



Office of General Services

DESIGN & CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242

ADDENDUM NO. 4 TO PROJECT NO. 45604

CONSTRUCTION, HVAC, PLUMBING, AND ELECTRICAL WORK
REPLACE EXPANSION JOINTS, EAST & WEST ARTERIAL
ROADWAYS
EMPIRE STATE PLAZA
ALBANY, NY 12242

October 25, 2024

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.

BIDDING REQUIREMENTS – ELECTRICAL WORK

1. DOCUMENT 004143 ELECTRICAL WORK UNIT PRICE CONTRACTS BID FORM: Discard all previously issued versions of this Bid Form and use the accompanying Bid Form (pages 004143 – 1 thru 004143 – 5) noted “Revised 10/24/2024”.
Bidders that do not utilize the revised bid form included with this Addendum WILL BE DISQUALIFIED

CONTRACTING REQUIREMENTS – CONSTRUCTION WORK

2. SECTION 007306 SUPPLEMENTARY CONDITIONS – WARRANTY EXTENSION: Discard the Section bound in the Project Manual and substitute the accompanying Section (page 007306 – 1) noted “Addendum #4; Revised 10/24/2024”.

CONTRACTING REQUIREMENTS – HVAC, PLUMBING AND ELECTRICAL WORK

3. SECTION 007306 SUPPLEMENTARY CONDITIONS – WARRANTY EXTENSION: Delete this section in its entirety.

GENERAL REQUIREMENTS – COMMON DOCUMENTS

4. SECTION 011000 SUMMARY OF THE WORK: Discard all previously issued versions and substitute the accompanying Section (pages 011000 – 1 thru 011000 – 8) noted “Addendum #4; Revised 10/24/2024”.

CONSTRUCTION WORK SPECIFICATIONS

5. SECTION 071400 LIQUID APPLIED WATERPROOFING SYSTEM: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 071400 – 1 thru 071400 – 5) noted “Addendum #4; Revised 10/24/2024”.

ELECTRICAL WORK SPECIFICATIONS

6. SECTION 260501 BASIC ELECTRICAL MATERIALS AND METHODS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 260501 – 1 thru 260501 – 24) noted “Addendum #4; Revised 10/24/2024”

GENERAL DRAWINGS

7. Revised Drawing:
 - a. Drawing No. G-010, noted “REVISED DRAWING 10/24/2024” accompanies this Addendum and supersedes the same numbered previously issued drawing.

ELECTRICAL WORK DRAWINGS

8. Revised Drawing:
 - b. Drawing No. E-001, noted “REVISED DRAWING 10/24/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.

END OF ADDENDUM

Brady Sherlock, P.E.
Director, Division of Design
Design & Construction

DETACH AND USE THIS FORM

BID FORM FOR: 45604-E

**ELECTRICAL WORK
REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS
EMPIRE STATE PLAZA
ALBANY, NY**

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 5 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN TEN (10) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at <https://ogs.ny.gov/acpl>.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

<https://ogs.ny.gov/iran-divestment-act-2012>

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes No

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion, or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, by submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes No and if yes:
2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

Yes No

(11) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that “all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia.” The complete text of Executive Order No. 16 can be found here: <https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting>

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an “entity conducting business operations in Russia” means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or which the commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

Addenda to the Contract Documents are available at:

<https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp>

The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

TOTAL BID

Unit Price Schedule Total (from appended Unit Price Schedule) \$.00

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)?

Yes No

MWBE Certification file No. _____

SIGN BID HERE _____
Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS _____
Street

_____ City State Zip

TELEPHONE NO. _____ FAX NO. _____
Area Code Area Code

E-MAIL ADDRESS _____

UNIT PRICE SCHEDULE FOLLOWS

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
01	012100.01	FIELD ORDER ALLOWANCE FOR CONTINGIENT ACTIVITIES WITHIN THE SCOPE OF THE CONTRACT	1	EACH	\$31,500	\$31,500
02	078400.01	FIRESTOPPING	1	SQUARE FOOT		
03	260501.01	ELECTRICAL BASE UNIT (EBU) -03 LIGHTING ½”-1”	18	EACH		
04	260501.02	ELECTRICAL BASE UNIT (EBU) -04 LIGHTING 1-1/4”-2”	7	EACH		
05	260501.03	ELECTRICAL BASE UNIT (EBU) -05 POWER ½” – 1”	12	EACH		
06	260501.04	ELECTRICAL BASE UNIT (EBU) -06 POWER 1-1/4” -2”	5	EACH		
07	260501.05	ELECTRICAL BASE UNIT (EBU) -07 POWER 3”-4”	2	EACH		
08	260501.06	ELECTRICAL BASE UNIT (EBU) -09 UNKNOWN UTILITY	16	EACH		
09	260501.07	ELECTRICAL BASE UNIT (EBU) -10 UNKNOWN UTILITY - HV	1	EACH		
10	260501.08	ELECTRICAL BASE UNIT (EBU) -11 NORTH TUBE LIGHTING REMOVAL	100	EACH		
11	260501.09	ELECTRICAL BASE UNIT (EBU) -12 NORTH TUBE LIGHTING INSTALLATION	40	EACH		
					UNIT PRICE SCHEDULE TOTAL:	

*Amount Bid = Estimated Quantity X Unit Bid Price

Federal Employer I.D. No.

Updated 6/1/2024

Printed 10/25/2024

Revised 10/24/2024

004143-5

Project No. 45604-E

DOCUMENT 007306

SUPPLEMENTARY CONDITIONS - WARRANTY EXTENSION

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provision of that part shall remain in effect.

ARTICLE 9 - INSPECTION AND ACCEPTANCE

9.8 Add the following sub-paragraph:

9.8.1 The one (1) year period required by Paragraph 9.8 of the General Conditions is extended and supplemented for part of the work as described in Section 071400 of the Specifications.

END OF DOCUMENT

SECTION 011000

SUMMARY OF THE WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The title and location of the Work is printed on the cover of this Project Manual.
- B. Type of Contract: Unit price.

1.02 RELATED CONTRACTS

- A. The Project consists of the following separate contracts:

Construction Work	Project No. 45604-C
HVAC Work	Project No. 45604-H
Plumbing Work	Project No. 45604-P
Electrical Work	Project No. 45604-E
- B. The suffix letter at the end of the project number distinguishes the separate Contracts. The Sections in Division 01 of the Specifications which have more than one suffix letter (such as this Section) are common to each related Contract.

1.03 SUBSTANTIAL AND PHYSICAL COMPLETION DATES

- A. Substantially complete the Work within 870 days after the Agreement is approved by the Comptroller.
 - 1. The time allocated for the performance of work under this contract includes 10 days for notification of the Contractor of the Comptroller's approval of the Agreement.
 - 2. The approval of the Agreement by the Comptroller constitutes the filing of the Contract Documents as a public record and notice to the Contractor that a fully executed contract exists between the Contractor and the State.
- B. Physically complete the Work within 90 days after the established Substantial Completion date.

1.04 CONTRACT AWARD SUBMITTALS

- A. Submittal No. 1: Submit the CONTRACTOR'S LIST OF SUBCONTRACTORS-SUPPLIERS information required in SCHEDULES AND RECORDS Article in Specification Section 013000 not later than 15 days after approval of the Contract by the Comptroller.
- B. Submittal No. 2: Submit Preliminary Project Schedule related information noted in 013113 Project Planning and Scheduling or 013200 Construction Progress Documentation, whichever section is applicable, within 15 days after approval of

the Contract by the Comptroller for review by the Director's Representative and OGS Scheduling.

- C. Submittal No. 3: Submit the Submittal Coordinator Qualifications not later than 10 days after Award. Include resume and references, and other certification, licenses, or other requested information.

1.05 RESTRICTED WORK HOURS

- A. Construction Work Contract:
 - 1. All work on the Roadway Level of the Arterial Highway to and from Column Lines S3-S2, and N2-N3 to be completed during the following hours:
 - a. 7:00 AM - 3:00 PM, Monday through Friday.
 - b. The Work Zone Traffic Control drawing (WZTN-01) indicates work being completed during off-peak traffic hours. The off-peak traffic hours are defined as 9:00 am – 3:00 pm, Monday through Friday.
 - c. Work during off-peak hours will be required during the slab scope of work by Swan Street. The work must be coordinated with the Director's Representative. The off-peak hours are defined as 9:00 pm – 4:00 am, Monday night through Friday morning. All construction debris and/or equipment must be removed from this area by 5:00 am.
 - d. Construction of this project will require sequencing:
 - 1.) When work is occurring on the West Arterial Roadway:
 - a.) One (1) lane of the West Bound Arterial Roadway will be open to allow parking access to P1 Parking Level, P2 Parking Level, and the Visitor Parking Level.
 - b.) One (1) lane through the North tube will be open for west bound through traffic.
 - c.) Both lanes of the East Bound Arterial will be open.
 - 2.) When work is occurring on the East Arterial Roadway:
 - a.) Both lanes of the West Bound Arterial Roadway will be open.
 - b.) One (1) lane of the East Bound Arterial Roadway will be open to allow access to the P3 Parking Level, P2 Parking Level, P1 Parking Level, and the P1 South Access Road to Madison Ave.
 - c.) One (1) lane through the North tube will be open for east bound through traffic.
 - 3.) Refer to the required traffic controls as specified under Specification Section 015526. This will allow entrance and exit to and from the parking levels.
 - e. There will be one lane of traffic open in the north tube with the required traffic controls as required under Specification Section 015526. This will allow thru-traffic to use the roadway.
 - f. If work is to be completed on Saturday or Sunday, the hours for construction work is to be established by the facility thru the

Director's Representative. All of the same traffic controls are to be adhered to.

2. All other work in all Contracts (not affected by the actual expansion joint repairs on the roadway level) to be completed during standard hours of operation.
 - A. Plumbing Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
 - B. HVAC Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
 - C. Electrical Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
 - E. All Contracts – North Tube Temporary Roadway Renovation:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.

1.06 RESTRICTED WORK PERIOD

- A. HVAC Work Contract: Do not perform Work requiring shut off of active heating piping and equipment on or after October 15th and up to, but not including May 1st unless approved otherwise, in writing, by the Director's Representative.
- B. Construction Work Contract: Do not perform the waterproofing and related work on or after December 1st and up to, but not including April 1st, unless approved otherwise, in writing, by the Director's Representative. During this period, clear the work area of materials, equipment, and debris.
- C. Construction Work Contract: Do not perform the asphalt paving work on or after November 15th and up to, but not including April 15th, unless approved otherwise, in writing, by the Director's Representative. During this period, leave the disturbed areas stabilized for winter shutdown and clear the work area of materials, equipment, and debris.
- D. Construction Work Contract: Contractor to coordinate with the Director's Representative and the Department of Transportation (DOT) to identify the shutdown period for the temporary roadway during the DOT's snow and ice period.

1.07 ITEMS NOT INCLUDED

- A. The following items shown on the Drawings are not included in the Contract:
 1. Items indicated "NIC" (Not in Contract).
 2. Existing construction, except where such construction is to be removed, replaced, or altered.

1.08 CONFINED SPACE

- A. Comply with confined space and permit-required confined space as defined in Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).
- B. Comply with Safety Requirements for Confined Spaces (ANSI/ASSE Z117.1-2009).
- C. All spaces shall be treated as permit-required confined spaces until the Contractor and/or subcontractors are able to re-classify the space to a non-permit confined space as per 29CFR 1910.146 and ANSI/ASSE Z117.1-2009.
- D. Indicated confined spaces are not intended to limit or define Contractor's or subcontractors' regulatory compliance requirements. In addition to confined spaces indicated on the drawings, other confined spaces may be present or created by the work of this contract. Notify the Director's Representative, in writing, of confined spaces created or eliminated during execution of the Work.
- E. For the purpose of inspecting ongoing work, furnish at no additional cost to the State, personnel, as directed, to allow the Director's Representative to enter confined space and permit-required confined space in compliance with Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).

1.09 OCCUPANCY

- A. This is an occupied Facility. The building will be occupied and operational during execution of the Work. Ingress to and egress from the building shall be maintained at all times.

1.10 CONNECTION TO ELECTRICAL EQUIPMENT OR SYSTEMS

- A. Contractor will not be allowed to tie into electrical equipment or systems until the Division of Utilities Management has reviewed and approved the connection.
 - 1. Submit written procedures thru the Director's Representative to the Division of Utilities Management, detailing how the connection Work is proposed to be performed.
 - 2. After procedures have been approved, notify the Director's Representative at least 3 working days prior to the connection Work so that arrangements can be made to have a Division of Utilities Management Representative witness the Work.

1.11 CONTRACTOR USE OF PREMISES

- A. Work hours shall be as established by the Facility authorities thru the Director's Representative.
- B. Inform the Director's Representative of work area access requirements. The Director's Representative will coordinate and schedule the requirements with Facility staff to obtain and ensure timely availability of work areas.

- C. Check in with the Facility Representative, as directed, at the beginning of each workday. Furnish information regarding where employees will be working during the day.
- D. Comply with the Facility's Visitor Identification Policy. A copy of the current policy will be distributed at the initial job meeting.
- E. The following items are not allowed on the Site or on Facility premises.
 - 1. Firearms, ammunition, weapons, and dangerous instruments (other than tools required for the Work).
 - 2. Alcoholic beverages and persons under the influence of same.
 - 3. Cannabis and persons under the influence of same. Cannabis, as used herein shall refer to any form of cannabis that has psychoactive properties.
 - 4. Illegal controlled substances and persons under the influence of same.
 - 5. Cameras (except with written permission from the Director's Representative).
- F. Comply with Facility policies relating to smoking at the Site.
 - 1. Empire State Plaza Projects: No smoking is allowed within the contract limit line, Individuals observed smoking in non-designated areas will be removed from the site for the duration of the project.
- G. Routes of ingress and egress within the building to the location of the Work shall be as directed by the Director's Representative.
- H. Store materials and perform the Work so that pedestrian and vehicular traffic is not obstructed.
- I. Do not diminish the level of life safety during performance of the Work.
- J. Remove furniture and portable equipment which interferes with the execution of the Work and store where directed. Reset such items when directed.
- K. Utility Outages and Shutdowns: Do not interrupt utility services or branch services within the building except for the time required to make new connections. Arrange with the Director's Representative for the time and duration of interruptions of services. Provide temporary services required to maintain building services at all times other than during scheduled interruptions.
- L. Do not use existing elevators for the Work.
- M. Be responsible and accountable for employees, suppliers, subcontractors and their employees, with regard to their use of the premises. Direct them to comply with the Facility Regulations and with the security and traffic regulations.
- N. Furnish Facility authorities with a telephone number or method to contact the supervisor for the Work in case of an emergency after work hours, including weekends and holidays.

