with the Authority dated _____, _____, 2025, for _____

_____

(the "Contract"), which Contract, together with all related contract documents (the "Contract Documents"), shall be deemed a part hereof as fully as if set out herein; and

WHEREAS, the Authority requires that these presents be executed on or before the final completion and acceptance of the work required under the contract or Contract Documents; and

WHEREAS, said work required under the Contract Documents was completed and accepted on the _____ day of _____, 2025.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal shall remedy, without cost to the Authority, any defects in the work performed by Principal, its agents employees or subcontractors under the contract or Contract Documents, that may develop its agents, employees or subcontractors under the contract or Contract Documents,

that may develop during a period of one (1) year from the date of completion and acceptance of such work and are caused by defective or inferior materials or workmanship, then this obligation shall be void; otherwise it shall be an remain in full force and effect.

Whenever the Principal shall fail, and be declared by the Authority to have failed, to remedy any defects in the work performed by Principal, its agents, employees or subcontractors under the Contract or the Contract Documents that may develop during a period of one (1) year from the date of completion and acceptance of such work, and said defect is caused by defective or inferior materials or workmanship, the Surety shall promptly: (i) remedy the defect; provided however that Surety shall not utilize Principal for such remedy without the approval of the Authority, which approval shall not be unreasonably withheld; or (ii) promptly obtain a bid or bids for remedying the defect and, upon determination by the surety and Authority jointly of the lowest responsible bidder, make available, as work on the defect progresses, sufficient funds to pay the cost of remedying the defect; provided, however, all such funds shall not exceed in the aggregate the amount set forth in the first paragraph hereof.

IN WITNESS WHEREOF, the Principal and Surety, intending to be legally bound, have executed this instrument and these presents have been duly signed by their undersigned representatives pursuant to authority of their governing bodies.

(INDIVIDUAL PRINCIPALS SIGN HERE)

In the presence of:

_____ _____
(Individual Principal)

_____
(Business Address)

_____ _____
(Individual Principal)

_____
(Business Address)

(CORPORATE PRINCIPAL SIGN HERE)

ATTEST:

_____
(Corporate Principal)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

(SURETY SIGN HERE)

ATTEST:

_____
(Corporate Principal)

_____
(Business Address)

_____ By_____

_____ _____
(Title) (Title)

The rate of premium on this Bond is _____ per thousand, total amount of premium charge , $_____.

(The above must be filled in by corporate surety).

Exhibit D

Subcontractors/Suppliers Information Sheet

(See Attached)

LIST OF MATERIAL SUPPLIERS AND SUBCONTRACTORS

Note: All contractors shall fill in the following information prior to award of contract

	Name of Supplier and Address:	Products to Be Supplied:
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

	Name of Subcontractor and Address:	Anticipated Dollar Amount:	Service/Trade to Be Supplied:
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 INTENT OF PLANS AND SPECIFICATIONS

A. The intent of the Plans and Specifications is to describe the work which the Contractor undertakes to do, in full compliance with the Contract, and it is understood that the Contractor will furnish, unless otherwise provided in the Contract, all materials, machinery, equipment, tools, supplies, transportation, labor, and all other incidentals necessary to the satisfactory prosecution and completion of the Work. The Plans and Specifications are complementary, and what is called for by either is as binding as if called for by both.

B. The Special Conditions shall control where in conflict with the Standard Specifications. However, such portions of the Standard Specifications not in conflict or not rendered meaningless by the Special provisions shall remain in full force and effect and be binding on the parties hereto.

C. In the event the Contractor discovers any error or discrepancy in the Contract Documents, he shall immediately call upon the Engineer for his decision. The Engineer shall then make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Specifications, Special Provisions, Plans and other Contract Documents, as construed by him and his decision shall be final.

1.03 SUMMARY OF WORK

A. General Mobilization: This work consists of all labor, materials, tools and equipment required for setting-up general plant, storage/staging areas and facilities required by State Laws and City Ordinances; and the general mobilization of equipment required for the completion of the work shown on the Contract Documents. The cost of this item shall include all permits and fees required to perform the project, unless otherwise noted in the Contract Documents, and all expenses for the de-mobilization after the work has been completed. If a building permit is required, it will be the contractor's responsibility to get the necessary permit to perform the repair work, unless noted otherwise in the documents. This work shall also include the following items:

1. Reviewing existing electrical layout and existing conditions for each phase of the work to identify all embedded conduits/wiring in the slabs. All existing mechanical and electrical services shall be maintained/restored by the Contractor for all work areas.

2. Provide effective ventilation system to safely remove all dust and hazardous fumes generated from the concrete demolition and any surface treatment applications.

3. Protection and/or relocation of fire protection system, if any, in order to implement repairs.

4. Protection and/or relocation of existing mechanical and electrical systems, in order to implement repairs.

5. Removal of loose overhead concrete from the structural concrete members in the structure prior to the start of any demolition work.

6. Coordinate and assist the security and property management personnel in respect to the security of commercial spaces during the repair work.

7. Electricity (power) and water required for the completion of the work will not be furnished by the Owner. All costs associated with power and water are at the contractor's expense. Any costs associated with power/water must be included in the contractor's bid.

B. Below is a summary of the work and may not include all work items that the contractor will be responsible for during the project. The work, in general, consists of the following areas:

1. Project mobilization and demobilization, including all permits as required.

2. Implement repairs in a logical manner. The contractor shall submit phasing plans to the owner and engineer for approval.

3. Perform electrical upgrades at locations designated on the drawings according to the specifications and details.

4. Demobilize and sweep clean or powerwash all areas affected by the work. This includes cleaning all light fixtures, signage, parking equipment, stair towers, elevators, exhaust equipment, fire protection system, etc. That have been impacted by the repair process.

C. Miscellaneous Items: This work consists of items not otherwise specifically indicated or shown on the plans, but which are ancillary to the specified scope of work. This work shall also include the following:

1. The Contractor shall furnish, install, maintain, relocate, and remove all construction fences, signs, barricades, cones, warning lights, and other safety control devices and temporary signage required for the proper execution of the project. The Engineer shall review the safety control device placement before work begins and also prior to the beginning of work on any subsequent construction stages. Any deficiencies in the location or arrangement of devices shall be corrected by the contractor before starting work.

2. The miscellaneous work shall include the cost of repairs to the non-functioning electrical/mechanical systems caused by the contractor's construction activities, for the entire work area. The contractor shall submit to the Engineer the documentation of all existing non-functioning electrical/mechanical systems in the entire work areas. This documentation should be based on the contractor's condition survey performed immediately prior to the scheduled mobilization. The contractor shall not start the mobilization until the Engineer approves the submittal. Repairs to non-functioning electrical/mechanical systems caused by the Contractor's construction activities shall be done by the Owner's Subcontractors at the Contractor's expense or as directed by the Owner or Engineer.

3. At repair areas, the contractor shall provide adequate protection and support systems, as required, for the existing mechanical, plumbing, and electrical installations to remain in-place and/or remove and re-install such items to implement repairs.

4. Work area enclosures: Floor-to-ceiling partitions/enclosures are to be utilized where the construction areas abut areas of the garage that are to remain open to the public. The

lower 4'-0" of the partitions shall be plywood; the remaining upper portions to be either plywood or 10 mil polyethylene sheeting. At all other locations around the perimeter of the work area, primarily at the exterior elevations of the garage, the openings shall be sealed with 10 mil polyethylene sheeting. In work areas on the roof level and exposed to the sky, only 4'-0" high plywood partitions are required.

All doors, including elevator and stair tower doors, and any other opening to occupied space (windows, vents, louvers, intakes, etc.) that are near the construction area and may be subjected to construction dust and debris shall be sealed with polyethylene sheeting. The materials that are utilized to enclose the construction areas shall result in a near air-tight seal, which will control and prevent the dispersion of dust and debris. Contractor may be required to utilize expandable foams, clamps, and various adhesives to provide a near air tight enclosure. Equip partitions with dust resistant doors and security locks. All claims by customers of the facility due to dust, debris, and damage to cars will be passed on to the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

B. Section specifies administrative and procedural requirements for unit prices.

1. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials and/or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.

2. Unit prices include all necessary labor, materials, equipment and incidentals, overhead, profit and applicable taxes.

3. Refer to Construction Documents for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in the Construction Documents.

C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor. The Owner will pay the cost for the independent surveyor if the Contractor is found to have submitted accurate quantities. However, if the quantities differ the Contractor will be responsible for payment of independent surveyor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 UNIT PRICE SCHEDULE

A. Unit prices for all items are as shown in the Bid Forms shall be considered an integral part of this Section.

3.02 PAYMENT FOR EXTRA WORK

A. Extra work which results from any of the changes as specified and for which no unit price is provided in the Contract, shall not be started until receipt of a written authorization or work order from the Owner, which authorization shall state the items of work to be performed and the method of payment for each item. The Contractor shall not be entitled to payment for work performed without such authorization.

B If it is practicable to pay for Extra Work on the unit price, or lump sum basis, a fair and equitable sum shall be fixed by agreement of the parties and shown in an Extra Work Order Agreement. Work to be performed directly by the Contractor should be submitted showing a detailed breakdown of labor and material costs to which a 15 percent markup should be added for overhead and profit.

C Work to be performed by the subcontractor should be submitted showing a detailed breakdown of labor and materials by the subcontractor to which a five percent markup should be added by the Contractor for overhead and profit.

D When the Owner deems it impracticable to handle any Extra Work on the unit price or lump sum basis, or if agreement of the parties cannot be reached, the work may be ordered done and paid for on a Force Account basis, as follows:

1. Labor: The Contractor will be paid the actual amount of wages for all labor and foremen who are actually engaged in such work, to which cost shall be added 10 percent of the sum of such wages. A foreman shall not be used when there are less than three laborers employed, except with the written consent of the Engineer.

2. Welfare and Pension Fund: The Contractor will receive the actual additional amount of contributions paid for regular and uniform health and welfare benefits, pension fund benefits or other benefits, to which 10 percent shall be added, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the class of labor employed on the Work.

3. Insurance and Tax: The Contractor will receive the actual cost or increase in cost of Contractor's Public Liability and Property Damage insurance, Workmen's Compensation tax, and Social Security tax required for Force Account work. The Contractor shall furnish satisfactory evidence of the cost or rates paid for such insurance and tax.

4. Materials: The Contractor will receive the actual cost for all materials, including freight charges as shown by the original paid invoices, which become an integral part of the finished work, to which shall be added 10 percent of the sum thereof.

   The Contractor will be reimbursed for any materials used in the construction of such work as sheeting, falsework, form lumber, etc., which are not an integral part of the finished work. The amount of reimbursement shall be agreed upon in writing before such work is begun, and no percent shall be added. The salvage value of such materials shall be taken into consideration in the reimbursement agreed upon.

5. Equipment: For any machinery or special equipment (other than small tools), the use of which has been authorized by the Engineer, the Contractor will be paid as following:

   a. For his own equipment, he will be paid by the monthly rate in accordance with the latest edition of Means Construction Cost Data.

   b. For rental equipment, he will be paid for the actual invoice amount as shown by the original paid invoices.

   The equipment shall be of a type and size reasonably required to complete the Extra Work. Compensation will not be allowed for transportation to or from The Work or for the time required for setting up and removing the equipment from The Work or for equipment of a type, size or condition unsuitable for The Work.

3.03 CANCELED ITEMS:

A It shall be in the sole judgment and sole discretion of the Engineer or its representatives to cancel or alter any or all portions of the Contract due to circumstances either unknown at the time of bidding or arising after the Contract was entered into. Should such actions result in elimination or non-completion of any portion of the Contract, payment shall be made as follows:

1. For the canceled work completed by the Contractor, payment shall be made to the Contractor for the actual number of units or items completed at the Contract unit or lump sum prices. For canceled work partially completed by the Contractor, payment shall be made to the Contractor for the partially completed units or items as specified in Payment for Extra Work.

2. For materials obtained by the Contractor for the unfinished (uncompleted) portions of the canceled work, that have been inspected, tested and accepted by the Engineer, and that have not been incorporated in the canceled work, payment shall be made to the Contractor for the actual costs for all such materials, including freight charges, as shown by the original paid invoices, to which shall be added 10 percent of the sums thereof. The materials, when so paid for by the Owner, shall become the property of the Owner.

3.04 PARTIAL PAYMENTS:

A. The Engineer shall review the Contractor's pay request for materials in-place and completed, the amount of work performed, and the value thereof, at the Contract Unit Prices. From the amount so determined there shall be deducted ten percent to be retained until after the completion of the entire work to the satisfaction of the Engineer, and the balance certified to the Owner for payment. Notwithstanding the above, after 50 percent or more of the work is completed, the Engineer may certify the remaining partial payments or some of them without any further retention, provided that satisfactory progress is being made in accordance with the Contract requirements and continues to be made, and provided that the amount retained shall not be less than five percent of the total adjusted Contract Price.

B. If stored matter is lost or damaged prior to incorporation in The Work, the materials shall be replaced or satisfactory repaired at the Contractor's expense. Where payment is made for materials in storage and not yet incorporated into The Work, the Contractor shall provide to the Owner, satisfactory evidence of insurance against loss by damage or disappearance. The Contractor shall pay and be responsible for cost of storage, if any, of said materials.

3.05 ADJUSTMENT OF UNIT PRICES BASED ON ACTUAL QUANTITIES PERFORMED

A. For unit price bid items, the quantities as listed in the schedule of bid items are estimates only. The Contractor will be required to complete the work specified in accordance with the Contract and at the quoted unit prices, whether quantities greater or less than the estimated amounts are involved. Should the actual quantity of a unit price pay item vary from the original estimate, the following adjustments to the unit prices shall be made:

1. When the actual quantity of a unit price pay item is less than 75 percent of the original bid estimate, the Contract will be paid an amount equal to the actual quantity times the original unit price plus 10 percent of the difference between this amount and the original estimated quantity times the original unit price for that particular item.