- O. Comply with applicable federal and State of New York Right-to-Know Law provisions. Provide Safety Data Sheets (SDS) documents for products that have SDS data prior to use on the project site.
 - 1. Upload and maintain electronic SDS documents on the Submittals Website (SDS tab).
 - 2. SDS tab is organized by prime contracts. To be readily identified, name products with SDS by specification section number and product name.
 - 3. Supply and maintain one hard copy of the appropriate SDS on the project site and one hard copy with the Facility's Right-to-Know Information Officer.

- P. Direct employees to be watchful for people in or near the work area where safety hazards may be present. Notify the Facility Safety/Security Department, if necessary, to remove them from the work area or Site.

- Q. Report fire and other emergency situations to the Facility Safety/Security Department immediately.

- R. Empire State Plaza Work Permits: Comply with facility requirements for Work Permits
 - 1. A weekly permit is required for all work
 - 2. Daily Permits are required for work that generates sparks, open flame or excessive heat, etc.
 - 3. Hot Work Permit are required a minimum of 24 hours in advance of the start of anticipated work,

1.12 OPENINGS AND CHASES IN NEW CONSTRUCTION

- A. Construction Work Contract:
 - 1. Unless specifically indicated otherwise, provide openings, chases, and similar items in new construction provided under this Contract, as required for items to be provided under related contracts.
 - 2. After the installation and completion of the items for which openings and chases have been provided, build in, over, around and finish the openings and chases to complete the Work.
 - 3. Provide all cutting, patching, and refinishing resulting from failure to provide the required openings and chases, if the necessary information was furnished by the related contractor before 24 hours of start of the applicable part of the Work.
 - 4. If related contractors fail to furnish drawings or written information covering the openings and chases they require in new construction at least 24 hours before installation of the Work affected by those items, the related contractors will be required to do all cutting, patching, and refinishing of the construction so affected, at their own expense.

- B. HVAC Work, Plumbing Work, and Electrical Work Contracts:
 - 1. Unless specifically indicated otherwise, furnish drawings or written information to the Construction Work Contractor covering the openings and chases required in new construction for the Work. If such information is not furnished at least 24 hours before start of the applicable part of the Construction Work Contractor's work, all

necessary cutting, patching, and refinishing will be included in the Contract at no additional cost to the State.

1.13 SPRAYED-ON FIREPROOFING FOR NEW CONSTRUCTION

- A. Construction Work Contract:
 - 1. Notify the related contractors 5 working days prior to the application of fireproofing.
 - 2. If related contractors fail to install hangers, clips, sleeves, and other items that will penetrate the fireproofing, the related contractors will be required to cut and repair the fireproofing at their own expense.
- B. HVAC Work, Plumbing Work, and Electrical Work Contracts:
 - 1. Construction Work Contractor will give 5 working days' notice prior to application of fireproofing.
 - 2. If hangers, clips, sleeves, and other items that will penetrate the fireproofing are not in place before application of the fireproofing by the Construction Work Contractor, all necessary cutting and repair of the fireproofing will be included in the Contract at no additional cost to the State.

1.14 REFERENCE SPECIFICATIONS AND STANDARDS

- A. Comply with the requirements of the various specifications and standards referred to in these Specifications, except where they conflict with the requirements of these Specifications. Such reference specifications and standards shall be the date of latest revision in effect at the time of receiving bids unless the date is given.
- B. DOT Specifications: If the abbreviation DOT appears in these Specifications, it shall mean the most current edition of the New York State Department of Transportation, Office of Engineering specifications entitled "STANDARD SPECIFICATIONS - CONSTRUCTION AND MATERIALS", including all applicable Addenda in effect at the time of receipt of bids. The DOT specifications may be purchased from the Department of Transportation, Plan and Publication Sales, 50 Wolf Road, Albany, NY 12232, (518) 457-2124.

1.15 LAYING OUT

- A. Examine the Contract Documents thoroughly and promptly report any errors or discrepancies to the Director's Representative before commencing the Work.
- B. Lay out the Work in accordance with the Contract Documents.
 - 1. Layouts which require the establishment of property lines or monuments shall be performed by a Land Surveyor licensed by New York State.
- C. Construction Work Contract:
 - 1. Provide and maintain axis lines on each floor.
 - 3. Provide and maintain marks 4 feet above finish floor on each column at each floor.

4. Take elevations and locations from control points located by the Director's Representative.

1.16 SPECIAL INSPECTIONS

- A. Special Inspections and tests are required by Chapter 17 of the Building Code of New York State (BCNYS). Inspections & Testing Services will be provided by the state unless otherwise noted.
- B. Contractors are responsible for notifying the Directors Representative regarding individual inspections listed in the **STATEMENT OF SPECIAL INSPECTIONS**. Contractors shall cooperate with the inspectors and testing agencies and sufficient notice and lead time (minimum 48 hours) must be allowed for inspection and testing to be performed.
- C. Where deficiencies are identified, the contractor must take corrective actions to comply with the contract documents or remedy the deficiencies in accordance with Article 9 of the General Conditions.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 071400

LIQUID APPLIED WATERPROOFING SYSTEM

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Sealants: Section 079200.

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, and installation instructions for each material specified.
 - 1. Include waterproofing manufacturer's recommended details for flashings, joint treatment, and required protection.
- B. Samples:
 - 1. Protection Board: Two 12 inch square pieces.
- C. Quality Control Submittals
 - 1. Certifications: Submit a letter certifying that the membrane material meets the requirements listed in the specifications.
 - 2. Installers Qualifications:
 - a. Submit a letter certifying that the applicator has been actively installing waterproofing and/or roofing systems for the past 3 years.
 - b. Submit the names and addresses of 5 previous waterproofing and/or roofing projects. Include the type and size of each project, the waterproofing and/or roofing manufacturer's name, and the name and telephone number of a contact person at the project location.
 - c. Submit a letter certifying that the supervisor or foreman and the workers applying the waterproofing materials have at least 3 years experience in the application of waterproofing and/or roofing materials.

1.03 QUALITY ASSURANCE

- A. Applicator's Qualifications:
 - 1. The waterproofing applicator must have been actively installing waterproofing and/or roofing systems for the past 3 years.
 - 2. The waterproofing applicator must have previously installed and completed a minimum of 5 waterproofing and/or roofing projects of comparable scope and complexity to the Work of this Section.
 - 3. The person supervising the Work of this Section and the workers applying the waterproofing materials shall have had at least 3 years of experience in the application of waterproofing and/or roofing materials.

- B. Provide all necessary instruments to measure wet film and dry film thicknesses as specified in this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, with seals and labels intact.
- B. Store materials off ground, in enclosed space, protected from weather and out of direct rays of sun.
- C. Maintain manufacturer's recommended storage temperature.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Do not mix or apply waterproofing materials when air or deck temperatures are less than 40 degrees F or more than 100 degrees F, unless otherwise instructed in writing by the manufacturer.
 - 2. Do not spray waterproofing materials during winds over 10 mph unless otherwise approved in writing by the Director's Representative.

1.06 WARRANTY

- A. **Warranty Extension**
 - 1. **The one (1) year is being extended to two (2) years for the Work of this Section. Refer to Supplementary Conditions - Warranty Extension.**

PART 2 PRODUCTS

2.01 MATERIALS

- A. Membrane Material: Liquid elastomeric (synthetic) rubber material, one or two part, compounded to self-cure into a flexible seamless waterproofing membrane and formulated to meet the following requirements:
 - 1. Solids Content: 95 percent minimum.
 - 2. Adhesive Property: Self-bonding to the specified substrate.
 - 3. Viscosity: Specifically compounded for the application method intended and the slopes of the substrate encountered at the site.
 - 4. Compatible with existing coal tar substrate.
 - 5. Contractor to verify material is compatible with existing membrane.
 - 6. Physical Properties of Cured Membrane:
 - a. Tensile Strength (Min.): 40 psi; ASTM D 412.
 - b. Elongation (Min. Ultimate): 400 percent; ASTM D 412.
 - c. Hardness (Shore A): Min. 15, Max. 30; ASTM D 2240.
 - d. Water Absorption (Max.): 1.0 percent for 21 days at 75 degrees F; ASTM D 471.
 - e. Service Temperature (Min. Range): -40 degrees F to 175 degrees F.

- f. Heat Aging: No measurable effects after 168 hours at 158 degrees F.; ASTM D 573.
- B. Primer: As recommended by the manufacturer of the elastomeric membrane for the substrate encountered at the site.
- C. Static Joint and Crack Filler: Use materials recommended by the manufacturer of the elastomeric membrane.
- D. Expansion Joint Sealant: Use type recommended by the manufacturer of the elastomeric membrane.
- E. Expansion Joint Filler and Back-up Rod: As specified in Section 079200.
- F. Protection Board:
 - 1. Core of stabilized asphalt and mineral fillers, sandwiched between asphalt saturated and coated organic felts.
Thickness: 1/8 inch.
 - a. Thickness: 1/8 inch.
- G. Cant Strips: Treated fiberboard; ASTM C 208.
- H. Bond Breaker Tape: Polyethylene or other plastic tape as recommended by manufacturer of elastomeric membrane.
- I. Wax (for bond breaking): Inert liquid buffing wax as recommended by manufacturer of elastomeric membrane.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that concrete and masonry substrates are properly cured.
- B. Verify that all fins and ridges have been removed and that all other surface defects have been corrected.
- C. Verify that all openings around penetrations such as pipes, vents and structural members are sealed to prevent entry of waterproofing material.
- D. Verify that drains are of the correct type and placed at the proper elevation to insure weepage at the membrane level.
- E. Verify that the substrate is dry, free of dirt and debris and acceptable for application of the waterproofing. Do not commence installation until all unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove all debris, dirt, dust, and other substances that are detrimental to the application of materials specified in this Section.
- B. Patch all areas of the existing substrate that have been damaged by removals. Remove loose materials and fill voids to obtain a reasonably smooth surface for proper bonding of the waterproofing materials. Use patching materials recommended by the elastomeric membrane manufacturer.
- C. Follow the written instructions of the elastomeric membrane manufacturer; unless otherwise specified herein.
 - 1. Prime all surfaces.
 - 2. Fill static joints and cracks.
 - 3. Where cant strips are required, embed the strips in elastomeric material.
 - 4. Install expansion joint filler, backer rod, and sealant.
 - 5. Install bond breaker (tape or wax) along each side of expansion joints. Make bond breaker at least 4 times the width of the expansion joint.
 - 6. Mask off and protect all adjoining surfaces that are not to receive elastomeric waterproofing.

3.03 INSTALLATION

- A. General: Install the elastomeric waterproofing in strict conformance with the approved manufacturer's written instructions, unless otherwise specified herein.
- B. Application Method: Use spray, roller, squeegee, trowel, or brush as recommended by the manufacturer and as necessary to produce the specified waterproof system.
- C. Apply the liquid material in the necessary quantities to produce a cured membrane average thickness of 60 mils, with no variation below 50 mils.
- D. Flashings: At all intersections with vertical surfaces (walls, pipes, mechanical units, structural members etc.) turn the membrane up to form a waterproof pan. Form integral flashings consisting of a double thickness (120 mils) of elastomeric membrane applied over a cant; or install flashings in conformance with the manufacturer's details.
- E. Expansion Joints: After installation of sealant and bondbreaker (each side of joint) apply a 12 inch wide double thickness (120 mils) of elastomeric membrane, centered over the joint, or cover expansion joint in conformance with the manufacturer's details.
- F. Drains: Flash waterproofing membrane into drains as indicated on the Drawings or as per manufacturer's details.
- G. Cure membrane in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

- A. Thickness of Membrane:

1. During application, take frequent wet gage checks to assure sufficient coverage to obtain the specified dry film thickness.
 2. When and where directed by the Director's Representative, make test cuts thru the cured membrane and measure the dry film thickness. (Up to one test for each 100 sf may be required). Patch the cuts immediately with matching materials. Apply additional membrane material where required, if tests show less than specified membrane thickness.
- B. Flood Testing: After completion and curing of the membrane, conduct a leakage test as follows:
1. Plug drains on horizontal surfaces.
 2. Use sand bags or other approved means to restrict runoff.
 3. Flood deck with water to a depth of two inches and allow to stand for 24 hours.
 4. If leaks develop, make all necessary repairs and repeat test.