2. When the actual quantity of a unit price pay item is greater than 120 percent of the original bid estimate (based upon prior approval to exceed this quantity by the University and Engineer) the Contractor will be paid for the actual work performed in excess of the 120 percent of the original bid estimate at an adjusted unit price of 0.90 times the original unit

price. The first 120 percent of the bid estimate quantity will be paid at the original unit price.

B. The foregoing provisions shall be instituted only after it can be accurately determined that the actual contract sum for the project (exclusive of all change orders unrelated to the original scope of work) will be greater than or less than the original contract sum by more than 5 percent. Until such time that this determination can be made, the Contractor will be paid at his base unit price for actual quantities of work performed. No associated adjustments will be made to lump sum items within the original contract sum due to changes in the actual quantities of unit price items and the Contractor shall not be entitled to an adjusted compensation for unit price items that are deleted in their entirety from the actual scope of work performed.

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination.
2. Administrative and supervisory personnel.
3. General installation provisions.
4. Cleaning and protection.

B. Requirements for the Contractor's Construction Schedule are included in Section "Submittals".

1.03 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

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

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.

4. Progress meetings.
5. Project Close-out activities.

D. 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 in, the Work. Refer to other sections for disposition of salvaged materials that are designated as University's property.

1.04 SUBMITTALS

A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the interrelationship of components shown on separate Shop Drawings.

2. Indicate required installation sequences.

3. Comply with requirements contained in Section "Submittals."

B. Staff Names: Within 10 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

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

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Engineer for final decision.

F. Recheck measurements and dimensions, before starting each installation.

G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Engineer for final decision.

3.02 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Construction activity that produces significant noise, such as the use of pneumatic hammers, shot-blasting, sand blasting, etc., shall only be permitted from the hours of 8:00 am to 5:00 pm.

C. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

D. Limiting Exposures: Supervise construction activities to ensure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading
2. Excessively high or low temperatures
3. Air contamination or pollution
4. Water or ice
5. Solvents
6. Chemicals
7. Puncture
8. Abrasion
9. Heavy traffic
10. Soiling, staining and corrosion
11. Bacteria
12. Combustion
13. Electrical current
14. Unusual wear or other misuse
15. Contact between incompatible materials
16. Destructive testing
17. Misalignment
18. Excessive weathering
19. Unprotected storage
20. Improper shipping or handling
21. Theft
22. Vandalism

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule
2. Submittal schedule
3. Daily construction reports
4. Shop Drawings
5. Product Data
6. Material Safety Data Sheets (MSDS)
7. Samples

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits
2. Applications for payment
3. Performance and payment bonds
4. Insurance certificates
5. List of Subcontractors

C. Inspection and test reports are included in Section "Quality Control."

1.03 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.

a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Engineer will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
b. If an intermediate submittal is necessary, process the same as the initial submittal.
c. Allow two weeks for reprocessing each submittal.
d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.

a. Project name
b. Date
c. Name and address of Engineer
d. Name and address of Contractor
e. Name and address of subcontractor
F. Name and address of supplier
g. Name of manufacturer
h. Number and title of appropriate Specification Section
i. Drawing number and detail references, as appropriate

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

2. Transmittal Form: Use AIA Document G 810.

1.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

C. Distribution: Following response to the initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations.

Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

1.05 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.

1. Coordinate submittal schedule with the list of subcontracts, schedule of values, and the list of products as well as the Contractor's construction schedule.

2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

a. Scheduled date for the first submittal
b. Related Section number
c. Submittal category
d. Name of subcontractor
e. Description of the part of the Work covered
f. Scheduled date for resubmittal
g. Scheduled date the Engineer's final release or approval

B. Distribution: Following response to initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.06 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Engineer at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and start-ups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.07 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions
2. Identification of products and materials included
3. Compliance with specified standards
4. Notation of coordination requirements
5. Notation of dimensions established by field measurement
6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".
7. Initial Submittal: Submit 2 blue- or black-line prints for the Engineer's review; one will be returned.
8. Final Submittal: Submit 3 blue- or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the Engineer for distribution. 2 prints will be retained; the remainder returned.
9. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

1. Preparation of coordination Drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.08 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, roughing-in diagrams and templates, and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

a. Manufacturer's printed recommendations
b. Compliance with recognized trade association standards
c. Compliance with recognized testing agency standards
d. Application of testing agency labels and seals
e. Notation of dimensions verified by field measurement
f. Notation of coordination requirements

2. Do not submit Product Data until compliance with requirements of the Contract

Documents has been confirmed.

3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.

4. Submittals: Submit 5 copies of each required submittal. The Engineer will return to the Contractor a marked submittal with action taken and corrections or modifications required.

    a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

    a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.

    b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.09 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts, or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Engineer's Sample. Include the following:

    a. Generic description of the Sample
    b. Sample source
    c. Product name or name of manufacturer
    d. Compliance with recognized standards
    e. Availability and delivery time

2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

    a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

    b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

    c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

3. Preliminary submittals: Where Samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit a full set of choices for the material or product. Preliminary submittals will be reviewed and returned with the Engineer's mark indicating selection and other action.

4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

    a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

    b. Sample sets may be used to obtain final acceptance of the construction Engineer with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

    a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 ENGINEER'S ACTION

A. Except for submittals for record, information, or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Accepted," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Final-But-Restricted Release: When submittals are marked "Accepted as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Resubmittal: When submittal is marked "Not Accepted, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark. Do not permit submittals marked "Not Accepted, Revise and

Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

4. Other Action: Where a submittal is primarily for information or record purposes, special processing, or other activity, the submittal will be returned, marked "Action Not Required."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 35 29

SAFETY, HEALTH AND ENVIRONMENT

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. References: In addition to publications referenced in the Construction Contract Clauses, the following Code of Federal Regulations (CFR) publications designate and define hazardous materials and conditions, and establish procedures for handling these materials and conditions. Omission of any publication in this section does not remove any obligation or legal requirement on the part of the contractor to comply with all legal requirements for the location of the work.

1. 29 CFR, Part 1910: Occupational Safety and Health Administration (OSHA) General Industry and Health Standards
2. 29 CFR, Part 1926: OSHA Construction Industry Standards.
3. 40 CFR, Part 61: National Emission Standards for Hazardous Air Pollutants.
4. 40 CFR, Part 261: Environmental Protection Agency (EPA) Characteristics of Hazardous Waste.
5. 40 CFR, Part 761: EPA Polychlorinated Biphenyls (PCBs), Manufacturing, Processing, Distribution in Commerce and Use Prohibitions
6. 40 CFR, Part 763: EPA Asbestos.
7. Federal Standards 313A: Material Safety Data Sheets, Preparation and the Submission of.
8. NIH DES Instruction 1340-7: Precautions and Procedures for Entering Manholes or Other Below Grade Confined Spaces.
9. NIH DCAB publication “Standards for Temporary Construction,” March 1988.

B. Related Sections: This specification section is related to any and all specification sections with explicit or implicit reference to cutting and patching. Specific submittal requirements of these related specification sections are not included in this section. Related sections include but are not limited to the following specification sections:

1. Division 1 Section 01 11 00 “Summary of Work”
2. Division 1 Section 01 22 00 “Unit Prices”
3. Division 1 Section 01 31 00 “Project Management and Coordination”
4. Division 1 Section 01 33 00 “Submittal Procedures”
5. Division 1 Section 01 42 19 “Reference Standards”
6. Division 1 Section 01 45 00 “Quality Control”
7. Division 1 Section 01 50 00 “Temporary Facilities”
8. Division 1 Section 01 60 00 “Product Requirements”
9. Division 1 Section 01 73 29 “Cutting and Patching”
10. Division 1 Section 01 77 00 “Closeout Procedures”
11. Division 1 Section 01 78 36 “Extended Guarantees”
12. Division 2 Section 02 41 16 “Selective Demolition”

C. Hazardous Materials: Some hazardous and toxic materials and substances are included in 29 CFR Part 1910, subparts H and Z, and in 29 CFR Part 1926 and others additionally defined in Federal Standard 313A. Commonly encountered hazardous materials include but are not limited to asbestos, PCBs, explosives and radioactive material.

1. Asbestos may be found in spray-on fireproofing, insulation, boiler lagging, pipe coverings and other materials. See Division 1 Section "Asbestos Abatement" for removal requirements.

2. PCBs may be contained in ballasts, transformers, capacitors, voltage regulators, oil switches, mechanical insulation and other materials.

D. Acquisition of Publications: Referenced CFR publications may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

1.03 SUBMITTALS

A. Contractor's Safety and Health Program: The contractor shall submit a written copy of the Company Safety and Health Program as well as the site specific safety and health plan for the project to the Owner's Representative within 14 calendar days of the Notice to Proceed or before work commences on the project site, whichever is earlier.

B. Accident Reports: The Contractor must submit to the Owner's Representative a written report within three calendar days of any accident, fire, emergency, theft or incident in which any personal or property damage took place, regardless of any other notifications performed. Include a copy of each accident report that is submitted by the Contractor or Subcontractors to their insurance carriers, within seven calendar days after the date of the accident.

C. Material Safety Data Sheets (MSDS): The contractor shall provide the Material Safety Data Sheets (MSDS's) for all products containing hazardous chemicals to the Owner's Representative within 14 calendar days of the Notice to Proceed or before work commences on the site. The MSDS's shall be maintained at the project site for workers, Owner personnel and government officials. MSDS's for new products shall similarly be submitted to the Owner Representative and be retained at the project site until completion of the project.

1.04 PRECONSTRUCTION SAFETY MEETING

A. Prior to commencing construction, representatives of the Contractor, including the general superintendent and one or more safety representatives, shall meet with the Owner's Representative for the purpose of reviewing Contract safety and health requirements.

1. The Contractor's Safety and Health Program and Site Specific Safety and Health Plan shall be reviewed, and implementation of safety and health provisions pertinent to the Work shall be discussed.

2. The Contractor shall be prepared to discuss, in detail, the Contractor's Site Specific Safety and Health Plan including measures intended to control any unsafe or unhealthy conditions associated with the work to be performed under the contract.

3. This meeting may be held in conjunction with the preconstruction conference, if so directed by the Owner's Representative. The conduct of this meeting is not contingent upon a general preconstruction meeting.

4. The level of detail for the safety meeting is dependent upon the nature of the work and the potential inherent hazards.

1.05 COMPLIANCE WITH REGULATIONS

A. The work, including contact with or handling of hazardous materials, disturbance or dismantling of surfaces containing hazardous materials, and disposal of hazardous materials, shall comply with the applicable requirements of 29 CFR Parts 1910 and 1926, and 40 CFR Parts 61, 261, 761 and 763.

B. Work involving disturbance or dismantling of asbestos or asbestos containing materials, demolition of structures containing asbestos and removal of asbestos, shall comply with 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763.

C. Work shall additionally comply with all applicable state and local safety and health regulations.

D. In case of a conflict between applicable regulations, the more stringent requirements shall apply.

E. Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable codes, standards and regulations pertaining to the health and safety of personnel during execution of the Work, and shall hold the Owner harmless for any action on the Contractor's part, or that of the Contractor's employees or subcontractors, that result in illness, injury or death.

1. The Contractor shall have written safety and health programs in compliance with 29 CFR Parts 1910 and 1926.

2. Inspections, Tests, and Reports: The required inspections, tests and reports made by the Contractor, subcontractors, specially trained technicians, equipment manufacturers, and others as required, shall be at the Contractor's expense.

1.06 USE OF EXPLOSIVES AND EXPLOSIVE ACTUATED FASTENING TOOLS

A. Use of explosives shall be prohibited.

B. Explosive actuated fastening tools (ex. nail guns, etc.) shall not be used or brought to the project site without the permission of the Owner's Representative, including a safety plan for the use of this equipment.

1.07 WORK UNDERGROUND OR IN CONFINED SPACES

A. Work underground or in confined spaces shall comply with the NIH Division of Engineering Services Instruction Manual 1340-7, "Precautions and Procedures for Entering Manholes or Other Below Grade Confined Spaces" (DES INST 1340-7). A copy of the instruction may be obtained from the University's Office of Environmental Health and Safety on request.

B. Work shall also comply with appropriate MSHA and OSHA regulations including but not limited to 29 CFR 1910.146 and COMAR 09.12.32B.

C. The Contractor shall remove water and debris and properly vent manholes before commencement and during execution of work in manholes.

1.08 ELECTRICAL

A. Electrical arc welding equipment shall not be connected to the building power supply.

1.09 MATERIAL DELIVERIES

A. Whenever practicable, deliveries shall be made during regular working hours and only when the Contractor's representative is available to receive them. Deliver material in approved containers and with properly licensed vehicles and operators. Open delivery vehicles are not permitted. Deliver materials in fully closed vehicles or tarp-covered vehicles. All dump trucks shall be fully covered while in transport to and from the unloading site. All loads shall be securely fastened until unloading. Engines shall not be left running while vehicles are loading, unloading, waiting or parked. Do not block roads, walks, building entrances/exits, fire hydrants and standpipes, exterior tanks or building gas connections.

1.10 HAZARDOUS MATERIAL

A. The Contractor shall bring to the attention of the Engineer and the Owner's Representative, any material encountered during execution of the Work that the Contractor suspects is hazardous. The Owner's Representative shall have the Office of Environmental Health and Safety perform tests to determine if the material is hazardous.

B. If the tested material is found to be hazardous, and/or if additional protective measures are required, a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

1.11 ADDITIONAL SAFETY REQUIREMENTS

A. No work shall be performed in any area occupied by the public or Owner employees unless approved by the Owner.

1. Accident Treatment and Records: The Contractor shall post emergency first aid information.

2. No person, regardless of position or authority, shall operate any switch, valve, or equipment that has an official lockout/tag out tag attached to it, nor shall such tag be removed except as provided in this section.

3. When work is to be performed on electrical circuits, the work shall be performed only by qualified personnel following the required safety procedures.

4. Identification markings on building light and power distribution circuit breakers shall not be relied on for establishing safe work conditions.

5. Before clearance will be given on any equipment other than electrical (generally referred to as mechanical apparatus), the apparatus, valves, or systems shall be secured in a passive condition with the appropriate vents, pins, and locks.

6. Pressurized or vacuum systems shall be vented to relieve differential pressure completely.

7. Vent valves shall be lockout/tag out tagged open during the course of the work.

8. Where dangerous gas or fluid systems are involved, or in areas where the environment may be oxygen deficient, systems or areas shall be purged, ventilated, or otherwise made safe prior to entry.

1.12 PERSONNEL PROTECTIVE EQUIPMENT

A. Special facilities, devices, equipment and similar items used by the Contractor in execution of the work shall comply with 29 CFR, Part 1910, Subpart 1 and other applicable regulations.

PART 2 – PRODUCTS

2.01 Safety and Health Programs: The Contractor shall submit copies of the written site specific project safety and health plan and emergency action procedures, as applicable to the work scope, as required as a result of the safety meeting, or as required by OSHA 29 CFR, Part 1926 including but not necessarily limited to the procedures and programs that support the requirements of the following:

A. Designation of Safety Competent Person
B. Occupational Noise Exposure
C. Fall Protection
D. Personnel Protective Equipment
E. Control of Hazardous Energy
F. Hazardous Materials Waste Management Plan (draft if final plan has not been accepted)
G. Electrical Safety Related Work Practices
H. Lead
I. Asbestos
J. Respirator Protection
K. Confined spaces
L. Emergency evacuation and reporting
M. Hot Work

2.02 Contractor's Safety and Health Plan: In addition to specific safety and health programs applicable to the project, Contractor shall submit to the Owner a copy of the firms' general Safety and Health Plan listing emergency procedures and contact persons with home addresses and telephone numbers.

2.03 Permits: If hazardous materials are disposed of off-site, submit copies of shipping manifests and permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations.

PART 3 – EXECUTION

3.01 EMERGENCY SUSPENSION OF WORK

A. When the Contractor is notified by the Engineer or the Owner's Representative, of noncompliance with the safety or health provisions of the Contract, the Contractor shall immediately, unless otherwise instructed, correct the unsafe or unhealthy condition.

1. If the Contractor fails to comply promptly, all or part of the work will be stopped by notice form the Engineer.

2. When, in the opinion of and by notice given by the Engineer and or the Owner's Representative, satisfactory corrective action has been taken by the Contractor, work shall resume.

3. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe or unhealthy condition.

3.02 PROTECTION OF PERSONNEL

A. The Contractor shall take all necessary precautions to prevent injury to the public, occupants, or damage to property of others. The public and occupants includes all persons not employed by the Contractor or a subcontractor.

B. Wherever practical, the work area shall be fenced, barricaded or otherwise blocked off from the public or occupants to prevent unauthorized entry into the work area.

1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.

2. Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe or unhealthy condition to the public or occupants.
3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupants by accidental shifting, ignition or other hazardous activity.

4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Owner's Representative. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks.

C. Alternate Precautions: When the nature of the work prevents isolation of the work area and the public or building occupants may be in or pass through, under or over the work area, alternate precautions such as the posting of signs, the use of signal persons, the erection of barricades or similar protection around particularly hazardous operations shall be used as appropriate.

D. Public Thoroughfare: When work is to be performed over a public thoroughfare such as a sidewalk, roadway or other site access way, the thoroughfare shall be closed, if possible, or other precautions taken such as the installation of screens or barricades. When the exposure to heavy falling objects exists, as during the erection of building walls or during demolition, special protection of the type detailed in 29 CFR, Parts 1910 and 1926 shall be provided.

3.03 ENVIRONMENTAL PROTECTION

A. Dispose of solid, liquid and gaseous contaminants in accordance with local codes, laws, ordinances and regulations.

B. Comply with applicable federal, state and local noise control laws, ordinances and regulations, including but not limited to 29 CFR, Part 1910.95 and 29 CFR, Part 1926.52.

END OF SECTION

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 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.

1.02 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 2004 format.

B. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.

2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

a. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.03 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standard in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified, and the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. In complying with these requirements, indicated numeric values are

minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Engineer for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

F. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AASHTO American Association of State Highway and Transportation Officials
444 North Capitol St., Suite 225
Washington, DC 20001
(202) 624-5800

ACI American Concrete Institute
P.O. Box 19150
Detroit, MI 48219
(313) 532-2600

ACIL American Council of Independent Laboratories
1725 K St., NW
Washington, DC 20006
(202) 887-5872

AI Asphalt Institute
P.O. Box 14052
Lexington, KY 40512
(606) 288-4960

AIA American Institute of Architects
1735 New York Ave., NW
Washington, DC 20006
(202) 626-7300

APA American Plywood Association
P.O. Box 11700
Tacoma, WA 98411
(206) 565-6600

ASC	Adhesive and Sealant Council 1627 K Street, NW, Suite 1000 Washington, DC 20006 (202) 452-1500
ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake, CA 91362 (805) 495-7120
ASTM	American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103 (215) 299-5400
AWS	American Welding Society 550 LeJeune Road, NW P.O. Box 351040 Miami, FL 33135 (305) 443-9353
BHMA	Builders' Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017 (212) 661-4261
BIA	Brick Institute of America 11490 Commerce Park Drive, Suite 300 Reston, VA 22091 (703) 620-0010
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Rd. Schaumburg, IL 60173 (312) 517-1200
EJMA	Expansion Joint Manufacturers Association 25 N. Broadway Tarrytown, NY 10591 (914) 332-0040
HPMA	Hardwood Plywood Manufacturers Association 1825 Michael Farraday Drive P.O. Box 2789 Reston, VA 22090 (703) 435-2900
IEEE	Institute of Electrical and Electronic Engineers 345 E. 47th St. New York, NY 10017 (212) 705-7900

NAPA	National Asphalt Pavement Association Calvert Building, Suite 620 6811 Kenilworth Ave. Riverdale, MD 20737 (301) 779-4880
NCMA	National Concrete Masonry Association P.O. Box 781 Herndon, VA 22070 (703) 435-4900
NEC	National Electric Code (from NFPA)
NECA	National Electrical Contractors Association 7315 Wisconsin Ave. Bethesda, MD 20814 (301) 657-3110
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 (617) 770-3000
NPCA	National Paint and Coatings Association 1500 Rhode Island Ave., NW Washington, DC 20005 (202) 462-6272
PCA	Portland Cement Assoc. 5420 Old Orchard Road Skokie, IL 60077 (312) 966-6200
PDI	Plumbing and Drainage Institute c/o Sol Baker 1106 W. 77th St., South Dr. Indianapolis, IN 46260 (317) 251-6970
RMA	Rubber Manufacturers Association 1400 K St., NW Washington DC 20005 (202) 682-4800
SSPC	Steel Structures Painting Council 4400 Fifth Ave. Pittsburgh, PA 15213 (412) 268-3327

WRI Wire Reinforcement Institute
1760 Reston Parkway, Suite 403
Reston, VA 22090
(703) 790-9790

G. Federal Government Agencies: Names and titles of federal government standard or Specification producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of the date of the Contract Documents.

CE Corps of Engineers
(U.S. Department of the Army)
Chief of Engineers - Referral
Washington, DC 20314
(202) 272-0660

CFR Code of Federal Regulations
Available from the Government Printing Office
N. Capitol St. between G and H St. NW
Washington, DC 20402
(202) 783-3238
(Material is usually first published in the "Federal Register")

CPSC Consumer Product Safety Commission
5401 Westbard Ave.
Bethesda, MD 20816
(800) 638-2772

CS Commercial Standard
(U.S. Department of Commerce)
Government Printing Office
Washington, DC 20402
(202) 377-2000

DOC Department of Commerce
14th St. and Constitution Ave., NW
Washington, DC 20230
(202) 377-2000

DOT Department of Transportation
400 Seventh St., SW
Washington, DC 20590
(202) 366-4000

EPA Environmental Protection Agency
401 M St., SW
Washington, DC 20460
(202) 382-2090

FAA	Federal Aviation Administration (U.S. Department of Transportation) 800 Independence Ave., SW Washington, DC 20590 (202) 366-4000
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Gaithersburg, MD 20899 (301) 975-2000
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) Government Printing Office Washington, DC 20402 (202) 523-6091
PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402 (202) 783-3238

1.04 GOVERNING REGULATIONS/AUTHORITIES

A. The Engineer has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

B. Copies of Regulations: Obtain copies of the applicable regulations and retain at the Project Site, available for reference by parties who have a reasonable need for such reference.

1.05 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Engineer's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.

B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include contract enforcement activities performed by the Engineer.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.

2. Inspections, testing, and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for the Contractor to provide quality control services required by the Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.03 RESPONSIBILITIES

A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.

1. The Contractor shall employ and pay an independent agency, to perform specified quality control services.

2. The Owner will engage and pay for the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities.

a. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and if the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.

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

a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

1. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:

a. Providing access to the Work and furnishing labor and facilities necessary to facilitate inspections and tests.

b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.

c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.

d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.

e. Security and protection of samples and test equipment at the Project site.

B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Engineer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Owner, Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.

C. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.04 SUBMITTALS:

A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Engineer, Owner and Contractor.

1. Report Data: Written reports of each inspection, test, or similar service shall include, but not be limited to:

a. Date of issue
b. Project title and number
c. Name, address, and telephone number of testing agency
d. Dates and locations of samples and tests or inspections
e. Names of individuals making the inspection or test
f. Designation of the Work and test method
g. Identification of product and Specification Section
h. Complete inspection or test data
i. Test results and interpretations of test results
j. Ambient conditions at the time of sample-taking and testing
k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector
m. Recommendations on retesting

1.05 QUALITY ASSURANCE

A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the work is to take place.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

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

B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include but are not limited to:

1. Water service and distribution
2. Temporary electric power and light
3. Telephone service

C. Temporary construction and support facilities required include but are not limited to:

1. Temporary heat.
2. Field offices and storage sheds.
3. Sanitary facilities, including drinking water.
4. Temporary enclosures.
5. Temporary Project identification signs and bulletin boards.
6. Waste disposal services.
7. Rodent and pest control.
8. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities required include but are not limited to:

1. Temporary fire protection
2. Barricades, warning signs, lights
3. Sidewalk bridge or enclosure fence for the site
4. Environmental protection

1.03 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

1.04 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Building Code requirements
2. Health and safety regulations
3. Utility company regulations
4. Police, Fire Department, and Rescue Squad rules
5. Environmental protection regulations

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.

2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.05 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials; if acceptable to the Engineer, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood:

1. For job-built temporary offices, shops and sheds within the construction area, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.

2. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.

3. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.

4. For safety barriers, sidewalk bridges, and similar uses provide minimum 5/8" thick exterior plywood.

C. Paint: Comply with requirements of Division-9 Section "Painting."

1. For job-built temporary offices, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.

2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.

3. For interior walls of temporary offices, provide two coats interior latex flat wall paint.

D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

E. Water: Provide potable water approved by local health authorities.

F. Mesh Fencing: Provide heavy duty square mesh fencing with maximum 2” x 2” openings 6-feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts. Secure opaque visual screen to entire length and height of fencing.

2.02 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Engineer, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air- conditioned units on foundations adequate for normal loading.

H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

I. First Aid Supplies: Comply with governing regulations.

J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for

temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.

1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site, where the University's easements cannot be used for that purpose.

4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Engineer, and will not be accepted as a basis of claims for a Change Order.

B. Temporary Water Service: The contractor shall make arrangements with the Owner for temporary water from existing sources at the facility. The Contractor shall be responsible for all hoses, connections, etc., required from the point of water source at the facility. The water usage may be metered and billed to the Contractor. Contractor is responsible to contact Owner’s utility services to set it up water usage.

C. Temporary Electric Power Service: The Contractor shall make all arrangements for and shall install and pay for the temporary electric service. The Contractor shall furnish, install and maintain all temporary and power facilities required by the work. Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.

1. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for

surveillance.

D. Temporary Lighting:

1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

E. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.

1. At each telephone, post a list of important telephone numbers.

F. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner. Weekly EPA reports are required to be filed with FOD/EHS. All fines are the responsibility of the Contractor.

1. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.

2. Connect temporary sewers to the municipal system as directed by the sewer department officials.

3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

G. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate storage sheds, sanitary facilities and other temporary construction and support facilities for easy access at locations approved by the University.

1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the University.

B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.

C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.

E. Field Offices: The Contractor will provide and pay for temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings.

F. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site as approved by the Owner.

G. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.

1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.

H. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

I. Drinking Water Facilities: Within temporary office, provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.

J. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.

3. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.

K. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.04 PROTECTION FACILITIES INSTALLATION

A. Temporary Fire Protection:

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

B. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

C. Security Enclosure and Lockup:

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.05 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.

2. Protection: Prevent water filled piping from freezing.

C. Termination and Removal: Unless the Owner requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Contractor.

2. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as

required by the governing authority.

3. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

   a. Replace air filters and clean inside of ductwork and housings.

   b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Reference Standards and Definitions" 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."

1.03 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. Note that some product specifications require job specific purchase of the materials versus use 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.

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.

1.04 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. Manufacturer's 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: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

    a. 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.

4. Completed Schedule: Within 60 days after date of commencement of the Work, 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 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Engineer's response will include the following:

    a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. 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.

1.06 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

2.01 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.

a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" 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.

   a. 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.

   a. 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.

9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS:

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for cutting and patching.

B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1. Requirements of this Section apply to existing plumbing and electrical installations.

C. Demolition of selected portions of the building for alterations is included in Section "Selective Demolition."

1.03 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the structure's appearance and other significant visual elements.

3. List products to be used and firms or entities that will perform Work.

4. Indicate dates when cutting and patching is to be performed.

5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and Engineer’s calculations to show how reinforcement is integrated with the original structure.