END OF SECTION

SECTION 260501

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the units of completed Work.
- B. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
 - 1. Item No. 260501.01 – Electrical Base Unit (EBU)-03 Provide removal and installation of 1/2” – 1” lighting conduit, wire, and electrical fixtures to accommodate for concrete slab/joint work.
 - a. Mobilize
 - b. Install Temporary Lighting
 - c. Trace, Tag, and Disconnect Circuits from Source
 - d. Remove 20’ PVC Conduit
 - e. Remove 375’ Conductors
 - f. Remove Light Fixtures
 - g. Install (2) Junction Boxes
 - h. Install 20’ PVC Conduit
 - i. Install 400’ Conductors
 - j. Reinstall Light Fixtures
 - k. Reconnect Circuits
 - l. Remove Temporary Lighting
 - m. Demobilize
- C. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
 - 1. Item No. 260501.02 – Electrical Base Unit (EBU)-04 Provide removal and installation of 1 1/4” – 2” lighting conduit, wire, and electrical fixtures to accommodate for concrete slab/joint work.
 - a. Mobilize
 - b. Install Temporary Lighting
 - c. Trace, Tag, and Disconnect Circuits from Source
 - d. Remove 20’ PVC Conduit
 - e. Remove 750’ Conductors
 - f. Remove Light Fixtures
 - g. Install (2) Junction Boxes
 - h. Install 20’ PVC Conduit
 - i. Install 750’ Conductors
 - j. Reinstall Light Fixtures
 - k. Reconnect Circuits
 - l. Remove Temporary Lighting
 - m. Demobilize

- D. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.03 – Electrical Base Unit (EBU)-05 Provide removal and installation of 1/2” – 1” power conduit, wire, and electrical fixtures to accommodate for concrete slab/joint work.
 - a. Mobilize
 - b. Install Temporary Power
 - c. Trace, Tag, and Disconnect Circuits from Source
 - d. Remove 20’ GRC Conduit
 - e. Remove 375’ Conductors
 - f. Remove Light Fixtures
 - g. Install (2) Junction Boxes
 - h. Install 20’ GRC Conduit
 - i. Install 400’ Conductors
 - j. Reinstall Electrical Fixtures
 - k. Reconnect Circuits
 - l. Remove Temporary Power
 - m. Demobilize
- E. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.04 – Electrical Base Unit (EBU)-06 Provide removal and installation of 1 1/4” – 2” power conduit, wire, and electrical fixtures to accommodate for concrete slab/joint work.
 - a. Mobilize
 - b. Install Temporary Power
 - c. Trace, Tag, and Disconnect Circuits from Source
 - d. Remove 20’ GRC Conduit
 - e. Remove 750’ Conductors
 - f. Remove Electrical Fixtures
 - g. Install (2) Junction Boxes
 - h. Install 20’ GRC Conduit
 - i. Install 750’ Conductors
 - j. Reinstall Electrical Fixtures
 - k. Reconnect Circuits
 - l. Remove Temporary Power
 - m. Demobilize
- F. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.05 – Electrical Base Unit (EBU)-07 Provide removal and installation of 3” – 4” power conduit, wire, and electrical fixtures to accommodate for concrete slab/joint work.
 - a. Mobilize
 - b. Install Temporary Power
 - c. Trace, Tag, and Disconnect Circuits from Source
 - d. Remove 20’ GRC Conduit
 - e. Remove 750’ Conductors
 - f. Remove Electrical Fixtures
 - g. Install (2) Junction Boxes
 - h. Install 20’ GRC Conduit

- i. Install 750' Conductors
 - j. Reinstall Electrical Fixtures
 - k. Reconnect Circuits
 - l. Remove Temporary Power
 - m. Demobilize
- G. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.06 – Electrical Base Unit (EBU)-09 Provide removal and installation of conduit, wire, and terminal devices to accommodate for concrete slab/joint work. Utility is unknown. Source and load unknown/unidentified.
 - a. Mobilize
 - b. Trace Out and Disconnect Conductors and Tag for Reconnect
 - c. Pull Conductors and Conduit
 - d. Reinstall Conduit and Conductors
 - e. Test
 - f. Demobilize
- H. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.07 – Electrical Base Unit (EBU)-10 Existing high voltage conduit and wire to remain in service during construction. Utility is unknown. Source and load unknown/unidentified.
 - a. Utility shall be existing to remain and remain active.
 - b. Provide warning labels as indicated on E-001.
- I. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.08 – Electrical Base Unit (EBU)-11 Provide removal of power conduit, wire, and electrical fixtures. Source and load unknown/unidentified.
 - a. Mobilize
 - b. Trace Out and Disconnect Conductors and Tag for Reconnect
 - c. Install Temporary Lighting
 - d. Remove (100) 4' Fluorescent Vapor-Tight Light Fixtures
 - e. Remove 480' Liquid-Tight Flexible Metal Conduit
 - f. Remove 200' GRC Conduit
 - g. Remove 2,040' Conductors
- I. The unit prices listed below shall include all Work specified in the Division 26 Electrical Sections.
1. Item No. 260501.09 – Electrical Base Unit (EBU)-12 Provide light fixtures, power conduit, and wire.
 - a. Install (40) Type W1 Light Fixtures
 - b. Install (20) Junction Boxes
 - c. Install 400' GRC Conduit
 - d. Install 1,200' Conductors
 - e. Reconnect Cicuits
 - f. Remove Temporary Lighting
 - g. Demobilize

1.02 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions.
 - 1. For fire rated construction, prove that materials and installation methods proposed for use are in accordance with the listing requirements of the classified construction.
- B. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

PART 2 PRODUCTS

2.01 RACEWAYS, FITTINGS AND ACCESSORIES

- A. Rigid Ferrous Metal Conduit: Steel, hot dipped galvanized on the outside and inside, UL categorized as Rigid Ferrous Metal Conduit (identified on UL Listing Mark as Rigid Metal Conduit - Steel or Rigid Steel Conduit), by Allied Tube & Conduit Corp., LTV Copperweld, or Wheatland Tube Co.
- B. Flexible Metal Conduit: Galvanized steel strip shaped into interlocking convolutions, UL categorized as Flexible Metal Conduit (identified on UL Listing Mark as Flexible Steel Conduit or Flexible Steel Conduit Type RW), by AFC Cable Systems Inc., Anamet Electrical Inc., Electri-Flex Co., or International Metal Hose Co.
- C. Liquid-tight Flexible Metal Conduit: UL categorized as liquid-tight flexible metal conduit (identified on UL Listing Mark as Liquid-Tight Flexible Metal Conduit, also specifically marked with temperature and environment application data), by AFC Cable Systems Inc., Anamet Electrical Inc., Electri-Flex Co., or Universal Metal Hose Co.
- D. Wireways, Fittings and Accessories:
 - 1. NEMA 1 (Without Knockouts): Hoffman Enclosures Inc. Bulletin F-40, Hubbell/Wegmann's HSK, Lee Products Co.'s S Series, Rittal/Electromate's EW & EWHC Lay-In Wireway System, or Square D Co.'s Square-Duct Class 5100.
- E. Insulated Bushings, Plastic Bushings, and Insulated Grounding Bushings: By Appleton Electric Co., Cooper/Crouse-Hinds, OZ/Gedney Co., or Thomas & Betts Corp.
- F. Connectors and Couplings:

1. Locknuts: UL, steel/zinc electroplate; Appleton Electric Co.'s BL-50 Series, Cooper/Crouse-Hinds' 11 Series, OZ/Gedney Co.'s 1-50S Series, Raco Inc.'s 1002 Series, Steel City/T&B Corp.'s LN-101 Series, or Thomas & Betts Corp.'s 141 Series.
 2. Couplings (For Rigid Metal Conduit): Standard galvanized threaded couplings as furnished by conduit manufacturer, Allied Tube & Conduit Corp.'s Kwik-Couple, or Thomas & Betts Corp.'s Shamrock.
 3. Three Piece Conduit Coupling (For Rigid Metal Conduit): Steel, malleable iron, zinc electroplate; Allied Tube & Conduit Corp.'s Kwik-Couple, Appleton Electric Co.'s EC-50 Series, Cooper/Crouse-Hinds' 190M Series, OZ/Gedney Co.'s 4-50 Series, Raco Inc.'s 1502 Series, Steel City/T & B Corp.'s EK-401 Series, or Thomas & Betts Corp.'s 675 Series.
 4. Flexible Metal Conduit Connectors: Arlington Industries Inc.'s Saddle-Grip, OZ/Gedney Co.'s C-8T, 24-34T, ACV-50T Series, or Thomas & Betts Corp.'s Nylon Insulated Tite-Bite Series.
 5. Liquid-tight Flexible Metal Conduit Connectors:
 - a. Dry, Damp Locations: Steel, malleable iron, zinc electroplate, insulated throat; Appleton Electric Co.'s STB Series, Cooper/Crouse-Hinds' LTB Series, OZ/Gedney Co.'s 4Q-50T Series, Raco Inc.'s 3512 Series, Steel City/T & B Corp.'s LT-701 Series, or Thomas & Betts Corp.'s 5332 Series.
 - b. Wet Locations: OZ/Gedney Co.'s 4Q-TG Series (hot-dip/mechanically galvanized), or Thomas & Betts Corp.'s 3322 Series (PVC coated).
- G. Conduit Bodies (Threaded):
1. Dry, Damp Locations: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.'s Unilets, Cooper/Crouse-Hinds' Condulets, OZ/Gedney Co.'s Conduit Bodies, or Thomas & Betts Corp.'s Conduit Bodies.
 2. Wet Locations: Malleable iron or cast iron alloy bodies and covers with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds' Condulets (Corro-free epoxy powder coat), Thomas & Betts Corp.'s Conduit Bodies (hot dipped galvanized), or OZ/Gedney Co.'s Conduit Bodies (hot dipped galvanized). Stainless steel cover screws, covers gasketed to suit application.
- H. Expansion Fittings:
1. Dry, Damp Locations:
 - a. Malleable iron, zinc electroplate finish: Appleton Electric Co.'s XJ or OZ/Gedney Co.'s AX (TX for EMT), with external bonding jumper.
 - b. Electrogalvanized Steel: Cooper/Crouse-Hinds' XJG (XJG-EMT for EMT), or Thomas & Betts Corp.'s XJG, with internal grounding.
 2. Wet Locations: Cooper/Crouse-Hinds XJG (Corro-free epoxy powder coat), OZ Gedney Co.'s AX, EXE (end type, hot dipped galvanized), or Thomas & Betts Corp.'s XJG (hot dipped galvanized).
- I. Vertical Conductor Supports:

1. Dry, Damp Locations: Kellems/Hubbell Inc.'s Conduit Riser Grips, or OZ/Gedney Co.'s Type M, Type R.
2. Wet Locations: Kellems/Hubbell Inc.'s Conduit Riser Grips (stainless steel or tin coated bronze), or OZ/Gedney Co.'s hot dipped galvanized finish Type CMT or Type W.

2.02 OUTLET, JUNCTION, AND PULL BOXES

- A. Galvanized Steel Outlet Boxes: Standard galvanized steel boxes and device covers by Appleton Electric Co., Beck Mfg./Picoma Industries, Cooper/Crouse-Hinds, Raco/Div. of Hubbell, or Steel City/T & B Corp.
- B. Galvanized Steel Junction and Pull Boxes: Code gage, galvanized steel screw cover boxes by Delta Metal Products Inc., Hoffman Enclosures Inc., Hubbell Wiegmann, Lee Products Co., or Rittal/Electromate.
- C. Threaded Type Boxes:
 1. Outlet Boxes:
 - a. For Dry, Damp Locations: Zinc electroplate malleable iron or cast iron alloy boxes by Appleton Electric Co., Cooper/Crouse-Hinds Co., OZ/ Gedney Co., or Thomas & Betts Corp. with zinc electroplate steel covers to suit application.
 - b. For Wet Locations: Malleable iron or cast iron alloy boxes with hot dipped galvanized or other specified corrosion resistant finish as produced by Cooper/Crouse-Hinds (hot dipped galvanized or Corro-free epoxy powder coat), OZ/Gedney Co. (hot dipped galvanized), or Thomas & Betts Corp. (hot dipped galvanized) with stainless steel cover screws, and malleable iron covers gasketed to suit application.
 2. Junction And Pull Boxes:
 - a. For Dry, Damp Locations: Zinc electroplate cast iron boxes by Appleton Electric Co., Cooper/Crouse-Hinds, OZ/Gedney Co., or Thomas & Betts Corp. with zinc electroplate steel or cast iron cover.
 - b. For Wet Locations: Cast iron boxes by Cooper/Crouse-Hinds' (hot dipped galvanized or Corro-free epoxy powder coat), OZ/Gedney Co. (hot dipped galvanized), or Thomas & Betts Corp. (hot dipped galvanized) with stainless steel cover screws and cast iron cover gasketed to suit application.
 3. Conduit Bodies, Threaded (Provided with a Volume Marking):
 - a. For Dry, Damp Location: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.'s Unilets, Cooper/Crouse-Hinds' Condulets, OZ/Gedney Co.'s Conduit Bodies, or Thomas & Betts Corp.'s Conduit Bodies.
 - b. For Wet Locations: Malleable iron or cast iron alloy bodies with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds' Condulets (hot dipped galvanized or Corro-free epoxy power coat), OZ/Gedney Co.'s Conduit Bodies (hot dipped galvanized), or Thomas & Betts Corp.'s Conduit Bodies (hot dipped galvanized) with stainless steel

cover screws and malleable iron covers gasketed to suit application.

- D. Specific Purpose Outlet Boxes: As fabricated by equipment manufacturers for mounting their equipment thereon.
- E. Outlet Boxes and Related Products for Fire Rated Construction:
 - 1. Parameters For Use of Listed Metallic Outlet or Switch Boxes: UL Electrical Construction Equipment Directory - Metallic Outlet Boxes (QCIT).
 - 2. Wall Opening Protective Materials: As listed in UL Fire Resistance Directory - Wall Opening Protective Materials (CLIV), or UL Electrical Construction Equipment Directory - Wall Opening Protective Materials (QCSN).

2.03 CONDUCTORS AND ACCESSORIES

- A. Date of Manufacture: No insulated conductor more than one year old when delivered to the site will be acceptable.
- B. Acceptable Companies: American Insulated Wire Corp., BICC General Cable Industries Inc., Cerro Wire & Cable Co. Inc., Pirelli Cable Corp., Rome Cable Corp., or Southwire Co..
- C. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor. Conductor sizes No. 8 and larger shall be stranded.
- D. Types:
 - 1. Electric Light and Power Wiring:
 - a. General: Rated 600V, NFPA 70 Type FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, XHHW-2.
 - b. THWN Gasoline and Oil Resistant: Polyvinylchloride insulation rated 600 V with nylon jacket conforming to UL requirements for type THWN insulation, with the words "GASOLINE AND OIL RESISTANT II" marked thereon.
 - c. USE, USE-2: Dual rated heat and moisture resistant insulation rated 600 V with jacket or dual purpose insulation/protective covering conforming to UL requirements for type USE service entrance cables.
 - 2. Class 1 Wiring:
 - a. No. 18 and No. 16 AWG: Insulated copper conductors suitable for 600 volts, NFPA 70 types KF-2, KFF-2, PAFF, PF, PFF, PGF, PGFF, PTF, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, or ZFF.
 - b. Larger than No. 16 AWG: Insulated copper conductors suitable for 600 volts, in compliance with NFPA 70 Article 310.
 - c. Conductor with other types and thickness of insulation may be used if listed for Class 1 circuit use.
 - 3. Class 3 Wiring:

- a. Single Conductors No. 18 and No. 16 AWG: Same as Class 1 No. 18 and No. 16 AWG conductors, except that:
 - 1) Conductors are also listed as CL3.
 - 2) Voltage rating not marked on cable except where cable has multiple listings and voltage marking is required for one or more of the listings.
- E. Connectors:
- 1. General: Connectors specified are part of a system. Furnish connectors and components, and use specific tools and methods as recommended by connector manufacturer to form complete connector system.
 - 2. Splices:
 - a. Spring Type:
 - 1) Rated 105° C, 600V; Buchanan/Ideal Industries Inc.'s B-Cap, Electrical Products Div./3M's Scotchlok Type Y, R, G, B, O/B+, R/Y+, or B/G+, or Ideal Industries Inc.'s Wing Nuts or Wire Nuts.
 - 2) Rated 150° C, 600V; Ideal Industries Inc.'s High Temperature Wire-Nut Model 73B, 59B.
 - b. Indent Type with Insulating Jacket:
 - 1) Rated 105° C, 600V; Buchanan/Ideal Industries Inc.'s Crimp Connectors, Ideal Industries Inc.'s Crimp Connectors, Penn-Union Corp.'s Penn-Crimps, or Thomas & Betts Corp.'s STA-KON.
 - c. Indent Type (Uninsulated): Anderson/Hubbell's Versa-Crimp, VERSAtile, Blackburn/T&B Corp.'s Color-Coded Compression Connectors, Electrical Products Div./3M's Scotchlok 10000, 11000 Series, Framatome Connectors/Burndy's Hydent, Penn-Union Corp.'s BCU, BBCU Series, or Thomas & Betts Corp.'s Compression Connectors.
- F. Tapes:
- 1. Insulation Tapes:
 - a. Plastic Tape: Electrical Products Div./3M's Scotch Super 33+ or Scotch 88, Plymouth Rubber Co.'s Plymouth/ Bishop Premium 85CW.
 - b. Rubber Tape: Electrical Products Div./3M's Scotch 130C, or Plymouth Rubber Co.'s Plymouth/Bishop W963 Plysafe.
 - 2. Moisture Sealing Tape: Electrical Products Div./3M's Scotch 2200 or 2210, or Plymouth Rubber Co.'s Plymouth/Bishop 4000 Plyseal-V.
 - 3. Electrical Filler Tape: Electrical Products Div./3M's Scotchfil, or Plymouth Rubber Co.'s Plymouth/Bishop 125 Electrical Filler Tape.
 - 4. Color Coding Tape: Electrical Products Div./3M's Scotch 35, or Plymouth Rubber Co.'s Plymouth/Bishop Premium 37 Color Coding.
 - 5. Arc Proofing Tapes:
 - a. Arc Proofing Tape: Electrical Products Div./3M's Scotch 77, Mac Products Inc.'s AP Series, or Plymouth Rubber Co.'s Plymouth/Bishop 53 Plyarc.
 - b. Glass Cloth Tape: Electrical Products Div./3M's Scotch 27/Scotch 69, Mac Products Inc.'s TAPGLA 5066, or Plymouth Rubber Co.'s Plymouth/Bishop 77 Plyglas.