7. Approval by the Engineer to proceed with cutting and patching does not waive the Engineer's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.04 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction
b. Bearing and retaining walls
c. Structural concrete
d. Structural steel
e. Lintels
f. Timber and primary wood framing
g. Structural decking
h. Stair systems
i. Miscellaneous structural metals
j. Exterior curtain wall construction
k. Equipment supports
l. Piping, ductwork, vessels, and equipment

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Shoring, bracing, and sheeting
b. Primary operational systems and equipment
c. Air or smoke barriers
d. Water, moisture, or vapor barriers
e. Membranes and flashings
f. Fire protection systems
g. Noise and vibration control elements and systems
h. Control systems
i. Communication systems
j. Conveying systems
k. Electrical wiring systems

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

1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

a. Processed concrete finishes.
b. Stonework and stone masonry.
c. Ornamental metal.
d. Matched-veneer woodwork.
e. Preformed metal panels.
f. Window wall system.

g. Stucco and ornamental plaster.
h. Acoustical ceilings.
i. Terrazzo.
j. Finished wood flooring.
k. Fluid-applied flooring.
l. Carpeting.
m. Aggregate wall coating.
n. Wall covering.
o. Swimming pool finishes.
p. HVAC enclosures, cabinets or covers.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 INSPECTION

A. Before cutting existing surfaces examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 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 the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. General: Employ skilled workmen 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 activities and the subsequent fitting and patching required to restore

surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

4. Comply with requirements of applicable Sections of Division-2 where cutting and patching requires excavating and backfilling.

5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. 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. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color 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 smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.

4. Patch or repair existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.04 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 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.

1.02 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.

1.03 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.

a. 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.

1.04 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List any 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. Reinspection Procedure: The Engineer will reinspect 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 reinspection, 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, reinspection will be repeated.

1.05 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.

1. 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.

1. 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 – submit at least three copies. 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
8. Fixture lamping schedule

H. The Engineer will compile all Record Documents and submit to the Owner as one submittal. Record Documents will be in both electronic and hard copy format.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 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. Lubricants
6. Fuels
7. Identification systems
8. Control sequences
9. Hazards
10. Cleaning
11. Warranties and bonds
12. Maintenance agreements and similar continuing commitments

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up
2. Shutdown
3. Emergency operations

4. Noise and vibration adjustments
5. Safety procedures
6. Economy and efficiency adjustments
7. Effective energy utilization

3.02 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

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 transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

3. 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.

4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

5. 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. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. 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.

1. 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

SECTION 01 78 36

EXTENDED GUARANTEES

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

2. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Divisions 2 through 9.

3. Certifications and other commitments and agreements for continuing services to the Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.04 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents.

The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.05 SUBMITTALS

A. Submit written warranties to the Engineer prior to the date certified for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Engineer.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.

C. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Engineer for approval prior to final execution.

1. Refer to individual Sections of Divisions 2 through 9 for specific content requirements, and particular requirements for submittal of special warranties.

D. Form of Submittal: At Final Completion compile three copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.

3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF WARRANTIES

A. Schedule: Provide warranties on products and installations as specified below:

1. The General Contractor shall provide a 5-year warranty for all repairs performed to conform to the specifications in addition to specific warranties for individual products.

END OF SECTION

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wiring connectors.

D. Electrical tape.

E. Heat shrink tubing.

F. Oxide inhibiting compound.

G. Wire pulling lubricant.

H. Cable ties.

I. Firestop sleeves.

1.2 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.

C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

D. Section 28 46 00 - Fire Detection and Alarm: Fire alarm system conductors and cables.

1.3 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).

C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).

D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).

E. ASTM B800 - Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes - Annealed and Intermediate Tempers; 2005 (Reapproved 2021).

F. ASTM B801 - Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation; 2018.

G. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.

H. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023a.

J. FM 3971 - Fire Protective Coatings and Wraps for Grouped Cables; 2019.

K. IEEE 383 - IEEE Standard for Qualifying Electric Cables and Splices for Nuclear Facilities; 2015.

L. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

M. NECA 104 - Standard for Installing Aluminum Building Wire and Cable; 2012.

N. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable; 2018.

O. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.

P. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

Q. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

R. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

S. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

T. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Current Edition, Including All Revisions.

U. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

V. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

W. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

X. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

Y. UL 1277 - Electrical Power and Control Tray Cables with Optional Optical-Fiber Members; Current Edition, Including All Revisions.

Z. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

B. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.8 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Metal-clad cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. For final connection to luminaires and vibrating equipment.
         1) Maximum Length: 24 inches.
      b. Where concealed in hollow stud walls and above accessible ceilings for branch circuits 30A and below.
   2. In addition to other applicable restrictions, may not be used:
      a. Where not approved for use by the authority having jurisdiction.
      b. Where exposed to view.
      c. Where exposed to damage.
      d. For damp, wet, or corrosive locations, unless provided with a PVC jacket listed as suitable for those locations.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Provide new conductors and cables manufactured not more than one year prior to installation.

D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

E. Comply with NEMA WC 70.

F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

H. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.

I. Conductor Material:
   1. Provide copper conductors except where aluminum conductors are specifically indicated. Conductor sizes indicated are based on copper unless specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.
      a. With approval from the Engineer, substitution of aluminum conductors for copper is permitted for feeders larger than 70A with the exception of fire pump, elevators, emergency panel feeders, and legally required standby panel feeders which shall be copper conductors regardless of size.
      b. Where aluminum conductors are substituted for copper, comply with the following:
         1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and equivalent or less voltage drop.
         2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.
         3) Provide aluminum equipment grounding conductor sized according to NFPA 70.
         4) Equip electrical distribution equipment with compression lugs for terminating aluminum conductors.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
   3. Tinned Copper Conductors: Comply with ASTM B33.
   4. Aluminum Conductors (only where specifically indicated or permitted for substitution): AA-8000 series aluminum alloy conductors recognized by ASTM B800 and compact stranded in accordance with ASTM B801 unless otherwise indicated.

J. Minimum Conductor Size: 12 AWG.

K. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

L. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
      a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
   3. Color Code:
      a. 480Y/277 V, 3 Phase, 4 Wire System:
         1) Phase A: Brown.
         2) Phase B: Orange.
         3) Phase C: Yellow.
         4) Neutral/Grounded: Gray.

b. 208Y/120 V, 3 Phase, 4 Wire System:
   1) Phase A: Black.
   2) Phase B: Red.
   3) Phase C: Blue.
   4) Neutral/Grounded: White.
c. Equipment Ground, All Systems: Green.
d. Travelers for 3-Way and 4-Way Switching: Pink.

2.3 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
   1. Copper Building Wire:
      a. Cerro Wire LLC.
      b. Encore Wire Corporation.
      c. General Cable Technologies Corporation.
      d. Service Wire Co
      e. Southwire Company.
   2. Aluminum Building Wire (only where specifically indicated):
      a. Encore Wire Corporation.
      b. Southwire Company.
      c. Stabiloy, a brand of General Cable Technologies Corporation.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
   1. Feeders and Branch Circuits:
      a. Size 10 AWG and Smaller: Solid.
      b. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
   1. Copper Building Wire: Type THHN/THWN-2, except as indicated below.

2.4 METAL-CLAD CABLE

A. Manufacturers:
   1. AFC Cable Systems Inc.
   2. Encore Wire Corporation.
   3. Service Wire Co.
   4. Southwire Company.

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN/THWN-2.

F. Grounding: Full-size integral equipment grounding conductor.

G. Armor: Steel, interlocked tape.

H. Provide PVC jacket applied over cable armor.

2.5 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.

C. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
   2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
   3. Connectors for Aluminum Conductors: Use compression connectors.

D. Wiring Connectors for Terminations:
   1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
   2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
   3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
   4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
   5. Aluminum Conductors: Use compression connectors for all connections.
   6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
   7. Conductors for Control Circuits: Use crimped terminals for all connections.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M.
      b. Ideal Industries, In
      c. NSI Industries LLC.

H. Mechanical Connectors: Provide bolted type or set-screw type.
   1. Manufacturers:
      a. Burndy LLC.
      b. Ilsco.
      c. Thomas & Betts Corporation.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
   1. Manufacturers:
      a. Burndy LLC.
      b. Ilsco.
      c. Thomas & Betts Corporation.

J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
   1. Manufacturers:
      a. Burndy LLC.
      b. Ilsco.
      c. Thomas & Betts Corporation.

2.6 ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
      a. 3M.
      b. Plymouth Rubber Europa.
   2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
   3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.

4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
1. Manufacturers:
a. 3M.
b. Burndy LLC.

C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
1. Manufacturers:
a. Burndy LLC.
b. Ideal Industries, Inc.
c. Ilsco.

D. Wire Pulling Lubricant:
1. Manufacturers:
a. 3M.
b. American Polywater Corporation.
c. Ideal Industries, Inc.
2. Listed and labeled as complying with UL 267.
3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
4. Suitable for use at installation temperature.
5. Products:
a. American Polywater Corporation; Polywater J Cable Pulling Lubricant.
b. American Polywater Corporation; Polywater LZ Cable Pulling Lubricant.

E. Cable Ties: Material and tensile strength rating suitable for application.
1. Manufacturers:
a. Burndy LLC.

F. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
1. Products:
a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built.

G. Fire-Protective Coating for Electrical Conductors and Cables: Field-applied, intumescent or ablative coating designed to prevent ignition and propagation of fire along thermoplastic-insulated conductors and cables.
   1. Pass flammability tests of one of the following:
      a. ASTM E84, Class A; maximum flame spread index of 25.
      b. FM 3971.
      c. IEEE 383.
   2. Products:
      a. Vimasco Corporation; CharCoat CC Cable Coating: www.charcoat.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as indicated.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
   6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
   7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same

raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install aluminum conductors in accordance with NECA 104.

E. Install metal-clad cable (Type MC) in accordance with NECA 120.

F. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

G. Exposed Cable Installation (only where specifically permitted):
   1. Route cables parallel or perpendicular to building structural members and surfaces.
   2. Protect cables from physical damage.

H. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

I. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
   2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

J. Terminate cables using suitable fittings.
   1. Metal-Clad Cable (Type MC):
      a. Use listed fittings.
      b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

K. Install conductors with a minimum of 12 inches of slack at each outlet.

L. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

M. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

N. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Connections for Aluminum Conductors: Fill connectors with oxide inhibiting compound where not pre-filled by manufacturer.
   6. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   7. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

O. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
   3. Wet Locations: Use heat shrink tubing.

P. Insulate ends of spare conductors using vinyl insulating electrical tape.

Q. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

R. Identify conductors and cables in accordance with Section 26 05 53.

S. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

T. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.4 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Ground bars.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
   1. Includes oxide inhibiting compound.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Field quality control test reports.

1.5 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

E. Bonding and Equipment Grounding:
   1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.

2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

F. Communications Systems Grounding and Bonding:
1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
b. Raceway Size: 3/4 inch trade size unless otherwise indicated or required.
c. Ground Bar Size: 1/4 by 4 by 18 and 24 as indicated on the drawings.
d. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 05 26:
1. Use insulated copper conductors unless otherwise indicated.
a. Exceptions:
1) Use bare copper conductors where installed underground in direct contact with earth.
2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

4. Manufacturers - Mechanical and Compression Connectors:
   a. allG Fabrication.
   b. Burndy LLC.
   c. Harger Lightning & Grounding.
   d. nVent ERICO.
   e. Thomas & Betts Corporation.
5. Manufacturers - Exothermic Welded Connections:
   a. Burndy LLC.
   b. nVent ERICO; Cadweld.
   c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC.

D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Make grounding and bonding connections using specified connectors.
1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 05 53.

3.3 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.13.

C. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

D. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION 26 05 26

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.2 RELATED REQUIREMENTS

A. Section 26 05 33.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.

B. Section 26 05 33.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

C. Section 26 51 00 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.3 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

D. MFMA-4 - Metal Framing Standards Publication; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

D. Installer's qualification statement.

PART 2 PRODUCTS

2.1 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Comply with the following. Where requirements differ, comply with most stringent.
      a. NFPA 70.
      b. Requirements of authorities having jurisdiction.
   2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
   3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
   4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
   5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
      a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
      c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
   1. Manufacturers:
      a. ABB.
      b. Eaton Corporation.
      c. Emerson Electric Co; O-Z/Gedney.
      d. HoldRite, a brand of Reliance Worldwide Corporation.
      e. nVent; Caddy.

2. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
3. Conduit Clamps: Bolted type unless otherwise indicated.
4. Products:
   a. Gripple, Inc; Universal Bracket.
   b. Gripple, Inc; Fast Trak.
   c. Gripple, Inc; Universal Clamp (Threaded)
   d. Gripple, Inc; Low Profile Bracket Kits.

C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
1. Manufacturers:
   a. ABB.
   b. Eaton Corporation.
   c. Emerson Electric Co; O-Z/Gedney.
   d. HoldRite, a brand of Reliance Worldwide Corporation.
   e. nVent; Caddy.

D. Metal Channel/Strut Framing Systems:
1. Manufacturers:
   a. ABB.
   b. Atkore International Inc; Unistrut.
   c. Custom Strut and Roll Forming, LLC.
   d. Eaton Corporation.
   e. Elgen Manufacturing Company, Inc.
2. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
3. Comply with MFMA-4.
4. Channel/Strut Used as Raceway, Where Indicated: Listed and labeled as complying with UL 5B.
5. Channel Material:
   a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
   b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
6. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
7. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.

E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
   a. Equipment Supports: 1/2-inch diameter.
   b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
   c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
   d. Trapeze Support for Multiple Conduits: 3/8-inch diameter.
   e. Outlet Boxes: 1/4-inch diameter.
   f. Luminaires: 1/4-inch diameter.

F. Anchors and Fasteners:
   1. Manufacturers - Mechanical Anchors:
      a. Dewalt.
      b. Hilti, Inc.
      c. ITW Red Head, a division of Illinois Tool Works, Inc.
      d. Simpson Strong-Tie Company Inc.
   2. Manufacturers - Powder-Actuated Fastening Systems:
      a. Dewalt.
      b. Hilti, Inc.
      c. ITW Ramset, a division of Illinois Tool Works, Inc.
      d. Simpson Strong-Tie Company Inc.
   3. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
   4. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
   5. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
   6. Hollow Masonry: Use toggle bolts.
   7. Hollow Stud Walls: Use toggle bolts.
   8. Steel: Use beam clamps, machine bolts, or welded threaded studs.
   9. Sheet Metal: Use sheet metal screws.
   10. Wood: Use wood screws.
   11. Plastic and lead anchors are not permitted.
   12. Powder-actuated fasteners are permitted only as follows:
      a. Use only threaded studs; do not use pins.
   13. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
      a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
      b. Comply with MFMA-4.
      c. Channel Material: Use galvanized steel.
      d. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch minimum base metal thickness.
   14. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Equipment Support and Attachment:
   1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
   2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

I. Conduit Support and Attachment: See Section 26 05 33.13 for additional requirements.

J. Box Support and Attachment: See Section 26 05 33.16 for additional requirements.

K. Interior Luminaire Support and Attachment: See Section 26 51 00 for additional requirements.

L. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

M. Secure fasteners in accordance with manufacturer's recommended torque settings.

N. Remove temporary supports.

3.3 FIELD QUALITY CONTROL

A. Inspect support and attachment components for damage and defects.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION 26 05 29

SECTION 26 05 33.13 - CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Galvanized steel intermediate metal conduit (IMC).

C. Flexible metal conduit (FMC).

D. Liquidtight flexible metal conduit (LFMC).

E. Galvanized steel electrical metallic tubing (EMT).

F. Rigid polyvinyl chloride (PVC) conduit.

G. Liquidtight flexible nonmetallic conduit (LFNC).

1.2 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete encasement of conduits.

B. Section 07 84 00 - Firestopping.

C. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.

D. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
   1. Includes additional requirements for fittings for grounding and bonding.

E. Section 26 05 29 - Hangers and Supports for Electrical Systems.

F. Section 26 05 33.16 - Boxes for Electrical Systems.

G. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.

C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit; 2018.

D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.

F. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.

G. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

H. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.

I. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.

J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

L. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

M. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.

N. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

O. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

P. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

Q. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

R. UL 1660 - Liquid-Tight Flexible Nonmetallic Conduit; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
   4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.6 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
   1. Under Slab on Grade: Use rigid PVC conduit.
   2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit.
   3. Exterior, Embedded Within Concrete: Use rigid PVC conduit.
   4. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or schedule 80 rigid PVC conduit where emerging from underground.

D. Embedded Within Concrete:
   1. Within Slab on Grade: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit. Embed within structural slabs only where approved by Structural Engineer.

2. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT) where emerging from concrete.

E. Concealed Within Hollow Stud Walls: Use galvanized steel intermediate metal conduit (IMC) or galvanized steel electrical metallic tubing (EMT).

F. Concealed Above Accessible Ceilings: Use galvanized steel intermediate metal conduit (IMC) or galvanized steel electrical metallic tubing (EMT).

G. Interior, Damp or Wet Locations: Use galvanized steel intermediate metal conduit (IMC) or galvanized steel electrical metallic tubing (EMT).

H. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).

I. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC).
1. Locations subject to physical damage include, but are not limited to:
a. Where exposed below 8 feet, except within electrical and communication rooms or closets.

J. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
1. Maximum Length: 6 feet.

K. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
3. Maximum Length: 6 feet unless otherwise indicated.
4. Vibrating equipment includes, but is not limited to:
a. Transformers.
b. Motors.

2.2 CONDUIT - GENERAL REQUIREMENTS

A. Comply with NFPA 70.

B. Fittings for Grounding and Bonding: See Section 26 05 26 for additional requirements.

C. Provide conduit, fittings, supports, and accessories required for complete raceway system.

D. Provide products listed, classified, and labeled as suitable for purpose intended.

E. Minimum Conduit Size, Unless Otherwise Indicated:
1. Branch Circuits: 3/4-inch trade size.

2. Branch Circuit Homeruns: 3/4-inch trade size.
3. Control Circuits: 1/2-inch trade size.
4. Flexible Connections to Luminaires: 3/8-inch trade size.
5. Underground, Interior: 3/4-inch trade size.
6. Underground, Exterior: 1-inch trade size.

F. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International.
2. Nucor Tubular Products.
3. Rymco USA.
4. Western Tube, a division of Zekelman Industries.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

C. Fittings:
1. Manufacturers:
a. ABB; T&B.
b. Allied Tube & Conduit, a division of Atkore International.
c. Bridgeport Fittings Inc.
d. Emerson Electric Co; O-Z/Gedney.
2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.4 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International.
2. Nucor Tubular Products.
3. Rymco USA.
4. Western Tube, a division of Zekelman Industries.

B. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

C. Fittings:
   1. Manufacturers:
      a. ABB; T&B.
      b. Allied Tube & Conduit, a division of Atkore International.
      c. Bridgeport Fittings, LLC.
      d. Emerson Electric Co; O-Z/Gedney.
   2. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
   3. Material: Use steel or malleable iron.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.5 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International.
   2. Electri-Flex Company.
   3. International Metal Hose.

B. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.

C. Fittings:
   1. Manufacturers:
      a. ABB; T&B.
      b. Bridgeport Fittings, LLC.
      c. Emerson Electric Co; O-Z/Gedney.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.

2.6 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International
   2. Electri-Flex Company.
   3. International Metal Hose.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
   1. Manufacturers:

a. ABB; T&B.
b. Bridgeport Fittings, LLC.
c. Emerson Electric Co; O-Z/Gedney.

2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.

2.7 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
1. Allied Tube & Conduit, a division of Atkore International.
2. Nucor Tubular Products.
3. Rymco USA.
4. Western Tube, a division of Zekelman Industries.
5. Wheatland Tube, a division of Zekelman Industries.

B. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
1. Manufacturers:
a. ABB; T&B.
b. Allied Tube & Conduit, a division of Atkore International.
c. Emerson Electric Co; O-Z/Gedney.
2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use compression/gland or set-screw type.
a. Do not use indenter type connectors and couplings.

2.8 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Manufacturers:
1. ABB; Carlon.
2. Allied Tube & Conduit, a division of Atkore International.
3. Cantex Inc.
4. Heritage Plastics, a division of Atkore International.
5. JM Eagle.

B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

C. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.9 LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC)

A. Manufacturers:
   1. AFC Cable Systems, a division of Atkore International: www.afcweb.com/#sle.
   2. Electri-Flex Company: www.electriflex.com/#sle.
   3. IPEX, a division of Aliaxis: www.ipexna.com/#sle.

B. Description: NFPA 70, Type LFNC liquidtight flexible nonmetallic conduit listed and labeled as complying with UL 1660.

C. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B; suitable for type of conduit to be connected.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install intermediate metal conduit (IMC) in accordance with NECA 101.

E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

F. Install liquidtight flexible nonmetallic conduit (LFNC) in accordance with NECA 111.

G. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. Conceal conduits unless specifically indicated to be exposed.
   3. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
   4. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
   5. Arrange conduit to maintain adequate headroom, clearances, and access.
   6. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
   7. Arrange conduit to provide no more than 150 feet between pull points.
   8. Route conduits above water and drain piping where possible.
   9. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
   10. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
      a. Heaters.
      b. Hot water piping.
      c. Flues.
   11. Group parallel conduits in same area on common rack.

H. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 05 29.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
   4. Use conduit strap to support single surface-mounted conduit.
      a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
   5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
   6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
   7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
   8. Use of spring steel conduit clips for support of conduits is not permitted.
      a. Support of electrical metallic tubing (EMT) up to 1-inch (27 mm) trade size concealed above accessible ceilings and within hollow stud walls.

I. Connections and Terminations:

1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
7. Secure joints and connections to provide mechanical strength and electrical continuity.

J. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
7. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 84 00.

K. Underground Installation:
1. Minimum Cover, Unless Otherwise Indicated or Required:
a. Underground, Exterior: 24 inches.
b. Under Slab on Grade: 12 inches to bottom of slab.
2. Provide underground warning tape along entire conduit length for service entrance where not concrete-encased; see Section 26 05 53.

L. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
3. Where conduits are subject to earth movement by settlement or frost.

M. Conduit Sealing:

1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
   a. Where conduits enter building from outside.
   b. Where service conduits enter building from underground distribution system.
   c. Where conduits enter building from underground.
   d. Where conduits may transport moisture to contact live parts.
2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
   a. Where conduits pass from outdoors into conditioned interior spaces.
   b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

N. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

O. Provide grounding and bonding; see Section 26 05 26.

P. Identify conduits; see Section 26 05 53.

3.3 FIELD QUALITY CONTROL

A. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

B. Correct deficiencies and replace damaged or defective conduits.

3.4 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.5 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION 26 05 33.13

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.2 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

PART 2 PRODUCTS

2.1 IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Switchboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location.
         4) Use identification nameplate to identify load(s) served for each branch device.
      b. Panelboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location.
         4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
         5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
         6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device.
      c. Transformers:
         1) Identify kVA rating.
         2) Identify voltage and phase for primary and secondary.

3) Identify power source and circuit number. Include location.

d. Enclosed switches, circuit breakers, and motor controllers:
   1) Identify voltage and phase.
   2) Identify power source and circuit number. Include location.

e. Transfer Switches:
   1) Identify voltage and phase.
   2) Identify power source and circuit number for both normal power source and standby power source. Include location.
   3) Identify short circuit current rating based on the specific overcurrent protective device type and settings protecting the transfer switch.

2. Service Equipment:
   a. Use identification nameplate to identify each service disconnecting means.
   b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format and descriptions with authority having jurisdiction.
3. Emergency System Equipment:
   a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
   b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
4. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
   a. Service equipment.
   b. Industrial control panels.
   c. Motor control centers.
   d. Elevator control panels.
   e. Industrial machinery.

B. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

2.2 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
   1. Materials:
   2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.

3. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
4. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
a. Use only for indoor locations.
2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend:
a. Equipment designation or other approved description.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height:
a. System Designation: 1 inch.
b. Equipment Designation: 1/2 inch.
c. Other Information: 1/4 inch.
d. Exception: Provide minimum text height of 1 inch for equipment located more than 10 feet above floor or working platform.
5. Color:
a. Normal Power System: White text on black background.
b. Emergency Power System: White text on red background.

2.3 VOLTAGE MARKERS

A. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.

B. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
4. Markers for Junction Boxes: 1/2 by 2 1/4 inches.

C. Legend:
1. Markers for Voltage Identification: Highest voltage present.
2. Markers for System Identification:
a. Emergency Power System: Text "EMERGENCY".
b. Other Systems: Type of service.

D. Color: Black text on orange background unless otherwise indicated.

2.4 WARNING SIGNS AND LABELS

A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

B. Warning Signs:
   1. Materials:
      a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
   2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
   3. Minimum Size: 7 by 10 inches unless otherwise indicated.

C. Warning Labels:
   1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
   2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
   3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   1. Surface-Mounted Equipment: Enclosure front.
   2. Flush-Mounted Equipment: Inside of equipment door.
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Branch Devices: Adjacent to device.
   6. Interior Components: Legible from the point of access.
   7. Boxes: Outside face of cover.
   8. Conductors and Cables: Legible from the point of access.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Secure rigid signs using stainless steel screws.

G. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION 26 05 53

SECTION 26 05 83 - WIRING CONNECTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Electrical connections to equipment.

1.2 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.

B. Section 26 05 33.13 - Conduit for Electrical Systems.

C. Section 26 05 33.16 - Boxes for Electrical Systems.

D. Section 26 27 26 - Wiring Devices.

1.3 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

A. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

1.5 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Comply with NEMA WD 1.

2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Disconnect Switches: As specified in Section 26 28 16.16 and in individual equipment sections.

C. Wiring Devices: As specified in Section 26 27 26.

D. Flexible Conduit: As specified in Section 26 05 33.13.

E. Wire and Cable: As specified in Section 26 05 19.

F. Boxes: As specified in Section 26 05 33.16.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.2 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION 26 05 83

SECTION 26 33 53 - STATIC UNINTERRUPTIBLE POWER SUPPLY

PART 2 PRODUCTS

1.1 STATIC UPS SYSTEM

A. General Requirements:
   1. Provide microprocessor-based, solid-state, static UPS system. Include sensors, wiring, and connections necessary for functions indicated.
   2. Provide products listed, classified, and labeled as suitable for the purpose intended.
   3. Enclosures:
      a. NEMA EN 10250 Environment Type, Unless Otherwise Indicated:
         1) Indoor Clean, Dry Locations: Type 1.
      b. Power Distribution Cabinet Color: Manufacturer's standard.
      c. Hinged Access Doors: Lockable, with locks keyed alike for each piece of equipment.
      d. Distribution equipment interior components provided prelabelled from manufacturer, coordinated with project-specific wiring diagrams.
   4. Designed for concrete pad mounting.

B. Electrical Ratings:
   1. AC Voltage:
      a. Input, Three-Phase Plus Ground: 480 V.
      b. Output, Three-Phase Plus Ground: 480 V.
   2. Input/Output Frequency: 60 Hz.
   3. Total System Nominal Power Rating:
      a. Continuous, kVA/kW: As indicated on drawings.
      b. Service Conditions: Provide UPS system and associated components suitable for operation under service conditions at installed location.
      c. Increase indicated power ratings as required to accommodate applicable load restrictions.
   4. Short Circuit Current Rating: Provide UPS assemblies with listed short circuit current rating not less than available fault current at installed location.

C. System Arrangement and Power Configuration:
   1. UPS Power Redundancy Method: None; stand-alone UPS.
   2. Static Bypass: One per UPS.