- c. Glass-Fiber Cord: Mac Products Inc.'s MAC 0527.
- G. Wire-Pulling Compounds: To suit type of insulation; American Polywater Corp.'s Polywater Series, Electric Products Div./3M's WL, WLX, or WLW, Greenlee Textron Inc.'s Y-ER-EAS, Cable Cream, Cable Gel, Winter Gel, Ideal Industries Inc.'s Yellow 77, Aqua-Gel II, Agua-Gel CW, or Thomas & Betts Corp.'s Series 15-230 Cable Pulling Lubricants, or Series 15-631 Wire Slick.
- H. Wire Management Products: Cable clamps and clips, cable ties, spiral wraps, etc., by Catamount/T&B Corp., or Ideal Industries Inc.

2.04 WIRING DEVICES

- A. Local Switches:
 - 1. Single Pole, 15A, 120/277 V ac: Bryant's 4801, Crouse-Hinds/AH's 1891, General Electric's GE5931-1G, Hubbell's 1201, Leviton's 1201, Pass & Seymour's 15AC1, or Slater's 710-BR.
 - 2. Double Pole, 15A, 120/277 V ac: Bryant's 4802, Crouse-Hinds/AH's 1892, General Electric's GE5932-1G, Hubbell's 1202, Leviton's 1202, Pass & Seymour's 15AC2, or Slater's 712-BR.
 - 3. Three-Way, 15A, 120/277 V ac: Bryant's 4803, Crouse-Hinds/AH's 1893, General Electric's GE5933-1, Hubbell's 1203, Leviton's 1203, Pass & Seymour's 15AC3, or Slater's 713-BR.
 - 4. Four-Way, 15A, 120/277 V ac: Bryant's 4804, Crouse-Hinds/AH's 1894, General Electric's GE5934-1G, Hubbell's 1204, Leviton's 1204, Pass & Seymour's 15AC4, or Slater's 714-BR.
- B. Receptacles:
 - 1. Single Receptacle, NEMA 5-15R (15A, 125 V, 2P, 3W): Bryant's 5251, Crouse-Hinds/AH's 5251, General Electric's 5251-1, Hubbell's 5251, Leviton's 5251, Pass & Seymour's 5251, or Slater's 5361-AG-BR.
 - 2. Duplex Receptacle, NEMA 5-15R (15A, 125 V, 2P, 3W): Bryant's 5262, Crouse-Hinds/AH's 5252-S, General Electric's GEN5252-1, Hubbell's 5252, Leviton's 5252, Pass & Seymour's 5252, or Slater's 5252-AG-BR.
 - 3. Ground Fault Interrupter Receptacle Rated 15A (NEMA 5-15R), Circuit-Ampacity 20A: Bryant's GFR52FT, Crouse-Hinds/AH's 1591-F, General Electric's TGTR15B, Leviton's 6194, Pass & Seymour's 1591-F, or Slater's SIR-15-F-BR.
- C. Wall Plates:
 - 1. Stainless Steel Wall Plates (Type 302 stainless steel with satin finish): Bryant, Crouse-Hinds/AH, General Electric, Hubbell, Leviton, or Pass & Seymour.
 - 2. Chrome Wall Plates (.040 inch thick brass with polished chromium finish): General Electric, Crouse-Hinds/AH, General Electric, Hubbell, Leviton, or Pass & Seymour.
 - 3. Weatherproof Covers: Crouse-Hinds, Hubbell, or Pass & Seymour, or Thomas & Betts Corp.

4. Covers for Threaded Type Boxes: Stamped sheet steel, gasketed device covers as produced by Crouse-Hinds Co., OZ/Gedney Co., or Thomas & Betts Corp.

2.05 SUPPORTING DEVICES

- A. Fasteners: Furnish all fasteners and hardware compatible with the materials and methods required for attachment of supporting devices.
 1. Slotted Type Concrete Inserts: Galvanized pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive steel nut and with knockout cover, hot-dipped galvanized in compliance with ASTM A 123.
 2. Masonry Anchorage Devices: Expansion shields complying with FS FF-S-325, as follows:
 - a. Furnish lead expansion shields for machine screws and bolts 1/4 inch and smaller; head-out embedded nut type, single unit class, Group I, Type 1, Class 1.
 - b. Furnish lead expansion shields for machine screws and bolts larger than 1/4 inch in size; head-out embedded nut type, multiple unit class, Group I, Type 1, Class 2.
 - c. Furnish bolt anchor expansion shields for lag bolts, zinc alloy, long-shield anchors class, Group II, Type 1, Class 1.
 - d. Furnish bolt anchor expansion shields for bolts, closed-end bottom bearing class, Group II, Type 2, Class 1.
 3. Toggle Bolts: Tumble-wing type, complying with FS FF-B-588C, Type, class and style as required.
 4. Nuts, Bolts, Screws, Washers:
 - a. General: Furnish zinc-coated fasteners, with galvanizing complying with ASTM A 153 for exterior use or where built into exterior walls. Furnish fasteners for the type, grade and class required for the particular installation.
 - b. Standard Nuts and Bolts: Regular hexagon head type, complying with ASTM A 307, Grade A.
 - c. Lag Bolts: Square head type, complying with FS FF-B-561C.
 - d. Machine Screws: Cadmium plated steel, complying with FS FF-S-92.
 - e. Plain Washers: Round, general assembly grade carbon steel, complying with FS FF-W-92.
 - f. Lock Washers: Helical spring type carbon steel, complying with FS FF-W-84.
- B. "C" Beam Clamps:
 1. For 1 inch Conduit Maximum: B-Line Systems Inc.'s BG-8-C2, BP-8-C1 Series, or Caddy Fastener Div./Erico Products Inc.'s BC-8P and BC-8PSM Series.
 2. For 3 inch Conduit Maximum: Appleton Electric Co.'s BH-500 Series beam clamp with H50WB Series hangers, Kindorf/T&B Corp.'s 500 Series beam clamp with 6HO-B Series hanger, or OZ/Gedney Co.'s IS-500 Series beam clamp with H-OWBS Series hanger.
 3. For 4 inch Conduit Maximum: Kindorf/T&B Corp.'s E-231 beam clamp and E-234 anchor clip and C-149 series lay-in hanger, or Unistrut

- Corp.'s P2676 beam clamp and P-1659A Series anchor clip with J1205 Series lay in hanger.
4. For Threaded Rods (100 lbs. load max.): Caddy Fastener Div./Erico Products Inc.'s BC-4A.
 5. For Threaded Rods (200 lbs. load max.): Appleton Electric Co.'s BH-500 Series, Kindorf/T&B Corp.'s 500 Series, or OZ/Gedney Co.'s IS-500 Series.
 6. For Threaded Rods (300 lbs. load max.): Kindorf/T&B Corp.'s E-231 beam clamp and E-234 anchor clip, or Unistrut Corp.'s P2676 beam clamp and P-1659A Series anchor clip.
- C. Fastener Fittings for Wood and Existing Masonry: Kindorf/T&B Corp.'s E-243, E-244, E-245, E-170, or Versabar Corp.'s VX-4310, VX-2308, VX-4308, VX-4309.
- D. Pipe Straps: Two hole steel conduit straps; Kindorf/T&B Corp.'s C-144 or C-280 Series.
- E. Pipe Clamps: One-hole malleable iron type clamps; Kindorf/T&B Corp.'s HS-400 Series, or OZ/Gedney Co.'s 14-50 Series.
- F. Channel Support System and Accessories: 12 gage galvanized steel channel and accessories; B-Line System Inc.'s B-22 (1-5/8 x 1-5/8 inches), B-12 (1-5/8 x 2-7/16 inches), B-11 (1-5/8 x 3-1/4 inches), Kindorf/T&B Corp.'s B-900 (1-1/2 x 1-1/2 inches), B-901 (1-1/2 x 1-7/8 inches), B-902 (1-1/2 x 3 inches), Unistrut Corp.'s, P-3000 (1-3/8 x 1-5/8 inches), P-5500 (1-5/8 x 2-7/16 inches), P-5500 (1-5/8 x 3-1/4 inches), or Versabar Corp.'s VA-1 (1-5/8 x 1-5/8 inches), VA-3 (1-5/8 x 2-1/2 inches).

2.06 SAFETY SWITCHES (SINGLE THROW)

- A. NEMA 1, 3R, 4 (Stainless Steel), 12: Cutler-Hammer Inc.'s DH, Federal Pacific Electric Co.'s Class 1240, General Electric Co.'s Type TH, Square D Co.'s Heavy Duty Series, or Westinghouse Electric Corp.'s H-600; having:
1. Fuses or unfused as indicated on drawings.
 2. Fused switches equipped with fuseholders to accept only the fuses specified (UL Class RK-1, RK-5, or L).
 3. NEMA 1 enclosure unless otherwise indicated on drawing.
 4. 240 V rating for 120 V, 208 V, or 240 V circuits.
 5. 600 V rating for 277 V, or 480 V circuits.
 6. Solid neutral bus when neutral conductor is included with circuit.
 7. Ground bus when equipment grounding conductor is included with circuit.
 8. Current rating and number of poles as indicated on drawings.
- B. NEMA 4X: Crouse-Hinds Co.'s NST, Cutler-Hammer Inc.'s DH, General Electric Co.'s Type TH, Square D Co.'s Heavy Duty Series, or Westinghouse Electric Corp.'s H-600; having:
1. Fuses, or unfused as indicated on drawings.
 2. Fused switches equipped with fuseholders to accept only the fuses specified (UL Class RK-1, RK-5, or L).

3. Molded fiberglass-reinforced polyester NEMA 4X enclosure.
4. 240 V rating for 120 V, 208 V, or 240 V circuits.
5. 600 V rating for 277 V, or 480 V circuits.
6. Solid neutral bus when neutral conductor is included with circuit.
7. Ground bus when equipment grounding conductor is included with circuit.
8. Current rating and number of poles as indicated on drawings.

2.07 GROUNDING AND BONDING

- A. Ground Clamps (Cable to Pipe): Blackburn/T&B Corp.'s GUV, Framatome Connectors/Burndy Corp.'s GAR, GD, GP, GK, or OZ/Gedney Co.'s ABG, CG.
- B. Ground Lugs: Copper, one or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell's VERSAtile VHCL, Blackburn/T&B Corp.'s Color-Coded CTL, LCN, Framatome Connectors/Burndy's Hylug YA, Electrical Products Div./3M Scotchlok 31036 or 31145 Series, Ideal Industries Inc.'s CCB or CCBL, or Thomas & Betts Corp.'s 54930BE or 54850BE Series.
- C. Grounding Electrode Conductors and Bonding Conductors: Copper conductors, bare or insulated with THW, THW-2, XHHW, XHHW-2, THWN, THWN-2 or THHN insulation.
- D. Hardware: Silicon-bronze bolts, nuts, flat and lock washers etc. by Dossert Corp., Framatome Connectors/Burndy Corp., or OZ/Gedney Co.

2.08 NAMEPLATES AND TAGS

- A. General: Precision engraved letters and numbers with uniform margins, character size minimum 3/16 inch high.
 1. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
 2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
 3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

PART 3 EXECUTION

3.01 RACEWAY INSTALLATION

- A. Number of Raceways: Do not change number of raceways to less than the number indicated on the drawings except when appropriate for advantageous reuse of existing exposed and concealed raceways (The contract documents do not indicate location, number, size or condition of existing raceways). Existing raceways may be reused if the following conditions are met:
 1. The existing raceway must be of adequate size for the new conductors to be installed therein (NFPA 70 Chapter 9, Tables 1, 4, & 5; Appendix C, Tables C1-C12a). More circuits may be enclosed by existing raceways

than the circuiting shown on the drawings provided conductor sizes are increased to compensate for derating (adjustment factors) and other considerations required by NFPA 70 Article 310-15.

2. Remove existing conductors.
 3. Demonstrate to the Director's Representative that the existing raceway is clear of obstructions and in good condition.
 4. Check ground continuity. When ground continuity of existing raceway is inadequate install insulated grounding bushings, grounding wedges, bonding straps, grounding jumpers or equipment grounding conductors to establish effective path to ground.
 5. Install insulated bushings to replace damaged or missing bushings. Replace non-insulated bushings with insulated bushings on raceway sizes 1 inch and larger.
 6. Install vertical conductor supports to replace existing or missing vertical conductor supports.
 7. Install extension rings on existing boxes when the number of new conductors installed therein exceeds NFPA 70 requirements.
 8. Furnish the Director's Representative with marked up drawings showing size and routing of existing raceways with number and size of new conductors installed therein. The drawings will be forwarded to the design engineer for verification of NFPA 70 compliance.
- B. Conduit Installed Concealed:
1. Install conduit concealed unless otherwise indicated on the drawings.
 2. Existing Construction:
 - a. Run conduit in existing chases and hung ceilings.
 - b. If conduit cannot be installed concealed due to conditions encountered in the building, report such conditions and await approval in writing before proceeding.
- C. Conduits Penetrating Concrete Floor Slabs (Concrete slabs that are both ceilings and floors shall be treated as floor slabs):
1. Provide a minimum of 2 inches between conduits that vertically penetrate elevated concrete slabs.
 2. Provide firestopping and spray on fireproofing at locations where conduits penetrate surface of floor slab and slab is part of fire rating required for construction.
- D. Conduit Installed Exposed:
1. Install conduit exposed where indicated on the drawings. If not indicated, conduit may be installed exposed, as approved, in:
 - a. Unfinished spaces, and finished spaces housing mechanical or electrical equipment that is generally accessible only to facility maintenance personnel.
 - b. Areas where existing conduits have been installed exposed.
 - c. Areas where conduit cannot be installed concealed.
 2. Install conduit tight to the surface of the building construction.
Exception:
 - a. Where otherwise indicated or directed.
 3. Install vertical runs perpendicular to the floor.
 4. Install runs on the ceiling perpendicular or parallel to the walls.

5. Install horizontal runs parallel to the floor.
 6. Do not run conduits near heating pipes.
 7. Installation of conduit directly on the floor will not be permitted.
- E. Conduit Size: Not smaller than 1/2 inch electrical trade size. Where type FEP, THHN, THWN, THWN-2, XHH, XHHW, or XHHW-2 conductors are specified for use, the minimum allowable conduit size for new Work shall be based on Type THW conductors.
- F. Raceways Exposed to Different Temperatures: Where portions of an interior raceway system are exposed to widely different temperatures, seal interior and exterior of raceway to prevent circulation of air from a warmer to a colder section through the raceway installation.
1. Refrigerated Rooms: Install conduit body or junction box in the raceway system on warm side of refrigerated room. After conductors are installed, seal interior of the raceway at the conduit body or junction box.
 2. Heated Areas to Unheated Areas: After conductors are installed, seal interior of the raceway at the nearest conduit body, outlet or junction box in the heated area adjoining the unheated area.
- G. Conduit in Hazardous Areas: Install Work in hazardous areas in accordance with NFPA 70.
1. Install sealing fittings in concealed conduit runs in a recessed box with blank face plate to match other face plates in the area.
- H. Raceway Schedule:
1. Rigid Ferrous Metal Conduit: Install in all locations unless otherwise specified or indicated on the drawings.
 2. Flexible Metal Conduit: Install equipment grounding conductor in the flexible metal conduit and bond at each box or equipment to which conduit is connected:
 - a. Use for final conduit connection to recessed lighting fixtures in suspended ceilings. Use 4 to 6 feet of flexible metal conduit (minimum size 1/2 inch) between junction box and fixture. Locate junction box at least 1 foot from fixture and accessible if the fixture is removed.
 - b. Use 1 to 3 feet of flexible metal conduit for final conduit connection to:
 - 1) Emergency lighting units.
 - 2) Dry type transformers.
 - 3) Motors with open, drip-proof or splash-proof housings.
 - 4) Equipment subject to vibration (dry locations).
 - 5) Equipment requiring flexible connection for adjustment or alignment (dry locations).
 - c. Use for concealed branch circuit conduits above existing non-removable suspended ceilings where rigid type raceways cannot be installed due to inaccessibility of space above ceiling.
 - d. May be installed concealed as branch circuit conduits in drywall construction with sheet metal studs, except where studs are less than 3-1/2 inches deep.

3. Liquid-tight Flexible Metal Conduit: Install equipment grounding conductor in liquid-tight flexible metal conduit and bond at each box or equipment to which conduit is connected:
 - a. Use 1 to 3 feet of liquid-tight flexible metal conduit (UL listed and marked suitable for the installation's temperature and environmental conditions) for final conduit connection to:
 - 1) Motors with weather-protected or totally enclosed housings.
 - 2) Equipment subject to vibration (damp and wet locations).
 - 3) Equipment requiring flexible connection for adjustment or alignment (damp and wet locations).
 4. Surface Metal Raceway: Use as exposed raceway system in finished spaces at locations indicated on the drawings.
 - a. Use surface metal raceway system of size required for number of wires to be installed therein. (Use specific size when indicated on the drawings).
 - b. Do not run raceway through walls that have a plaster finish nor through masonry walls or floors. Install a pipe sleeve, or a short length of conduit with junction boxes or adapter fittings for raceway runs through such areas. Run raceway along top of baseboards, care being taken to avoid telephone and other signal wiring. Where raceway crosses chair railing or picture molding, cut the chair railing or picture molding to permit the raceway to lie flat against the wall. Run raceway around door frames and other openings. Run raceway on ceiling or walls perpendicular to or parallel with walls and floors.
 - c. Secure one piece raceway every 30 inches alternately with 2 hole straps, and support clips (2 hole strap, support clip, 2 hole strap, etc.). Secure 2 piece raceway every 30 inches alternately with 2 hole straps and fasteners through back of raceway (2 hole strap, fastener through back, 2 hole strap, etc.).
 - d. Install separate equipment grounding conductor for grounding of equipment. The raceway alone will not be considered suitable for use as an effective path to ground.
- I. Fittings and Accessories Schedule:
1. General:
 - a. Use fittings and accessories that have a temperature rating equal to, or higher than the temperature rating of the conductors to be installed within the raceway.
 - b. Use zinc electroplate or hot dipped galvanized steel/malleable iron or cast iron alloy fittings and accessories in conjunction with ferrous raceways in dry and damp locations, unless otherwise specified or indicated on the drawings.
 - c. Use malleable iron or cast iron alloy fittings and accessories having hot dipped/mechanically galvanized finish or other specified corrosion resistant finish in conjunction with ferrous raceways in wet locations, unless otherwise specified or indicated on the drawings.

- d. Use insulated grounding bushings or grounding wedges on ends of conduit for terminating and bonding equipment grounding conductors (when required) if cabinet or boxes are not equipped with grounding/bonding screws or lugs.
- e. Use caps or plugs to seal ends of conduits until wiring is installed (to exclude foreign material).
- f. Use insulated grounding bushings on the ends of conduits that are not directly connected to the enclosure (such as stub-ups under equipment, etc.), and bond between bushings and enclosure with equipment grounding conductor.
- g. Use expansion fittings where raceways cross expansion joints.
- h. Use deflection fittings where raceways cross expansion joints that move in more than one plane.
- i. Use 2 locknuts and an insulated bushing on end of each conduit entering sheet metal cabinet or box in dry or damp locations.
 - 1) Plastic bushing may be used in lieu of insulated bushing on 1/2 and 3/4 inch conduit.
 - 2) Terminate conduit ends within cabinet/box at the same level.
- 2. For Rigid Metal Conduit: Use threaded fittings and accessories. Use 3 piece conduit coupling where neither piece of conduit can be rotated.
- 3. For Liquid-tight Flexible Metal Conduit: Use liquid-tight connectors.
- 4. For Surface Metal Raceway: Use raceway manufacturer's standard fittings and accessories.
- 5. For Wireways: Use wireway manufacturer's standard fittings and accessories.

3.02 OUTLET, JUNCTION AND PULLBOX INSTALLATION

- A. Mounting Position of Wall Outlets For Wiring Devices: Unless otherwise indicated, install boxes so that the long axis of each wiring device will be vertical.
- B. Height of Wall Outlets: Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

MOUNTING HEIGHT	
Lighting Fixtures	6'-0"
Exit Lights	8'-0" where ceiling height allows a minimum of 6 inch clearance between ceiling and top of exit light. Otherwise mount exit light so that it's top is 6 inches below finished ceiling. Adjust height and clearances as required to suit installation over doors.
Night Lights	2'-0"
Switches	4'-0"
Single & Duplex Receptacles	1'-6"*
Special Purpose Receptacles	4'-0"
Thermostats	5'-0"
Manual Fire Alarm Boxes	4'-0"

Audible Notification Appliances	8'-0" where ceiling height allows a minimum of 6 inch clearance between ceiling and top of appliance. Otherwise mount appliance so that it's top is 6 inches below finished ceiling.
Visible Notification Appliances	Install outlet so that the bottom of the visible lens will be 6'-8" AFF.
Combination Audible/Visible Notification Appliances	Install outlet so that the bottom of the visual lens will be 6'-8" AFF, and the audible section will be above the visible section.
Telecommunications	2'-0"
Telephone	2'-0"
Telephone Marked W.T.	Install outlet so that the highest operable part of the wall mounted telephone will not be more than 4'-0" AFF.

- C. Supplementary Junction and Pull Boxes: In addition to junction and pull boxes indicated on the drawings and required by NFPA 70, provide supplementary junction and pull boxes as follows:
1. When required to facilitate installation of wiring.
 2. At every third 90 degree turn in conjunction with raceway sizes over 1 inch.
 3. At intervals not exceeding 100 feet in conjunction with raceway sizes over 1 inch.
- D. Box Schedule for Concealed Conduit System:
1. Non-Fire Rated Construction:
 - a. Depth: To suit job conditions and comply with NFPA 70 Article 370.
 - b. For Lighting Fixtures: Use galvanized steel outlet boxes designed for the purpose.
 - 1) For Fixtures Weighing 50 lbs. or Less: Box marked "FOR FIXTURE SUPPORT".
 - 2) For Fixtures More Than 50 lbs: Box listed and marked with the weight of the fixture to be supported (or support fixture independent of the box).
 - c. For Junction and Pull Boxes: Use galvanized steel boxes with flush covers.
 - d. For Switches, Receptacles, Etc:
 - 1) Plaster or Cast-In-Place Concrete Walls: Use 4 inch or 4-11/16 inch galvanized steel boxes with device covers.
 - 2) Walls Other Than Plaster or Cast-In-Place Concrete: Use type of galvanized steel box which will allow wall plate to cover the opening made for the installation of the box.
 2. Recessed Boxes in Fire Rated (2 hour maximum) Bearing and Nonbearing Wood or Steel Stud Walls (Gypsum Wallboard Facings):
 - a. Use listed single and double gang metallic outlet and switch boxes. The surface area of individual outlet or switch boxes shall not exceed 16 square inches.

- b. The aggregate surface area of the boxes shall not exceed 100 square inches per 100 square feet of wall surface.
 - c. Securely fasten boxes to the studs. Verify that the opening in the wallboard facing is cut so that the clearance between the box and the wallboard does not exceed 1/8 inch.
 - d. Separate boxes located on opposite sides of walls or partitions by a minimum horizontal distance of 24 inches. This minimum separation distance may be reduced when wall opening protective materials are installed according to the requirements of their classification.
 - e. Use wall opening protective material in conjunction with boxes installed on opposite sides of walls or partitions of staggered stud construction in accordance with the classification requirements for the protective material.
3. Other Fire Rated Construction: Use materials and methods to comply with the listing requirements for the classified construction.
- E. Box Schedule for Exposed Conduit System:
1. Dry and Damp Locations: Use zinc electroplate or hot dipped galvanized threaded type malleable iron or cast iron alloy outlet, junction, and pullboxes or conduit bodies provided with a volume marking in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
 - a. Galvanized steel boxes may be used in conjunction with conduit sizes over 1 inch in non-hazardous dry and damp locations.
 - b. Galvanized steel boxes may be used in conjunction with electrical metallic tubing where it is allowed (specified) to be installed exposed as branch circuit conduits at elevations over 10'-0" above finished floor.
 2. Wet Locations: Use threaded type malleable iron or cast iron alloy outlet junction, and pullboxes or conduit bodies (provided with a volume marking) with hot dipped galvanized or other specified corrosion resistant coating in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
 - a. Use corrosion resistant boxes in conjunction with plastic coated rigid ferrous metal conduit.
 3. Finishing Collar or Combination Finishing Collar/Outlet Box (Surface Mounted Equipment Used With Exposed Raceway):
 - a. Use finishing collar where surface mounted equipment is installed on an exposed raceway outlet box and the equipment base is larger than the outlet box.
 - b. Use combination finishing collar/outlet box where surface mounted equipment is not indicated to be installed on an exposed raceway outlet box, but raceway cannot be run directly into equipment body due to equipment design.
- F. Specific Purpose Outlet Boxes: Use to mount equipment when available and suitable for job conditions. Unless otherwise specified, use threaded type boxes with finish as specified for exposed conduit system, steel (painted) for surface metal raceway system and galvanized steel for recessed installations.