D. Source Input Power:
   1. Inverter: Solidly grounded, wye utility source.

E. DC-Link:
   1. Energy Source Type: Lithium-ion batteries.
      a. NFPA 70; Stationary Standby Batteries.

b. Battery Form Factor:

2. Comply with UL 1973.
3. Ampere-Hour Rating: Sufficient to supply DC to inverter for outage period specified, with inverter operating at full rated output.
4. Battery Monitoring: Basic; string level.
5. OCPDs: Provide with DC rated, position local or remote control or monitoring, and under voltage (UV) trip.
6. UPS and DC-Link Energy Source Connection: Remote from UPS, requiring DC ground fault protection.
7. Control Power, When Required: Provide from UPS branch circuits.
8. Include insulated protective guards on terminals; no exposed terminations.

F. Communications Capability:

1. Provide network cards compatible with system indicated. Provide accessories necessary for proper interface.
2. Remote monitoring capability via ethernet and web interface.
3. Interface with BAS/BMS.

1.2 ONLINE STATIC UPS AND RELATED EQUIPMENT

A. Description: Online type static UPS with no transfer time to DC-Link backup power source upon loss of normal power source. Accomplishes power switching using semiconductor devices without use of continuous moving parts or electron tubes. Construct equipment so that each power component can be replaced without soldering iron or special tools.

B. Design Standards: IEEE 519 and NEMA PE 1.

C. UPS and related equipment listed and labeled UL 1778, as complete system.

D. UPS Type:

E. UPS Components:

1. General Requirements:
2. Inverter:
   a. Technology: Pulse width modulation (PWM) with minimum 3-level IGBT/SiC.
3. Static Bypass:
   a. Technology: Pulse width modulation (PWM) with minimum 6-pulse SCR.
   b. Duty Rating:
   c. Load Transfer Time to DC-Link: Upon loss of normal power source, maximum 1/4 seconds; suitable for operation of lighting, and computer loads.
   d. Backfeed protection internal to UPS or supplied external from UPS.
      1) Comply with NEMA PE 1.
4. DC-Link:
   a. Provide energy source compatible with UPS listing.

1) Lithium-Ion Energy Storage: UPS listed in accordance with UL 1973, UL 9540, and UL 9540A.

b. DC Ground Fault Protection: Comply with UL 1778 based on UPS and DC-Link energy source configuration.
1) Protection, device trip; based on power system study determined and installed settings.

c. Provide charger or circuits for maintaining energy source charge.

d. Provide dedicated energy source, batteries or flywheels as indicated, per UPS.

5. Charger:
a. Temperature compensated.
b. Capable of returning supplied DC-Link from fully discharged to fully charged condition within time in accordance with NFPA 111 unless otherwise indicated.
c. Provide automatic low-voltage battery disconnect to prevent battery deep discharge damage.

6. Rectifier:
a. Technology: Pulse width modulation (PWM) with minimum 6-pulse SCR.

7. User Control:
a. Graphical touchscreen HMI interface with on-screen instructions and showing visual mimic bus, power flow, and maintenance data.
b. Include self-testing and self-diagnostics capability.
c. Include event log.

8. Include monitors, sensors, and control circuits.

9. Cabinets:
a. Front-only accessible.

10. Source Inputs:
a. OCPD Type: Thermal magnetic.
b. Trip Rating: Install settings in accordance with power system studies.
c. Minimum Features:
1) Shunt trip.
2) Auxiliary contacts.

11. Load Distribution: Integrated branch distribution.

12. Load Circuits:
a. OCPD Type: Thermal magnetic.
b. Trip Rating: Install settings in accordance with power system studies.
c. Minimum Features:
1) Shunt trip.
2) Auxiliary contacts.
d. Output Circuit Breakers: As indicated on drawings.
e. Monitoring:
1) Contact for power on status.
2) Contact for alarm condition.
3) Contact for maintenance bypass switch status.

13. UPS Features:

a. Supports parallel UPS configuration.
b. Cooling Method: Design utilizes forced-air.
c. Equip air inlet with permanent type filters and pressurize cabinet, or use gaskets around door and panel openings to prevent entry of dirt.
d. Includes local EPO with cover.
e. Minimum Monitoring Outputs:
    1) Contact for power on status.
    2) Contacts for power source status (e.g., primary/normal or DC-Link).
    3) Contact for alarm condition.
    4) Contact for maintenance bypass switch status.
f. Configurable by remote monitoring and control using computer-based software.
g. Capable of modes of operation as specified in SOO.

14. System Performance Characteristics:
    a. Comply with ANSI C84.1 voltage ratings for 60 Hz electrical power systems and equipment.
    b. Comply with IEC 62040-1, IEC 62040-2, and IEC 62040-3.
    c. Heat Dissipation at Nominal Output Load:
    d. Maximum Altitude Above Sea-Level Without Derating: 3,280 feet.
    e. Operating Temperature: 32 degrees F to 104 degrees F.
    f. Surge Tolerance: Capable of withstanding characteristic surges according to IEEE C62.41.2, location Category B.
    g. Input:
        1) Voltage Range: Plus 10/minus 15 percent of nominal.
        2) Frequency Range: Plus/minus 2.5 percent of nominal.
        3) THD: 10 percent maximum at full load.
        4) Power Factor Capability: From 0.74 to 1.0 lagging.
        5) Current Limit: Adjustable to maximum of 125 percent of that required to operate at full load with DC-Link on float charge.
        6) Current Walk-In Time: 25 to 100 percent in fifteen seconds.
    h. Output:
        1) Voltage Regulation: Plus/minus 3 percent of nominal.
        2) Frequency Range: Plus/minus 0.5 Hz.
        3) THD: 3 percent maximum for linear load.
        4) Load Power Factor Capability: From 0.8 lagging to 0.8 leading.
        5) Phase Displacement:
            (a) 120 degrees plus/minus 1 degree for balanced loads.
            (b) 120 degrees plus/minus 4 degrees for 50 percent unbalanced loads.
            (c) 120 degrees plus/minus ____ degrees for _____.
        6) Three-Phase Overload Ratings:
            (a) 1,000 percent for 5 cycles; via static switch.
            (b) 150 percent for 10 seconds.
            (c) 125 percent for 10 minutes.

7) Output Current Limit: 150 percent of rated output current.
8) Voltage Unbalance: 3 percent maximum line-line with 100 percent load unbalance.

i. Efficiency:
1) Complying with NEMA PE 1 for permitted allowances to be deducted.
2) Measure efficiency of unit, including DC-Link energy source and isolation transformer losses.
3) Online Mode: ____ percent at full load, ____ percent at ____ percent load.
4) Low Mode: ____ percent at full load, ____ percent at ____ percent load.

1.3 DC-LINK - LITHIUM-ION ENERGY STORAGE

A. General Requirements:
1. Comply with:
a. UL 1642.
b. UL 1778.
c. UL 1973 for battery modules and battery racks.
d. UL 9540.
e. UL 9540A.
f. 47 CFR 15, Class B.
2. Capable of parallel operation with other DC-Link sources for larger capacity.
3. Operational Temperature Ratings: 32 degrees F to 104 degrees F.

END OF SECTION 26 33 53

OLIVER GARAGE EMERGENCY BATTERY BACKUP MODERNIZATION

PITTSBURGH, PENNSYLVANIA

SEPTEMBER 11, 2025

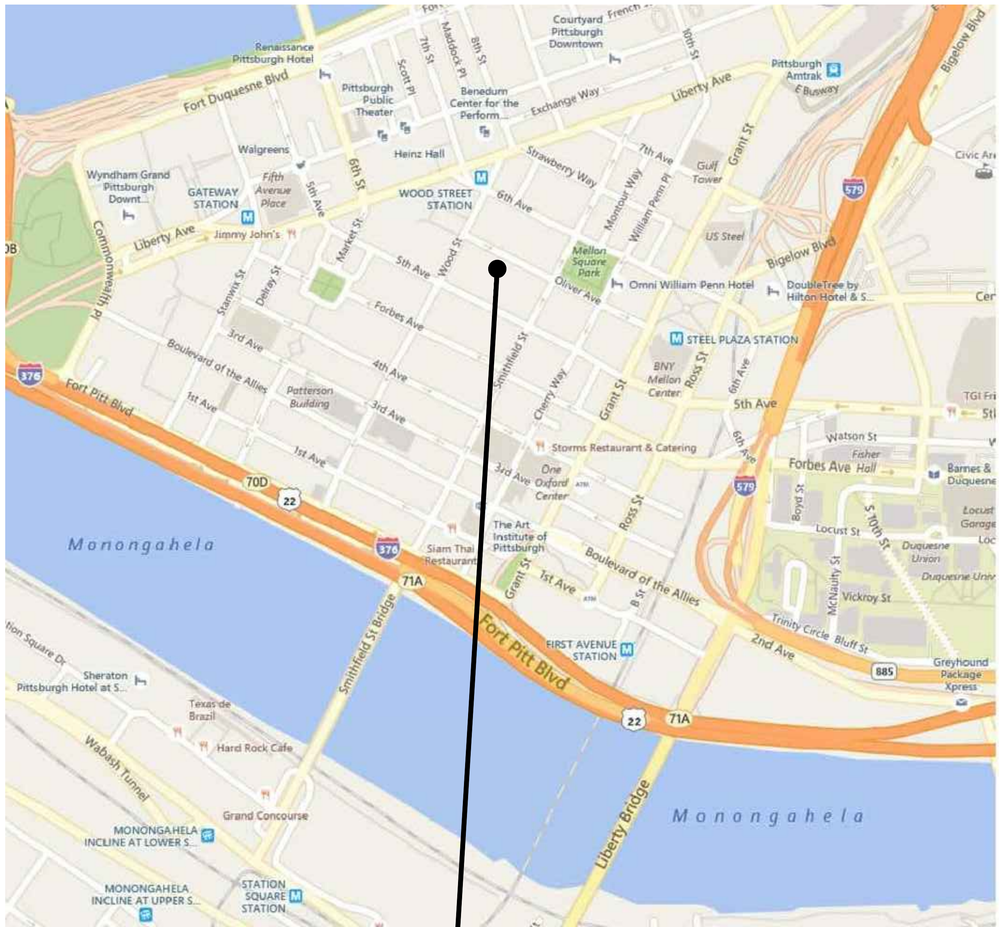
SCOPE OF WORK

NOTE: THIS IS A SUMMARY OF THE WORK AND MAY NOT INCLUDE ALL WORK ITEMS THAT THE CONTRACTOR WILL BE RESPONSIBLE FOR DURING THE PROJECT.

1. PROJECT MOBILIZATION & DEMOBILIZATION, INCLUDING ALL PERMITS AS REQUIRED.
2. IMPLEMENT REPAIRS IN A LOGICAL MANNER. THE CONTRACTOR SHALL SUBMIT PHASING PLANS TO THE OWNER AND ENGINEER FOR APPROVAL.
3. PERFORM ELECTRICAL UPGRADES AT LOCATIONS DESIGNATED ON THE DRAWINGS ACCORDING TO THE SPECIFICATIONS AND DETAILS.
4. DEMOBILIZE AND SWEEP CLEAN OR POWERWASH ALL AREAS AFFECTED BY THE WORK. THIS INCLUDES CLEANING ALL LIGHT FIXTURES, SIGNAGE, PARKING EQUIPMENT, STAIR TOWERS, ELEVATORS, EXHAUST EQUIPMENT, FIRE PROTECTION SYSTEM, ETC. THAT HAVE BEEN IMPACTED BY THE REPAIR PROCESS.

SHEET INDEX

LOCATION MAP



OLIVER GARAGE

DESMAN

OLIVER GARAGE EMERGENCY BATTERY BACKUP MODERNIZATION
PITTSBURGH, PENNSYLVANIA

ISSUE

NO.	DESCRIPTION	DATE

DRAWING TITLE:

COVER SHEET

DRAWING NO.

S0.00

SCALE:	NONE
DATE:	09/11/25
PROJECT NO :	51-22130

DES.	DRWN.	CK'D.
MWR	DJC	MWR

ELECTRICAL GENERAL NOTES:

GENERAL: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON THE ELECTRICAL DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

COORDINATION: COORDINATE AND COOPERATE WITH ALL TRADES ON THE PROJECT.

RECORD DRAWINGS: SECURE AN EXTRA SET OF ELECTRICAL DRAWINGS TO BE KEPT ON SITE AND MARK DAILY, THE DRAWINGS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED. THESE MARKED DRAWINGS SHALL REFLECT ANY AND ALL CHANGES AND REVISIONS TO THE ORIGINAL DESIGN WHICH EXISTS IN THE COMPLETED WORK. DELIVER THE MARKED DRAWINGS TO THE ARCHITECT OR ENGINEER AT PROJECT CLOSE-OUT.

TESTS: TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING #8 OR LARGER TO ENSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.

INSPECTIONS: ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE OWNER.

GROUNDING: PROVIDE GROUNDING IN ACCORDANCE WITH THE NEC FOR THE ELECTRICAL SYSTEM, INCLUDING EQUIPMENT FRAMES CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS AND OTHER EQUIPMENT. PROVIDE A GROUNDING CONDUCTOR IN ALL CIRCUITS.

LABELS: PROVIDE LABELS FOR ALL PANELBOARDS, CABINETS, SAFETY SWITCHES, MOTOR-DISCONNECT SWITCHES, AND MOTOR CONTROLLERS. LABELS SHALL BE MACHINE ENGRAVED, LAMINATED PLASTIC.

J-BOX LABELING: LABEL ALL JUNCTION BOXES WITH PERMANENT MARKER IDENTIFYING CIRCUIT NUMBER AND PANELBOARD OF CIRCUITS WITHIN.

PANEL DIRECTORY: PROVIDE TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD, INCLUDING EXISTING PANELBOARDS MODIFIED FOR THIS PROJECT, WITH CIRCUIT LOAD INFORMATION AND ROOM NUMBER CLEARLY IDENTIFIED. USE ACTUAL ROOM NUMBERS IN THE BUILDING, NOT THE ROOM NUMBERS SHOWN ON THE CONTRACT DRAWINGS, AS THEY ARE OFTEN DIFFERENT.