3.03 CONDUCTOR INSTALLATION

- A. Install conductors in raceways after the raceway system is completed.
- B. Do not change, group or combine circuits other than as indicated on the drawings.
- C. Do not change, group or combine circuits other than as indicated on the drawings except as permitted when reusing existing raceways.
- D. Common Neutral Conductor:
 - 1. A common neutral may be used for 2 or 3 branch circuits where the circuits are indicated on the drawings to be enclosed within the same raceway, provided each branch circuit is connected to a different phase in the panelboard.
 - 2. Exceptions: The following circuits shall have a separate neutral:
 - a. Circuits containing ground fault circuit interrupter devices.
 - b. Circuits containing solid state dimmers.
 - c. Circuits recommended by equipment manufacturers to have separate neutrals.
- E. Conductor Size: Install conductors of size shown on drawings. Where size is not indicated, the minimum size allowed is:
 - 1. For Electric Light and Power Branch Circuits: No. 12 AWG.
 - 2. For Class 1 Circuits:
 - a. No. 18 and No. 16 AWG may be used provided they supply loads that do not exceed 6 amps (No. 18 AWG), or 8 amps (No. 16 AWG).
 - b. Larger than No. 16 AWG: Use to supply loads not greater than the ampacities given in NFPA 70 Section 310-15.
 - 3. For Class 3 Circuits: No. 18 AWG.
- F. Color Coding:
 - 1. Color Coding for 120/208 Volt Electric Light and Power Wiring:
 - a. Color Code:
 - 1) 2 wire circuit - black, white.
 - 2) 3 wire circuit - black, red, white.
 - 3) 4 wire circuit - black, red, blue, white.
 - b. White to be used only for an insulated grounded conductor (neutral). If neutral is not required use black and red, or black, red and blue for phase to phase circuits.
 - 1) "White" for Sizes No. 6 AWG or Smaller:
 - a) Continuous white outer finish, or:
 - b) Three continuous white stripes on other than green insulation along its continuous length.
 - 2) "White" for Sizes Larger Than No. 6 AWG:
 - a) Continuous white outer finish, or:
 - b) Three continuous white stripes on other than green insulation along its continuous length, or:
 - c) Distinctive white markings (color coding tape) encircling the conductor, installed on the

- conductor at time of its installation. Install white color coding tape at terminations, and at 1' 0" intervals in gutters, pullboxes, and manholes.
- c. Colors (Black, Red, Blue):
 - 1) For Branch Circuits: Continuous color outer finish.
 - 2) For Feeders:
 - a) Continuous color outer finish, or:
 - b) Color coding tapes encircling the conductors, installed on the conductors at time of their installation. Install color coding tapes at terminations, and at 1' 0" intervals in gutter, pullboxes, and manholes.
2. Color Coding For 277/480 Volt Electric Light and Power Wiring:
 - a. Color Code:
 - 1) 2 wire circuit - brown, gray.
 - 2) 3 wire circuit - brown, yellow, gray.
 - 3) 4 wire circuit - brown, yellow, orange, gray
 - b. Gray to be used only for an insulated grounded conductor (neutral). If neutral is not required use brown and yellow, or brown, yellow and orange for phase to phase circuits.
 - 1) "Gray" For Sizes No. 6 AWG or Smaller.
 - a) Continuous gray outer finish.
 - 2) "Gray" For Sizes Larger Than No. 6 AWG:
 - a) Distinctive gray markings (color coding tape) encircling the conductor, installed on the conductor at time of its installation. Install gray color coding tape at terminations, and at 1' 0" intervals in gutters, pullboxes, and manholes.
 - c. Colors (Brown, Yellow, Orange):
 - 1) For Branch Circuits: Continuous color outer finish.
 - 2) For Feeders:
 - a) Continuous color outer finish, or:
 - b) Color coding tapes encircling the conductors, installed on the conductors at the time of their installation. Install color coding tapes at terminations, and at 1' 0" intervals in gutters, pullboxes, and manholes.
 3. More Than One Nominal Voltage System Within A building: Permanently post the color coding scheme at each branch-circuit panelboard.
 4. Existing Color Coding Scheme: Where an existing color coding scheme is in use, match the existing color coding if it is in accordance with the requirements of NFPA 70.
 5. Color Code For Wiring Other Than Electric Light and Power: In accordance with ICEA/NEMA WC-30 "Color Coding of Wires and Cables". Other coding methods may be used, as approved.
- G. Identification: Use tags to identify feeders and designated circuits. Install tags so that they are easily read without moving adjacent feeders or require removal of arc proofing tapes. Attach tags with non-ferrous wire or brass chain.

1. Interior Feeders: Identify each feeder in pullboxes and gutters. Identify by feeder number and size.
 2. Exterior Feeders: Identify each feeder in manholes and in interior pullboxes and gutters. Identify by feeder number and size, and also indicate building number and panel designation from which feeder originates.
 3. Street and Grounds Lighting Circuits: Identify each circuit in manholes and lighting standard bases. Identify by circuit number and size, and also indicate building number and panel designation from which circuit originates.
- H. Use wire management products to bundle, route, and support wiring in junction boxes, pullboxes, wireways, gutters, channels, and other locations where wiring is accessible.
- I. Equipment Grounding Conductor:
1. Install equipment grounding conductor:
 - a. Where specified in other Sections or indicated on the drawings.
 - b. In conjunction with circuits recommended by equipment manufacturers to have equipment grounding conductor.
 2. Equipment grounding conductor is not intended as a current carrying conductor under normal operating circumstances.
 3. Color Coding For Equipment Grounding Conductor:
 - a. Color Code: Green.
 - b. "Green" For sizes No. 6 AWG or Smaller:
 - 1) Continuous green outer finish, or:
 - 2) Continuous green outer finish with one or more yellow stripes, or:
 - 3) Bare copper (see exception below).
 - c. "Green" For Sizes Larger Than No. 6:
 - 1) Stripping the insulation or covering from the entire exposed length (see exception below).
 - 2) Marking the exposed insulation or covering with green color coding tapes.
 - 3) Identify at each end and at every point where the equipment grounding conductor is accessible.
- J. Conductor Schedule - Types and Use:
1. Electric Light and Power Circuits:
 - a. FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, or XHHW-2: Wiring in dry or damp locations (except where special type insulation is required).
 - b. THWN, THWN-2, XHHW, XHHW-2, USE, or USE-2: Wiring in wet locations (except where type USE or USE-2 insulated conductors are specifically required, or special type insulation is required).
 - c. THHN, THWN or THWN-2: Wiring installed in existing raceway systems (except where special type insulation is required).

- d. THHN, THW-2, THWN-2, XHHW, or XHHW-2: Wiring for electric discharge lighting circuits (fluorescent, HID), except where fixture listing requires wiring rated higher than 90° C.
 - e. THWN Marked “Gasoline and Oil Resistant”: Wiring to gasoline and fuel oil pumps.
 - f. USE, or USE-2: Wiring indicated on the drawings to be direct burial in earth.
 - g. USE, or USE-2 Marked “Sunlight Resistant”:
 - 1) Service entrance wiring from overhead service to the service equipment.
 - 2) Wiring exposed to the weather and unprotected (except where special type insulation is required).
 2. Class 1 Circuits: Use Class 1 wiring specified in Part 2 (except where special type insulation is required).
 3. Class 2 Circuits: Use Class 2 wiring specified in Part 2 (except where special type insulation is required).
 4. Class 3 Circuits: Use Class 3 wiring specified in Part 2 (except where special type insulation is required).
- K. Connector Schedule - Types And Use:
1. Temperature Rating: Use connectors that have a temperature rating, equal to, or greater than the temperature rating of the conductors to which they are connected
 2. Splices:
 - a. Dry Locations:
 - 1) For Conductors No. 8 AWG or Smaller: Use spring type pressure connectors, indent type pressure connectors with insulating jackets, or connector blocks (except where special type splices are required).
 - 2) For Conductors No. 6 AWG or Larger: Use connector blocks or uninsulated indent type pressure connectors. Fill indentions in uninsulated connectors with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with heat shrinkable splices or cold shrink splices.
 - 3) Gutter Taps in Panelboards: For uninsulated type gutter taps fill indentions with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with gutter tap cover.
 - b. Damp Locations: As specified for dry locations, except apply moisture sealing tape over the entire insulated connection (moisture sealing tape not required if heat shrinkable splices or cold shrink splices are used).
 - c. Wet Locations: Use uninsulated indent type pressure connectors and insulate with resin splice kits, cold shrink splices or heat shrinkable splices. Exception: Splices above ground which are totally enclosed and protected in NEMA 3R, 4, 4X enclosures may be spliced as specified for damp locations.
 3. Terminations:
 - a. For Conductors No. 10 AWG or Smaller: Use terminals for:

- 1) Connecting wiring to equipment designed for use with terminals.
- b. For Conductors No. 8 AWG or Larger: Use compression or mechanical type lugs for:
 - 1) Connecting cables to flat bus bars.
 - 2) Connecting cables to equipment designed for use with lugs.
- c. For Conductor Sizes Larger Than Terminal Capacity On Equipment: Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduced section not longer than one foot). Use compression or mechanical type connectors suitable for reducing connection.

3.04 WIRING DEVICE INSTALLATION

- A. Local Switches:
 1. Install switches indicated Sa, Sb, Sc, etc, for control of outlets, with corresponding letters on the same circuit.
 2. Where more than one switch occurs at same location in a 120 volt system, arrange switches in gangs and cover with one face plate.
 3. Install switches in a 277 volt system in separate single boxes if voltage between exposed live metal parts of adjacent switches exceeds 300 volts.
 4. Install single and double pole switches so that switch handle is up when switch is in the "On" position.
- B. Receptacles:
 1. Install receptacles with ground pole in the down position.
- C. Wall Plates:
 1. Install wall plates on all wiring devices in dry locations, with finish to match hardware in each area.
 2. Install 5/8 inch bushed wall plates on telephone outlets.
- D. Weatherproof Covers: Install weatherproof covers on wiring devices in damp and wet locations.
- E. Nameplates: Install phenolic or embossed aluminum nameplate on each special purpose receptacle indicating phase, ampere and voltage rating of the circuit. Attach nameplate with rivets or vandal resistant fasteners to wall plate or to wall above receptacle. Wall plates may be engraved with required data in lieu of separate nameplates.
- F. Mats: Where flush plates are required over outlet boxes that cannot be set deep enough for the plates to fit closely over the finished wall surfaces, provide oak mats to fill the space between the finished wall surface and the plate.

3.05 SUPPORTING DEVICE INSTALLATION

- A. Attachment of Conduit System:
 1. Masonry Construction: Attach conduit to masonry construction by means of pipe straps and masonry anchorage devices.

3. Steel Beams: Attach conduit to steel beams by means of “C” beam clamps and hangers.
 4. Multiple Parallel Conduit Runs: Use channel support system.
 5. Conduit Above Suspended Ceiling: Do not rest conduit directly on runner bars, T-bars, etc. Support conduit from ceiling supports or from construction above suspended ceiling.
- B. Support of Lighting Fixtures:
1. General: Support fixtures with suitable accessories.
 2. Number of Supports (Fluorescent Fixtures):
 - a. Support individual fluorescent fixtures less than 2 feet wide at 2 points. Support continuous row fluorescent fixtures less than 2 feet wide at points equal to the number of fixtures plus one. Uniformly distribute the points of suspension over the row of fixtures.
 - b. Support individual fluorescent fixtures 2 feet or wider at 4 corners. Support continuous row fluorescent fixtures 2 feet or wider at points equal to twice the number of fixtures plus 2. Uniformly distribute the points of suspension over the row of fixtures.

3.06 SAFETY SWITCH INSTALLATION

- A. Install switches so that the maximum height above the floor to the center of the operating handle does not exceed 6’-6”.
- B. Identify each safety switch, indicating purpose or load served:
 1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.
 2. NEMA 12 Enclosures: Rivet or bolt and gasket nameplate to the cover.
 3. NEMA 3R, 4, 4X Enclosures: Attach nameplate to the cover using adhesive specifically designed for the purpose, or mount nameplate on wall or other conspicuous location adjacent to switch. Do not penetrate enclosure with fasteners.
- C. Paint switches used for the fire protective signaling system with red paint and identify - “FIRE ALARM CIRCUIT CONTROL”.

3.07 GROUNDING AND BONDING

- A. Connections:
 1. Make grounding and bonding connections, except buried connections, with silicone-bronze hardware and ground clamps, ground lugs or compression connectors, to suit job conditions.
 2. For buried connections use exothermic type weld or compression connectors.

END OF SECTION

WORK AREA SCHEDULE - BID QUANTITY SUMMATION TABLE

SPEC.	EBU'S WITHIN THE WORK AREA	DESCRIPTION (WORK BEYOND EBU DESCRIPTION)	SURVEYED QTY	BID QTY	UNITS	ADDITIONAL NOTES
260501.04	EBU-06		EBU-06: (5)	EBU-06: (5)	EA	
260501.01	EBU-03		EBU-03: (1)	EBU-03: (1)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (2)	EBU-05: (2)	EA	
260501.05	EBU-07		EBU-07: (1)	EBU-07: (1)	EA	
260501.06	EBU-09		EBU-09: (5)	EBU-09: (5)	EA	
NIC	EBU-01		EBU-01: (1)	EBU-01: (0)	EA	
260501.01	EBU-03		EBU-03: (1)	EBU-03: (1)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (1)	EBU-05: (1)	EA	
260501.05	EBU-07		EBU-07: (1)	EBU-07: (1)	EA	
260501.06	EBU-09		EBU-09: (1)	EBU-09: (1)	EA	
NIC	EBU-02		EBU-02: (1)	EBU-02: (0)	EA	
260501.01	EBU-03		EBU-03: (3)	EBU-03: (3)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (2)	EBU-05: (2)	EA	
260501.06	EBU-09		EBU-09: (3)	EBU-09: (3)	EA	
NIC	EBU-01		EBU-01: (1)	EBU-01: (0)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (2)	EBU-05: (2)	EA	
260501.01	EBU-03		EBU-03: (2)	EBU-03: (2)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (1)	EBU-05: (1)	EA	
260501.06	EBU-09		EBU-09: (6)	EBU-09: (6)	EA	
NIC	EBU-01		EBU-01: (1)	EBU-01: (0)	EA	
260501.01	EBU-03		EBU-03: (10)	EBU-03: (10)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (2)	EBU-05: (2)	EA	
NIC	EBU-02		EBU-02: (1)	EBU-02: (0)	EA	
260501.02	EBU-04		EBU-04: (0)	EBU-04: (1)	EA	
260501.03	EBU-05		EBU-05: (2)	EBU-05: (2)	EA	
NIC	EBU-02		EBU-02: (1)	EBU-02: (0)	EA	
260501.01	EBU-03		EBU-03: (1)	EBU-03: (1)	EA	
260501.06	EBU-09		EBU-09: (1)	EBU-09: (1)	EA	
260501.07	EBU-10		EBU-10: (0)	EBU-10: (1)	EA	
260501.08	EBU-11	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. REMOVE HORIZONTAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 6' OF 3/4" LIQUID-TIGHT FLEXIBLE METAL CONDUIT AND WIRE PER FIXTURE. ASSUME (3) #10 CONDUCTORS PER CONDUIT. REMOVE VERTICAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 10' OF 3/2" GRC BACK TO NEAREST COUPLING. ASSUME (3) #10 CONDUCTORS PER CONDUIT. TAG ALL CIRCUITS FOR REUSE. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	EBU-11: (100)	EBU-11: (100)	EA	
260501.09	EBU-12	PROVIDE TYPE W1 FULL CUT-OFF LED WALL-PACK FIXTURES. INSTALL AT 15' ABOVE ROADWAY SURFACE. PROVIDE 10' GRC WITH (3) #10 CONDUCTORS FROM JUNCTION BOX TO WALL-PACK. CONNECT TO EXISTING LIGHTING CIRCUITS TAGGED FOR REUSE. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	EBU-12: (40)	EBU-12: (40)	EA	

2

- NOTE:**
- SEE DRAWING E-001 FOR EBU DESCRIPTIONS
 - WORK AREA CORRESPONDS TO AREAS SHOWN ON DRAWINGS E-101, E-102, E-103 AND E-104.
 - NUMBER IN THE PARENTHESES IN THE SURVEYED AND BID QUANTITY COLUMNS REFER TO THE NUMBER OF CONDUITS IN THAT WORK AREA FOR THAT SPECIFIC EBU. EBU DESCRIPTION AND BASIS OF WORK SHOWN ON DRAWING E-001 APPLIES TO (1) CONDUIT. PROVIDE BASIS OF WORK TO EACH CONDUIT SHOWN IN THE WORK AREA.