MOTOR COORDINATION: MOTORS, MOTOR STARTERS, CONTROLLERS, INTEGRAL DISCONNECT SWITCHES, AND CONTACTORS SHALL BE PROVIDED WITH THEIR RESPECTIVE PIECES OF EQUIPMENT BY THE EQUIPMENT SUPPLIER. COMMUNICATE WITH THE TRADES PROVIDING THE EQUIPMENT, VERIFYING ALL REQUIREMENTS. PROVIDE ALL ELECTRICAL CONNECTIONS REQUIRED THEREIN AND INSTALL MOTOR STARTERS.

MOTOR DISCONNECTS: ALL MOTORS SHALL HAVE DISCONNECTING MEANS.

MOTOR FUSE PROTECTION: WHERE FUSE PROTECTION IS SPECIFICALLY REQUIRED BY THE EQUIPMENT MANUFACTURER, PROVIDE FUSIBLE SWITCHES IN LIEU OF NON-FUSIBLE SWITCHES OR FUSIBLE ENCLOSED CIRCUIT BREAKERS OR OTHER DEVICES INDICATED.

CONNECTION DETAILS: SECURE APPROVED SHOP DRAWINGS SHOWING WIRING DIAGRAMS, ROUGH-IN AND HOOK UP DETAILS FOR EQUIPMENT WHICH MUST BE CONNECTED ELECTRICALLY.

EQUIPMENT DETAILS: MECHANICAL EQUIPMENT WILL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE LOCATIONS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE. COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE THE EXACT LOCATION OF EACH PIECE OF EQUIPMENT AND DETERMINE THE EXACT ROUGH-IN AND CONNECTION REQUIREMENTS.

STARTER MOUNTING: WHERE AN INDIVIDUALLY MOUNTED SAFETY SWITCH, STARTER OR CIRCUIT BREAKER IS SHOWN ADJACENT TO ITS RESPECTIVE LOAD AND NOT MOUNTED ON A WALL, PROVIDE ALL SUPPORTS, BRACKETS, ANCHORING, ETC. NECESSARY TO PROPERLY SUPPORT THE DEVICE.

LIGHTING ARRANGEMENT: ARRANGE LIGHTING FIXTURES IN ACCORDANCE WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

LIGHTING COORDINATION: COORDINATE LIGHTING FIXTURES WITH GRILLES, DIFFUSERS, SPRINKLER HEADS, ACCESS PANELS, ETC.

MATERIAL COORDINATION: VERIFY CEILING AND WALL CONSTRUCTION AND MATERIAL PRIOR TO ORDERING LIGHT FIXTURES OR OTHER DEVICES TO ENSURE PROPER FIXTURES OR DEVICES ARE FURNISHED TO MATCH CONSTRUCTION.

MOUNTING HEIGHTS: MOUNTING HEIGHTS INDICATED ARE FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE WIRING DEVICE UNLESS OTHERWISE NOTED. MOUNTING HEIGHTS OF LIGHTING FIXTURES AND FIRE ALARM DEVICES ARE TO THE BOTTOM OF THE FIXTURE OR DEVICE UNLESS OTHERWISE NOTED.

DEVICE LOCATIONS: COORDINATE LOCATIONS OF SWITCHES, RECEPTACLES, AND TELE/DATA OUTLETS WITH OTHER WALL MOUNTED DEVICES SUCH AS THERMOSTATS AND CONTROL STATIONS. DO NOT MOUNT WIRING DEVICES BACK TO BACK.

EWC RECEPTACLES: RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) SHALL BE INSTALLED OUT OF VIEW AND BEHIND THE EWC ENCLOSURE. VERIFY THE MOUNTING HEIGHT WITH THE EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.

DEVICE COORDINATION: THOROUGHLY REVIEW AND COORDINATE ALL CASEWORK, DOOR SWINGS, AND CABINET DRAWINGS AND ARCHITECTURAL ELEVATIONS WITH DEVICE LOCATIONS PRIOR TO ROUGH-IN OF OUTLET BOXES.

BARRIERS: WHERE A MULTIPLE GANG BOX HAS CIRCUITS OF DIFFERENT VOLTAGES OR SYSTEMS WHICH ARE REQUIRED TO BE SEPARATED, PROVIDE THE CODE-REQUIRED SEPARATION, USING A FULL HEIGHT AND DEPTH BARRIER PLATE.

FIRE PROOFING: FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE RATED STRUCTURES, PROVIDE FIRE-PROOFING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED. FIRE PROOFING FOR PENETRATIONS SHALL BE UL APPROVED PER THE THE PENETRATION MADE IN ORDER TO MAINTAIN FIRE RATED INTEGRITY OF THE STRUCTURE.

CLEAN UP: ON PROJECT CLOSE-OUT, CLEAN ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, LAMPS AND LENSES, AND REMOVE ALL PAINT SPATTERS FROM DEVICES, FIXTURES, AND PLATES. REPLACE ALL INOPERATIVE LAMPS.

OWNER FURNISHED EQUIPMENT: CONTRACTOR SHALL OBTAIN CUT SHEETS, INSTALLATION DATA, AND ROUGH-IN REQUIREMENTS FOR OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT AND COORDINATE ROUGH-IN AND POWER REQUIREMENTS WITH THE OWNER'S REPRESENTATIVE PRIOR TO STARTING ANY ASSOCIATED WORK.

CONDUIT ROUTING: ALL CONDUIT RUN OVERHEAD SHALL BE RUN AT THE BOTTOM OF THE FLOOR, ROOF STRUCTURE, OR LOWEST CHORD OF JOIST SPACE (AS APPLICABLE) ABOVE IN ORDER TO AVOID CONFLICTS WITH OTHER TRADES.

WIRING DEVICES: ALL RECEPTACLES AND SWITCHES SHALL BE LABELED WITH CLEAR PLASTIC LAMINATED LABEL WITH BLACK TEXT, NOTING PANELBOARD DESIGNATION AND CIRCUIT NUMBER FROM WHICH IT IS FED.

EQUIPMENT DEMONSTRATION: PROVIDE A DEMONSTRATION OF THE OPERATION OF ALL ELECTRICAL COMPONENTS.

CEILING AND MECHANICAL ROOM PLENUM: ALL WIRING THAT WILL NOT BE RUN IN METAL CONDUIT SHALL BE PLENUM RATED.

ELECTRICAL DEMOLITION GENERAL NOTES:

GENERAL: DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION. VISIT THE EXISTING BUILDING PRIOR TO BID IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND IN ORDER TO AVOID CONFLICTS.

DASHED ITEMS: ALL ITEMS SHOWN DASHED ON DEMOLITION PLANS ARE EXISTING AND SHALL BE REMOVED COMPLETE INCLUDING BOXES, CONDUIT, WIRE, FASTENERS, AND ASSOCIATED APPURTENANCES UON.

SOLID ITEMS: ALL ITEMS SHOWN SOLID ON DEMOLITION PLANS ARE EXISTING TO REMAIN.

CIRCUITING TO REMAIN: WHERE AFFECTED BY NEW WORK, EXISTING CIRCUITING TO REMAIN SHALL BE REROUTED OR RECONNECTED AS REQUIRED, IN ORDER TO MAINTAIN CONTINUITY OF CIRCUIT.

REUSE OF EXISTING CIRCUITRY: EXISTING CIRCUITS SHALL BE REUSED WHERE CONVENIENT TO SERVE THE NEW LAYOUT. PROVIDE CIRCUIT MODIFICATIONS INDICATED OR REQUIRED TO MAINTAIN CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.

EXISTING CONDUIT: ALL EXISTING CONDUITS AND WIRING THAT WILL NOT BE REUSED SHALL BE REMOVED. EXISTING CONDUIT TO REMAIN CONCEALED IN WALLS SHALL BE ABANDONED. EXISTING CONDUIT TO REMAIN BELOW FLOOR SLAB SHALL BE CUT OFF ONE INCH BELOW ROUGH FLOOR AND GROUTED FLUSH. ALL EXISTING WIRING IN CONDUITS TO BE ABANDONED SHALL BE DISCONNECTED FROM POWER SOURCE AND REMOVED.

REPAIR DAMAGE: EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.

ASSOCIATED APPURTENANCES: REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, ETC.) ASSOCIATED WITH EQUIPMENT TO BE REMOVED BY OTHERS.

KNOCKOUT PLUGS AND COVERS: ALL CONDUIT REMOVED SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, ETC. PROVIDE CONDUIT PLUGS AND BLANKS FOR ALL OPENINGS CREATED BY THE REMOVAL OF CONDUIT. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF THE EQUIPMENT AND/OR DEVICES.

DEMOLISHED MATERIALS: ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.

SCHEDULE OUTAGES: ALL WORK AND ALL POWER OUTAGES SHALL BE SCHEDULED AT TIMES CONVENIENT TO THE OWNER.

NOTIFICATION: NOTIFY THE OWNER PRIOR TO TURNING OFF ANY CIRCUITS.

EXISTING CIRCUITS: IF DURING THE COURSE OF CONSTRUCTION, IT IS DETERMINED BY THE CONTRACTOR THAT AN EXISTING CIRCUIT BECOMES SPARE, THE CONTRACTOR SHALL UPDATE THE PANELBOARD DIRECTORY TO INDICATE SUCH, EVEN IF IT IS NOT EXPLICITLY MARKED ON THE ELECTRICAL PLANS.

POWER DEVICES

	DUPLEX RECEPTACLE, 20A, 120V, 18"AFF, UON.
	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V, 18"AFF, UON.
	DUPLEX RECEPTACLE WITH ADDITIONAL ISOLATED GROUND WIRE, 20A, 120V, 18"AFF, UON.
	DUPLEX RECEPTACLE, 20A, 120V, 40"AFF OR 4" ABOVE COUNTER TOP OR IN CASEWORK (AS APPLICABLE), UON.
	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V, 40" AFF OR 4" ABOVE COUNTER TOP OR IN CASEWORK (AS APPLICABLE), UON.
	(2) DUPLEX RECEPTACLES IN COMMON BOX, 20A, 120V, 18"AFF, UON.
WP	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTING TYPE, 20A, 120V, WITH LOCKABLE, METALLIC "WHILE-IN-USE" WEATHERPROOF COVER, 18"AFG UON.
EWC	ELECTRIC WATER COOLER CONNECTION, PROVIDE 20A, 120V GROUND FAULT INTERRUPTING TYPE DUPLEX RECEPTACLE. COORDINATE WITH EWC MANUFACTURER'S ROUGH-IN REQUIREMENTS. RECEPTACLE SHALL BE ACCESSIBLE THROUGH REMOVAL OF EWC COVER.
	DUPLEX RECEPTACLE, 20A, 120V, 18"AFF, UON. TOP OUTLET SHALL BE CONNECTED TO LOCAL SWITCH.
	FLOORBOX WITH DUPLEX RECEPTACLE. COORDINATE EXACT LOCATION IN FIELD WITH IN-FLOOR DISTRIBUTION SYSTEM.
	FLOORBOX WITH DUPLEX RECEPTACLE AND TELE/DATA. COORDINATE EXACT LOCATION IN FIELD WITH IN-FLOOR DISTRIBUTION SYSTEM.
	RECESSED FLUSH MOUNTED MULTIPLE SERVICE POKE THROUGH FOR POWER, TELE/DATA, AND AV (WHERE INDICATED). CONFIRM REQUIRED TELE/DATA AND AV DEVICES WITH CLIENT'S VENDOR AND AV DRAWINGS. PROVIDE (1)3/4"C FOR POWER AND (1)1-1/2"C FOR TELE/DATA TO ABOVE ACCESSIBLE CEILING ON THE FLOOR BELOW. FINISH TO BE VERIFIED BY ARCHITECT.
TV	CABLE TELEVISION OUTLET WITH DUPLEX RECEPTACLE, EQUAL TO ARLINGTON TVBS505 BOX. PROVIDE DUPLEX RECEPTACLE AND 3/4"C WITH PULL STRING STUBBED ABOVE ACCESSIBLE CEILING AND TERMINATED WITH BUSHING.
	SPECIAL RECEPTACLE. NEMA CONFIGURATION AS NOTED. MOUNT 18"AFF UON.
J	JUNCTION BOX - ABOVE CEILINGS OR FLUSH IN WALLS.
	ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.

POWER EQUIPMENT

MGB	MAIN GROUND BAR
TMGB	TELECOM MAIN GROUND BAR
GB	GROUND BAR
	DISCONNECT SWITCH - SIZE AS INDICATED ON PLANS 30/2/20/3R — NEMA RATING (IF OTHER THAN 1) FUSE SIZE (AMPS), N.F. INDICATES NON-FUSED No. OF POLES SIZE (AMPS)
$M	HORSEPOWER RATED MOTOR SWITCH
M	EMON DMON METER. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.
SPD	SURGE PROTECTIVE DEVICE
	ELECTRICAL METER. MOUNT 54" AFF (MINIMUM).
	208/120V ELECTRICAL PANELBOARD
	480/277V ELECTRICAL PANELBOARD
	DRY-TYPE TRANSFORMER

ELECTRICAL ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CURRENT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO/VISUAL
BFG	BELOW FINISHED GRADE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING
FLA	FULL LOAD AMPS
FPC	FIRE PROTECTION CONTRACTOR
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HP	HORSE POWER / HEAT PUMP
IG	ISOLATED GROUND
JB	JUNCTION BOX
KVA	KILO-VOLT AMPERE
KW	KILO-WATT
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPACITY
MC	MECHANICAL CONTRACTOR
MC	METAL CLAD
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
P	POLE
PC	PLUMBING CONTRACTOR
PNL	PANEL
Ø	PHASE
REC	RECEPTACLE
RTU	ROOF TOP UNIT
SE	SERVICE ENTRANCE
TBB	TELEPHONE BACKBOARD
TR	TAMPER RESISTANT
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
W	WATTS / WIRE
WP	WEATHERPROOF

APPLICABLE CODES

THE INTERNATIONAL ENERGY CONSERVATION CODE(IECC)	2018
THE INTERNATIONAL BUILDING CODE (IBC)	2018
NATIONAL ELECTRIC CODE (NFPA 70)	2017

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PROJECT NAME

REPAIR AND PREVENTATIVE MAINTENANCE
OLIVER PARKING GARAGE UPS EMERGENCY
BACK-UP SYSTEM
PITTSBURGH, PENNSYLVANIA

SEAL

NO.	DATE	REVISIONS/ADDENDUMS

DESIGNED:	RJL
DRAWN:	RJL
CHECKED:	DEB
DATE:	08-01-2025
SCALE:	AS SHOWN

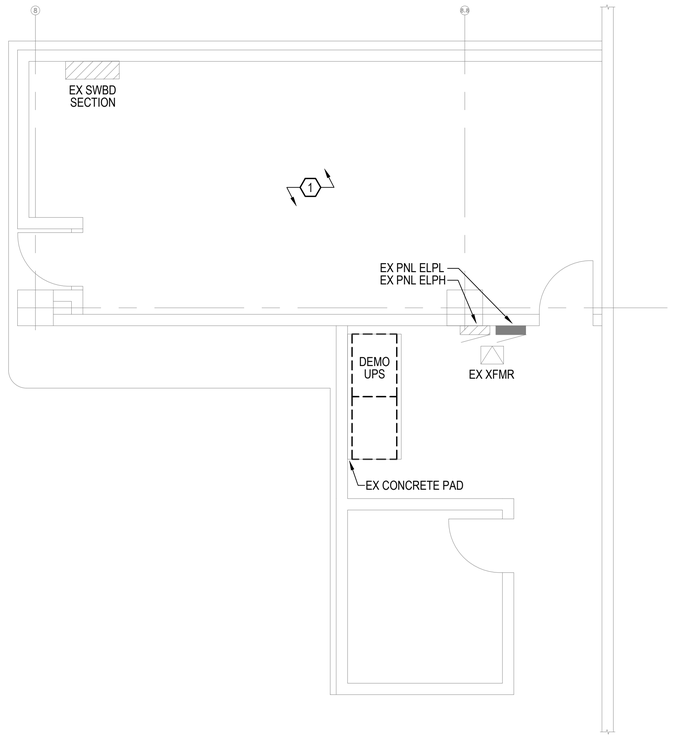
DRAWING TITLE

ELECTRICAL DATA SHEET

DRAWING NUMBER

E001

PROJECT NUMBER: 2441078



1 / E101 First Floor Electrical Demolition Plan
1/4" = 1'-0"

ELECTRICAL DEMOLITION GENERAL NOTES:

1. ELECTRICAL DISTRIBUTION EQUIPMENT IS EXISTING TO REMAIN, UNLESS OTHERWISE NOTED.
2. FIXTURES AND DEVICES NOTED WITH "EX" ARE EXISTING TO REMAIN. MAINTAIN EXISTING CIRCUITRY UNLESS OTHERWISE NOTED ON NEW WORK PLANS.
3. ALL HOLES IN WALLS, COLUMN ENCLOSURES, CEILINGS AND FLOORS FROM CONDUIT PENETRATIONS, JUNCTION BOXES, OR WIRING DEVICES SHALL BE PATCHED AND PAINTED PER THE ARCHITECT. RATED PARTITIONS SHALL BE FIREPROOFED TO MAINTAIN THE EXISTING FIRE RATING.

ELECTRICAL DEMOLITION KEY NOTES: (#)

1. THE FULL EXTENT OF ELECTRICAL DISTRIBUTION EQUIPMENT IN THIS ROOM IS NOT SHOWN. ONLY EQUIPMENT THAT SHALL BE MODIFIED AND OR ADDED UNDER THIS SCOPE HAS BEEN INCLUDED.

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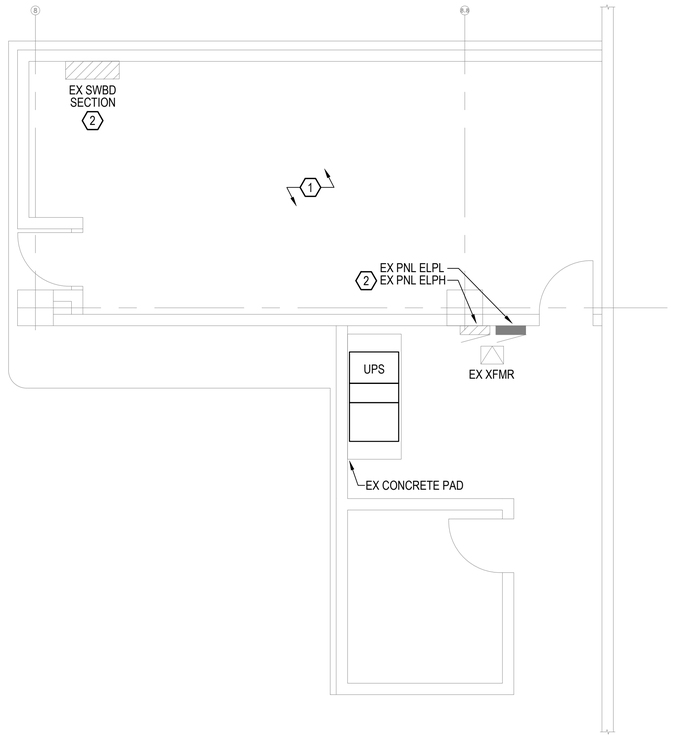
DRAWING TITLE
FIRST FLOOR
ELECTRICAL
DEMOLITION PLAN

DRAWING NUMBER
E101

PROJECT NUMBER: 2441078



1 / E201 First Floor Electrical Plan
1/4" = 1'-0"

ELECTRICAL GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN RMC CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, EMT CONDUIT IS PERMISSIBLE.

ELECTRICAL KEY NOTES: (#)

1. THE FULL EXTENT OF ELECTRICAL DISTRIBUTION EQUIPMENT IN THIS ROOM IS NOT SHOWN. ONLY EQUIPMENT THAT SHALL BE MODIFIED AND OR ADDED UNDER THIS SCOPE HAS BEEN INCLUDED.
2. REFER TO ELECTRICAL RISER DIAGRAM 2/E601 FOR INFORMATION ABOUT MODIFICATIONS TO EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.

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SEAL

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DAVID C. PRICE
Engineer
No. PE081572

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DRAWING TITLE
FIRST FLOOR
ELECTRICAL PLAN

DRAWING NUMBER
E201

PROJECT NUMBER: 2441078

ELECTRICAL DEMOLITION RISER DIAGRAM GENERAL NOTES:

1. THE FULL EXTENT OF THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM MAY NOT BE REPRESENTED ON THIS RISER DIAGRAM. ONLY PORTIONS THAT SHALL BE MODIFIED OR PROVIDED NEW UNDER THIS SCOPE HAVE BEEN INCLUDED.

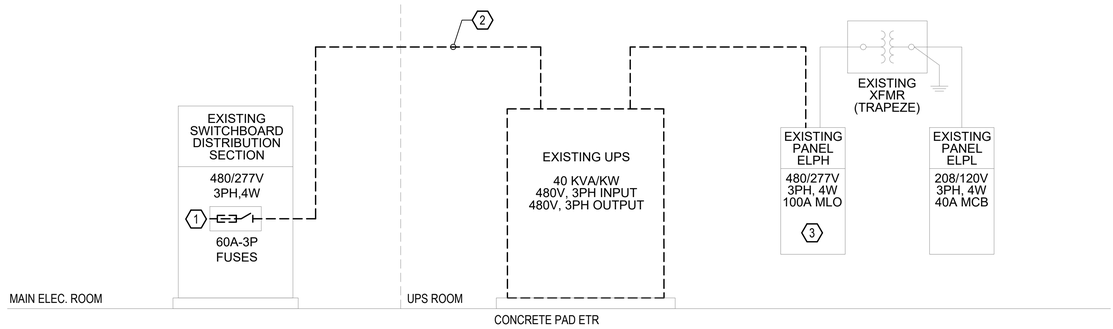
2. THE RISER DIAGRAM IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO SHOW SYSTEM CONNECTIVITY AND FEEDER SIZES. REFER TO POWER PLANS FOR EQUIPMENT LAYOUTS AND LOCATIONS. ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE SUBMITTED EQUIPMENT DIMENSIONS FIT WITHIN THE CORRESPONDING ELECTRICAL SPACE(S). ALL EQUIPMENT CLEARANCES AND MOUNTING HEIGHTS REQUIRED BY THE NEC SHALL BE MAINTAINED.

ELECTRICAL DEMOLITION RISER DIAGRAM KEY NOTES: ⟨#⟩

1. EXISTING 60A FUSED SWITCH IN THE SWITCHING COMPARTMENT SERVING PANEL ELPH SHALL BE DEMOLISHED FOR REPLACEMENT. FUSE COMPARTMENT IS EXISTING TO REMAIN. REFER TO ELECTRICAL RISER DIAGRAM 2/E601.

2. EXISTING FEEDER FROM SWITCHBOARD TO UPS SHALL BE DEMOLISHED FOR REPLACEMENT. CONDUIT PATHWAY MAY BE REUSED WHERE IT IS SIZED ADEQUATELY TO ACCOMMODATE THE NEW FEEDER.

3. PANELBOARD IS EXISTING TO REMAIN BUT SHALL BE MODIFIED TO INCLUDE A MAIN CIRCUIT BREAKER (MCB) UNDER THIS SCOPE. REMOVE EXISTING BLANK COVER OVER AT THE MCB LOCATION. REFER TO ELECTRICAL RISER DIAGRAM 2/E601.



1 E601 Electrical Demolition Riser Diagram
NOT TO SCALE

ELECTRICAL DEMOLITION RISER DIAGRAM GENERAL NOTES:

1. THE RISER DIAGRAM IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO SHOW SYSTEM CONNECTIVITY AND FEEDER SIZES. REFER TO POWER PLANS FOR EQUIPMENT LAYOUTS AND LOCATIONS. ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE SUBMITTED EQUIPMENT DIMENSIONS FIT WITHIN THE CORRESPONDING ELECTRICAL SPACE(S). ALL EQUIPMENT CLEARANCES AND MOUNTING HEIGHTS REQUIRED BY THE NEC SHALL BE MAINTAINED.

2. ELECTRICAL CONTRACTOR SHALL PROVIDE CONCRETE PADS FOR ALL ELECTRICAL EQUIPMENT REQUIRING A HOUSEKEEPING PAD. THIS INCLUDES GENERATORS, TRANSFORMERS, SWITCHBOARDS, LARGE DISTRIBUTION PANELS, ETC. ALL PADS SHALL BE PROVIDED PER THE EQUIPMENT SPECIFICATIONS.

3. EXPOSED CONDUIT SHALL BE RMC.

4. PROVIDE PULL BOXES WHERE REQUIRED PER NEC FOR CONDUIT BENDS.

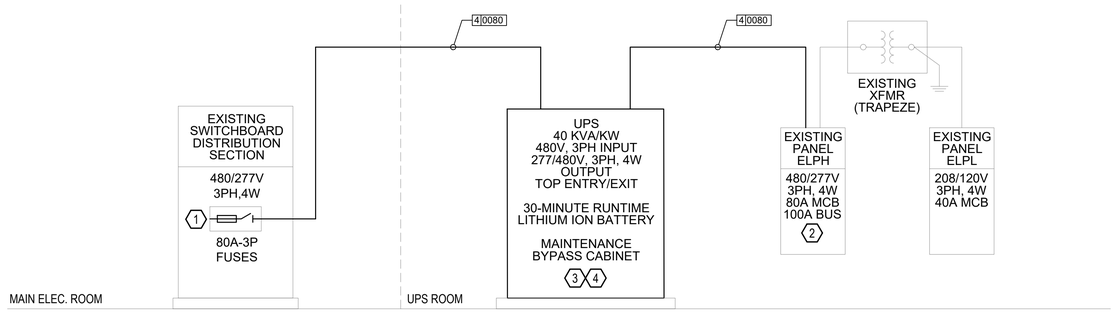
ELECTRICAL RISER DIAGRAM KEY NOTES: ⟨#⟩

1. PROVIDE 80A FUSED SWITCH IN THE EXISTING SWITCHING COMPARTMENT SERVING PANEL ELPH.

2. PROVIDE 80A-3P MAIN CIRCUIT BREAKER (MCB) IN EXISTING PANEL ELPH. NOTE THAT EXISTING PANEL WAS MAIN LUG ONLY (MLO). MCB SHALL BE MOUNTED IN EXISTING BREAKER COMPARTMENT.

3. EC SHALL PROVIDE DIESEL LOCOMOTIVE CABLE (DLO), SIZED PER THE EQUIPMENT SPECIFICATIONS, FOR CONNECTION OF THE BATTERY CABINET. NOTE THAT THIS CABLING IS SEPARATE FROM THE PRIMARY POWER INPUT AND OUTPUT FROM THE UPS. REFER TO THE WIRING DIAGRAMS IN THE EQUIPMENT SPECIFICATIONS FOR THE FULL SCOPE OF WORK AND CONDUCTOR SIZES.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROL WIRING CONNECTIONS WITHIN THE UPS, WHERE REQUIRED, PER THE EQUIPMENT SPECIFICATIONS.



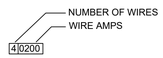
UPS BASIS OF DESIGN:
- UPS: APC MODEL #GVUPS40KFS
- BATTERY: LIBSESMG13UL
- BYPASS: GVSBPSU80G

2 E601 Electrical Riser Diagram
NOT TO SCALE

COPPER FEEDER SCHEDULE:

FEEDER TAG	FEEDER AMPS	FEEDER
40080	80	4-#4, 1-#8 GND - 1 1/4"C

FEEDER TAG KEY:



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ELECTRICAL RISER DIAGRAMS

DRAWING NUMBER
E601

PROJECT NUMBER: 2441078