E-DRAWING BID QUANTITY SUMMATION TABLE FOR E-CONTRACT

ITEM NO.	WORK NOTE	SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	UNITS
E1		078400.01	FIRESTOPPING	(0)	(1)	SF

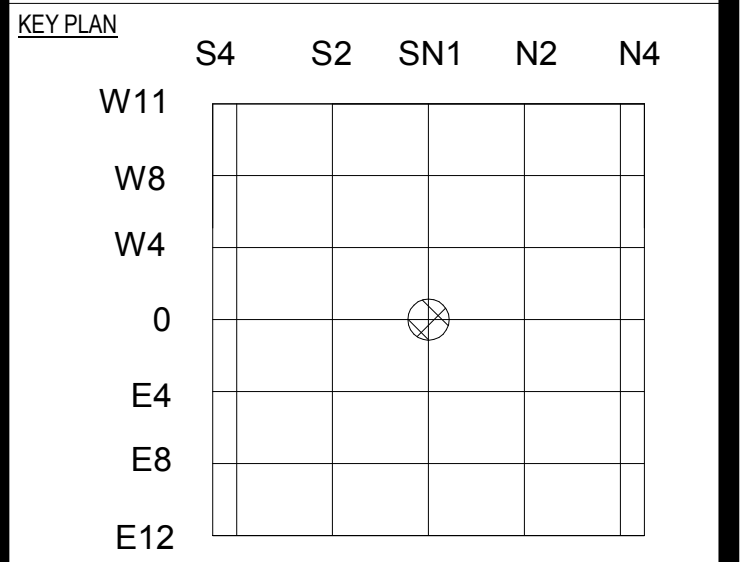
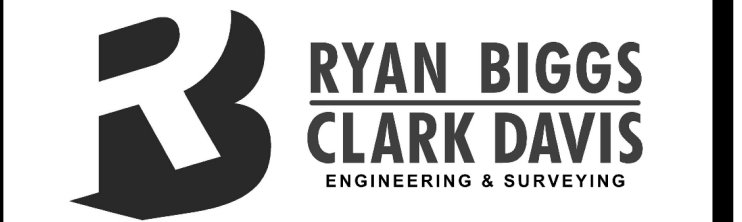
NOTE:
THE BID SUMMATION TABLE ON THIS DRAWING IDENTIFIES WORK QUANTITIES FOR THE E-CONTRACT. HOWEVER THIS TABLE AND NOTES ARE NUMBERED AS A G-DRAWING TO LET EACH TRADE KNOW WHAT WORK IS BEING DONE. AS ALL TRADES WILL HAVE TO WORK TOGETHER IN A SPECIFIC WORK ZONE, NOTE AT RANDOM THROUGHOUT ALL ZONES.

EBU = ELECTRICAL BASE UNIT BY UTILITY

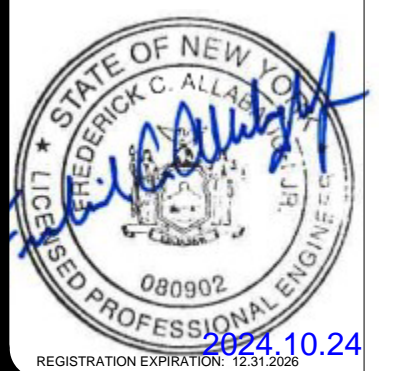
REVISED DRAWING 10/24/2024

DESIGN & CONSTRUCTION

CONSULTANT
CERTIFICATE OF AUTHORIZATION #: 019598



WARNING:
THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS 'A' MISDEMEANOR.



CONTRACT: CONSTRUCTION, HVAC, PLUMBING AND ELECTRICAL
TITLE: REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS
LOCATION: EMPIRE STATE PLAZA ALBANY, NY
CLIENT: OFFICE OF GENERAL SERVICES

MARK	DATE	DESCRIPTION
2	2024.10.24	ADDENDUM #4
1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS

PROJECT NUMBER: 45604-C,H,P,E
DESIGNED BY: JTS
DRAWN BY: JTS
CHECKED: SRB
APPROVED: SRB

SHEET TITLE:
ELECTRICAL - BID QUANTITY SUMMATION TABLE

DRAWING NUMBER:
G-010

LIGHT FIXTURE SCHEDULE								
TYPE	DESCRIPTION	FINISH	MANUFACTURER	CATALOG NO.	LAMPING		WATTAGE	VOLTAGE
					QTY	TYPE		
W1	FULL CUT-OFF LED WALL- PACK	DARK BRONZE	KENALL	FNSL-3-7-DB-24L40K-DCC-DV	-	LED	27 W	120-277 V

ELECTRICAL WORK (BASE UNIT BY UTILITY)				EBU = ELECTRICAL BASE UNIT BY UTILITY			
ITEM NO.	UTILITY	SPEC	DESCRIPTION	BASIS OF WORK (FOR ONE CONDUIT)	SURVEYED QTY	BID QTY	ADDITIONAL NOTES
EBU-01	DATA	N.I.C	DATA CONDUIT, CABLE TRAYS AND CABLES SHALL BE EXISTING TO REMAIN. ALL CONDUITS AND CABLES SHALL BE PROTECTED DURING CONSTRUCTION. COORDINATE WITH C-CONTRACT. SHALL THE DATA CONDUITS/CABLING BE REMOVED DUE TO THE CONCRETE WORK THAT IS TO BE PERFORMED, COORDINATION SHALL GO THROUGH DIRECTOR'S REPRESENTATIVE. ASSUME (8) CAT6 CABLES PER 1" CONDUIT.	-MOBILIZE -TONE OUT AND DISCONNECT CONDUCTORS AND TAG FOR RECONNECT -PULL CONDUCTORS AND CONDUIT -RE-INSTALL CONDUIT AND CONDUCTORS -TEST -DEMOLISH	100LF CONDUIT 100LF WIRE	0LF CONDUIT 0LF WIRE	WORK TO BE PERFORMED BY OWNER'S DATA VENDOR/OTHERS. NOT IN E-CONTRACT.
EBU-02	FIRE ALARM AND SECURITY	N.I.C	FIRE ALARM AND SECURITY CONDUIT, WIRE AND COMPONENTS SHALL BE COORDINATED WITH VENDOR HONEYWELL. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-INSTALL TEMPORARY SYSTEM (200FT OF CABLE AND 5 DEVICES) -DISCONNECT AND TAG CONNECTIONS AT SOURCE -PULL OUT CABLES -REMOVE 20' GRC -INSTALL PULL BOX -INSTALL 20' GRC -RE-PULL CONDUCTORS AND TERMINATE -TEST -REMOVE TEMPORARY SYSTEM	200LF CONDUIT 200LF WIRE	0LF CONDUIT 0LF WIRE	WORK TO BE PERFORMED BY OWNER'S FIRE ALARM VENDOR/OTHERS. NOT IN E-CONTRACT.
EBU-03	1/2" - 1" LIGHTING CONDUIT, WIRE, FIXTURES	260501.01	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. CONDUIT AND WIRE SHALL BE REMOVED FOR JOINT AND CONCRETE WORK. REMOVE 10' OF PVC CONDUIT FROM 1/2" UP TO AND INCLUDING 1", AND WIRE ON BOTH SIDES OF THE JOINT AND/OR CONCRETE REPAIR AREA BEING WORKED ON. ASSUME (15) #12 CURRENT CARRYING CONDUCTORS PER CONDUIT. TAG ALL CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH OF THE EXISTING CONDUIT AND PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAG CIRCUITS FROM REMOVAL AS REQUIRED. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. PROVIDE TEMPORARY FEEDS AS NEEDED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-MOBILIZE -INSTALL TEMPORARY LIGHTING -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -REMOVE 20' PVC CONDUIT -REMOVE 375' CONDUCTORS -REMOVE LIGHT FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 20' PVC CONDUIT -INSTALL 400' CONDUCTORS -RE-INSTALL LIGHT FIXTURES -RE-CONNECT CIRCUITS -REMOVE TEMPORARY LIGHTING -DEMOLISH	20LF CONDUIT 400LF WIRE	40LF CONDUIT 600LF WIRE	
EBU-04	1 1/4" - 2" LIGHTING CONDUIT, WIRE, FIXTURES	260501.02	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. CONDUIT AND WIRE SHALL BE REMOVED FOR JOINT AND CONCRETE WORK. REMOVE 10' OF PVC CONDUIT FROM 1 1/4" UP TO AND INCLUDING 2", AND WIRE ON BOTH SIDES OF THE JOINT AND/OR CONCRETE REPAIR AREA BEING WORKED ON. ASSUME (15) #10 CURRENT CARRYING CONDUCTORS PER CONDUIT. TAG ALL CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH OF THE EXISTING CONDUIT AND PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAG CIRCUITS FROM REMOVAL AS REQUIRED. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. PROVIDE TEMPORARY FEEDS AS NEEDED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-MOBILIZE -INSTALL TEMPORARY LIGHTING -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -REMOVE 20' PVC CONDUIT -REMOVE 750' CONDUCTORS -REMOVE LIGHT FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 20' PVC CONDUIT -INSTALL 750' CONDUCTORS -RE-INSTALL LIGHT FIXTURES -RE-CONNECT CIRCUITS -REMOVE TEMPORARY LIGHTING -DEMOLISH	0LF CONDUIT 0LF WIRE	40LF CONDUIT 1000LF WIRE	
EBU-05	1/2" - 1" POWER CONDUIT, WIRE, FIXTURES	260501.03	LOW VOLTAGE POWER: LOCATE SOURCE OF POWER AND DISCONNECT. CUT/REMOVE 10' OF GRC CONDUIT FROM 1/2" UP TO AND INCLUDING 1", AND WIRE ON BOTH SIDES OF THE JOINT AND/OR CONCRETE REPAIR AREA BEING WORKED ON. ASSUME (15) #12 CURRENT CARRYING CONDUCTORS PER CONDUIT DURING REMOVAL. TAG ALL EXISTING CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH SIDE OF EXISTING CONDUIT AND PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAGGED CIRCUITS ARE REQUIRED. PROVIDE TEMPORARY FEEDS AS NEEDED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-MOBILIZE -INSTALL TEMPORARY POWER -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -REMOVE 20' GRC CONDUIT -REMOVE 375' CONDUCTORS -REMOVE ELECTRICAL FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 20' GRC CONDUIT -INSTALL 400' CONDUCTORS -RE-INSTALL ELECTRICAL FIXTURES -RE-CONNECT CIRCUITS -REMOVE TEMPORARY POWER -DEMOLISH	20LF CONDUIT 400LF WIRE	40LF CONDUIT 600LF WIRE	
EBU-06	1 1/4" - 2" POWER CONDUIT, WIRE, FIXTURES	260501.04	LOW VOLTAGE POWER: LOCATE SOURCE OF POWER AND DISCONNECT. CUT/REMOVE 10' OF GRC CONDUIT FROM 1 1/4" UP TO AND INCLUDING 2", AND WIRE ON BOTH SIDES OF THE JOINT AND/OR CONCRETE REPAIR AREA BEING WORKED ON. ASSUME (30) #10 CURRENT CARRYING CONDUCTORS PER CONDUIT DURING REMOVAL. TAG ALL EXISTING CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH SIDE OF EXISTING CONDUIT AND PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAGGED CIRCUITS ARE REQUIRED. PROVIDE TEMPORARY FEEDS AS NEEDED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-MOBILIZE -INSTALL TEMPORARY POWER -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -REMOVE 20' GRC CONDUIT -REMOVE 750' CONDUCTORS -REMOVE ELECTRICAL FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 20' GRC CONDUIT -INSTALL 750' CONDUCTORS -RE-INSTALL ELECTRICAL FIXTURES -RE-CONNECT CIRCUITS -REMOVE TEMPORARY POWER -DEMOLISH	20LF CONDUIT 750LF WIRE	40LF CONDUIT 1000LF WIRE	
EBU-07	3" - 4" POWER CONDUIT, WIRE, FIXTURES	260501.05	LOW VOLTAGE POWER: LOCATE SOURCE OF POWER AND DISCONNECT. CUT/REMOVE 10' OF PVC CONDUIT FROM 3" UP TO AND INCLUDING 4", AND WIRE ON BOTH SIDES OF THE JOINT AND/OR CONCRETE REPAIR AREA BEING WORKED ON. ASSUME (15) #2 CURRENT CARRYING CONDUCTORS PER CONDUIT DURING REMOVAL. TAG ALL EXISTING CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH SIDE OF EXISTING CONDUIT AND PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAGGED CIRCUITS ARE REQUIRED. PROVIDE TEMPORARY FEEDS AS NEEDED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-MOBILIZE -INSTALL TEMPORARY POWER -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -REMOVE 20' PVC CONDUIT -REMOVE 750' CONDUCTORS -REMOVE ELECTRICAL FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 20' PVC CONDUIT -INSTALL 750' CONDUCTORS -RE-INSTALL ELECTRICAL FIXTURES -RE-CONNECT CIRCUITS -REMOVE TEMPORARY POWER -DEMOLISH	20LF CONDUIT 750LF WIRE	40LF CONDUIT 1000LF WIRE	
EBU-09	UNKNOWN UTILITY	260501.06	UNKNOWN UTILITIES SHALL BE COORDINATED WITH DIRECTOR'S REPRESENTATIVE. TRACE OUT CIRCUITS AS REQUIRED. CONDUITS THAT ARE FOUND TO BE POWER, LIGHTING, DATA, TELEPHONE, FIRE ALARM AND SECURITY, REFER TO EBU-10 REFERENCES ABOVE. CONDUITS THAT ARE FOUND TO BE HIGH VOLTAGE (ABOVE 480V) OR ARE CONSIDERED ESSENTIAL EQUIPMENT BY DIRECTOR'S REPRESENTATIVE REFER TO EBU-10 BELOW.	-MOBILIZE -TRACE OUT AND DISCONNECT CONDUCTORS AND TAG FOR RECONNECT -PULL CONDUCTORS AND CONDUIT -RE-INSTALL CONDUIT AND CONDUCTORS -TEST -DEMOLISH	100LF CONDUIT 100LF WIRE	350LF CONDUIT 350LF WIRE	
EBU-10	UNKNOWN UTILITY - HIGH VOLTAGE	260501.07	UNKNOWN UTILITIES SHALL BE COORDINATED WITH DIRECTOR'S REPRESENTATIVE. TRACE OUT CIRCUITS AS REQUIRED. HIGH VOLTAGE POWER/ESSENTIAL POWER AND EQUIPMENT: CONDUITS AND WIRE SHALL BE EXISTING TO REMAIN. COORDINATE WITH C-CONTRACT TO PROTECT AND REMAIN ACTIVE DURING CONSTRUCTION. PROVIDE WARNING LABELS - "DANGER - LIVE HIGH VOLTAGE CONDUCTORS"	-UTILITY SHALL BE EXISTING TO REMAIN AND REMAIN ACTIVE. -PROVIDE WARNING LABELS AS INSTRUCTED IN DESCRIPTION	100LF CONDUIT 100LF WIRE	100LF CONDUIT 100LF WIRE	
EBU-11	NORTH TUBE LIGHTING REMOVAL	260501.08	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. REMOVE (80) HORIZONTAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 6' OF 1/2" LIQUID-TIGHT FLEXIBLE METAL CONDUIT AND WIRE PER FIXTURE. ASSUME (3) #10 CONDUCTORS PER CONDUIT. REMOVE (20) VERTICAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 10' OF 1/2" GRC BACK TO NEAREST COUPLING. ASSUME (3) #10 CONDUCTORS PER CONDUIT. TAG ALL CIRCUITS FOR REUSE.	-MOBILIZE -TRACE, TAG, AND DISCONNECT CIRCUITS FROM SOURCE -INSTALL TEMPORARY LIGHTING -REMOVE (100) #4 FLUORESCENT VAPOR-TIGHT LIGHT FIXTURES -REMOVE 480' LIQUID-TIGHT FLEXIBLE METAL CONDUIT -REMOVE 200' GRC CONDUIT -REMOVE 2,040' CONDUCTORS	100 FIXTURES 600LF CONDUIT 2,040LF WIRE	100 FIXTURES 600LF CONDUIT 2,040LF WIRE	
EBU-12	NORTH TUBE LIGHTING INSTALLATION	260501.09	PROVIDE (40) TYPE W1 FULL CUT-OFF LED WALL-PACK FIXTURES. INSTALL AT 15' ABOVE ROADWAY SURFACE. PROVIDE 10 GRC WITH (3) #10 CONDUCTORS FROM JUNCTION BOX TO WALL-PACK. CONNECT TO EXISTING LIGHTING CIRCUITS TAGGED FOR REUSE. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	-INSTALL (40) TYPE W1 LIGHT FIXTURES -INSTALL (2) JUNCTION BOXES -INSTALL 400' GRC CONDUIT -INSTALL 1,200' CONDUCTORS -RE-CONNECT CIRCUITS -REMOVE TEMPORARY LIGHTING -DEMOLISH	N/A	40 FIXTURES 400LF CONDUIT 1,200LF WIRE	

NOTE:
1. SEE DRAWING G-010 FOR BID QUANTITIES AND ADDITIONAL DESCRIPTIONS OF ALL WORK AREAS.
2. BASIS OF WORK REFERS TO WORK DONE TO (1) CONDUIT.

GENERAL REMOVAL NOTES

A. ELECTRICAL EQUIPMENT SHOWN DASHED ON REMOVAL DRAWINGS, INCLUDING ASSOCIATED ANCHORS, SUPPORTS, STRAPS, BOXES, FITTINGS AND OTHER APPURTENANCES NOT SHOWN, SHALL BE DISCONNECTED AND REMOVED. REMOVE ASSOCIATED BRANCH CIRCUITRY TO SOURCE.
B. EXISTING RACEWAYS AND DEVICE BACKBOXES NOT INTERFERING WITH NEW WORK SHALL BE REUSED WHERE POSSIBLE.
C. PROVIDE REQUIRED JUNCTION BOXES, RACEWAY AND WIRING TO MODIFY/EXTEND EXISTING SYSTEMS AND CIRCUITS FED DOWNSTREAM OF ELECTRICAL EQUIPMENT SHOWN TO BE REMOVED.
D. CUT ABANDONED CONDUITS INSTALLED THRU WALLS AND FLOORS FLUSH WITH SURFACE AND PATCH PENETRATIONS (FIRESTOP IF LOCATED ON A FIRE RATED SURFACE). PATCH AND PAINT SURFACES IN EXPOSED AREAS TO MATCH SURROUNDINGS MATERIALS, FINISHES AND COLORS.
E. PROVIDE BLANK COVERPLATES ON UNUSED BACKBOXES REMAINING FROM REMOVALS NOT SPECIFIED TO BE INFILLED.
F. EXISTING EQUIPMENT SHOWN TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION.

ELECTRICAL ABBREVIATIONS

##AF	ARC FAULT CIRCUIT BREAKER. ## INDICATES BREAKER SIZE
'E' SERIES	ELECTRICAL DRAWINGS
'M' SERIES	HVAC DRAWINGS
'P' SERIES	PLUMBING DRAWINGS
'S' SERIES	STRUCTURAL DRAWINGS
AF	ABOVE FINISHED FLOOR
AL	ALUMINUM
AMP	AMPERAGE
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
CB	CIRCUIT BREAKER
cd	CANDELA
CKT	CIRCUIT
CU	CONDENSING UNIT
CJH	CABINET UNIT HEATER
DDC	TEMPERATURE CONTROLS
DEFIB	DEFIBRILLATOR CABINET
DIA	DIAMETER
DISC	DISCONNECT
DM	DIMMER
EF	EXHAUST FAN
EM	EMERGENCY BALLAST
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENC	ENCLOSURE
EWG	ELECTRIC WATER COOLER
FA	FIRE ALARM
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
J-BOX	JUNCTION BOX
LB	CONDULETTE
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MFR	MANUFACTURER
MH	METAL HALIDE
MLO	MAIN LUG ONLY
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
OC	OCCUPANCY SENSOR
PV	POST INDICATOR VALVE
QUAD	QUADRUPLEX
RECPTS	RECEPTACLES
SPEC	SPECIFICATION
SR	SURFACE RACEWAY
SW	SWITCH
TELO	TELECOMMUNICATIONS
TSP	THWISTED, SHIELDED PAIR
TYP	TYPICAL
UC	UNDER COUNTER
UE	UNDERGROUND ELECTRIC
UF	UNDERGROUND FIBER
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
WP	WEATHERPROOF
XFMR	TRANSFORMER
Ø	ELECTRICAL PHASE

SECURITY LEGEND

SYMBOL	DESCRIPTION
	SECURITY CAMERA (VENDOR: HONEYWELL)

POWER LEGEND

SYMBOL	DESCRIPTION
	SAFETY SWITCH
	JUNCTION BOX
	DUPLEX RECEPTACLE
	PANELBOARD
	UNIT HEATER

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	CEILING SPEAKER BOX (VENDOR: HONEYWELL)

TELECOMMUNICATIONS LEGEND

SYMBOL	DESCRIPTION
	TELEPHONE OUTLET

LIGHTING LEGEND

SYMBOL	DESCRIPTION
	1'x4' LUMINAIRE
	WALL-MOUNT LUMINAIRE
	CEILING EXIT SIGN - REFER TO PLANS FOR CHEVRONS AND SINGLE/DOUBLE FACE

POWER GENERAL NOTES

A. ELECTRICAL PLANS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO DEPICT ALL OF THE ARCHITECTURAL DETAIL OR SPECIFIC ROUTING OF CONDUITS, WIRING, ETC. FIELD VERIFY ALL DIMENSIONS AND ROUTING ONSITE WITH ACTUAL CONDITIONS.
B. ALL EQUIPMENT AND MATERIALS SHALL SHOW EVIDENCE OF LISTING OR LABELLING BY AN AGENCY ACCEPTABLE TO THE BUILDING CODE OF NEW YORK STATE.
C. PROVIDE ALL NECESSARY ANCHORS, SUPPORTS, STRAPS, BOXES, FITTINGS AND OTHER APPURTENANCES NOT INDICATED ON THE DRAWINGS BUT REQUIRED FOR A COMPLETE SYSTEM.
D. INSTALL ALL BRANCH CIRCUITRY WITHIN RACEWAY UNLESS NOTED OTHERWISE. MINIMUM DIAMETER OF RACEWAY IS: 3/4-IN.
E. ALL CONDUIT SHALL BE SUPPORTED BY PIPE STRAPS, SUITABLE CLAMPS OR HANGERS ATTACHED TO THE BUILDING STRUCTURE. CONDUIT SHALL NOT BE SUPPORTED FROM ADJOINING PIPE OR INSTALLED IN SUCH A MANNER AS TO PREVENT THE READY REMOVAL OF OTHER EQUIPMENT FOR REPAIRS.
F. CONDUCTORS #12 AND SMALLER SHALL BE SOLID COPPER TYPE XHHW, THHN OR THWN. CONDUCTORS #8 AND LARGER SHALL BE STRANDED COPPER TYPE XHHW, THHN OR THWN. CONDUCTORS INSTALLED IN DAMP OR WET LOCATIONS SHALL BE TYPE XHHW.
G. IDENTIFY ALL CONDUCTORS AT BOTH ENDS AND WITHIN CABINETS AND JUNCTION BOXES WITH PREMARKED, SELF-ADHESIVE, WRAPAROUND TYPE LABELS.
H. PROVIDE A SEPARATE NEUTRAL CONDUCTOR WITH EACH BRANCH CIRCUIT. SHARED NEUTRAL CONDUCTORS ARE NOT PERMITTED.
I. GROUNDING CONDUCTORS ARE GENERALLY NOT SHOWN. GROUND AND BOND ALL EQUIPMENT, RACEWAYS, MOTORS, PANELBOARDS, SWITCHBOARDS, ETC. IN ACCORDANCE WITH NEC ARTICLE 250. REFER TO SPECIFICATION SECTION 260526.
J. CONDUIT SYSTEMS SHALL BE ELECTRICALLY CONTINUOUS. ALL LOCK NUTS SHALL CUT THROUGH METAL OR PAINTED STRUCTURE. CONDUIT SHALL NOT BE ENCLOSED AND NON-CURRENT CARRYING METALS ARE ISOLATED FROM THE CONDUIT SYSTEM. USE BONDING JUMPERS WITH APPROVED CLAMPS. WHERE REDUCING WASHERS ARE USED AND WHERE CONCENTRIC OR ECCENTRIC KNOCKOUTS ARE NOT COMPLETELY REMOVED BONDING BUSHINGS ARE REQUIRED.
K. SIZE ALL MOTOR OVERLOADS OR FUSES WITH THE ACTUAL EQUIPMENT NAMEPLATE. FUSES FOR MOTOR AND TRANSFORMER CIRCUITS SHALL BE DUAL ELEMENT. FUSES FOR OTHER NON-INRUSH EQUIPMENT SHALL BE FAST ACTING. ALL FUSES SHALL BE CURRENT LIMITING CLASS RK5 OR CLASS L UNLESS OTHERWISE NOTED.
L. CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE MADE WITH A MINIMUM OF 24-IN. FLEXIBLE CONDUIT TO PREVENT SOUND AND VIBRATION TRANSMISSION.
M. CORE DRILL OPENINGS IN FLOOR SLABS/WALLS/FOUNDATIONS AS REQUIRED TO INSTALL CONDUITS.
N. SEAL ALL PENETRATIONS THROUGH NON-FIRE RATED CONSTRUCTION WITH MORTAR.
O. MAINTAIN NEC MANDATED MINIMUM WORKING AND DEDICATED EQUIPMENT SPACE AT ALL PANELBOARDS, SWITCHBOARDS AND MOTOR CONTROL CENTERS.
P. PROVIDE ADEQUATE SPACE AROUND EQUIPMENT THAT REQUIRES MAINTENANCE OR ADJUSTMENT.
Q. PROVIDE PULLSTRING IN ALL RACEWAYS.
R. LABEL ALL JUNCTION BOX COVERS INDICATING THE PANEL NAME AND CIRCUIT NUMBER CONTAINED WITHIN.
S. PROVIDE CLEAR LABELS ON ALL RECEPTACLE AND LIGHT SWITCH COVERPLATES INDICATING THE PANEL NAME AND CIRCUIT NUMBER.

FIRE ALARM GENERAL NOTES

A. COMPLY WITH THE AUTHORITY HAVING JURISDICTION (AHJ), 2016 NFPA 72, THE 2017 NATIONAL ELECTRICAL CODE, THE AMERICANS WITH DISABILITIES ACT (ADA) AND ALL STATE, LOCAL AND MUNICIPAL ORDINANCES.
B. REFER TO SCHEDULES FOR QUANTITIES AND LOCATIONS OF FIRE ALARM EQUIPMENT.
C. INSTALL FIRE ALARM CABLING IN EXPOSED LOCATIONS AND INACCESSIBLE AREAS WITHIN WALLS OR ABOVE CEILINGS IN GRC.
D. NEATLY BUNDLE, TIGHTLY WRAP AND SECURE FIRE ALARM WIRING TO BUILDING STRUCTURE ABOVE ACCESSIBLE CEILINGS USING APPROVED HANGERS AND INDEPENDENT OF OTHER SYSTEMS.
E. FIRE ALARM WIRING SHALL BE INSTALLED IN DEDICATED RACEWAYS, SEPARATE AND SEGREGATED FROM ALL OTHER WIRING SYSTEMS.
F. PAINT FIRE ALARM JUNCTION BOX COVERS RED.
G. IDENTIFY FIRE ALARM WIRING BY SYSTEM AND FUNCTION AT BOTH ENDS AND WITHIN CABINETS AND JUNCTION BOXES WITH PREMARKED, SELF-ADHESIVE, WRAPAROUND TYPE LABELS. WIRE DESIGNATIONS SHALL CORRESPOND WITH POINT-TO-POINT WIRING DIAGRAMS.
H. SYNCHRONIZE ALL VISUAL NOTIFICATION APPLIANCES.
I. TEST ALL FIRE ALARM WIRING FOR CONTINUITY AND VERIFY THAT ALL FIRE ALARM WIRING TESTS FREE FROM GROUNDS BETWEEN CONDUCTORS.
J. LABEL ALL FIRE ALARM EQUIPMENT WITH THE FINAL DEVICE ADDRESS.
K. T-TAPS ARE NOT PERMITTED.
L. FIRE ALARM EQUIPMENT SHALL BE UL LISTED COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM.
M. PROVIDE ALL EQUIPMENT, ACCESSORIES AND PROGRAMMING REQUIRED TO MODIFY THE EXISTING FIRE ALARM SYSTEM.
N. INSTALL FIRE ALARM WIRING FOR SURFACE MOUNT EQUIPMENT IN METALLIC SURFACE RACEWAY SIMILAR TO WIREMOLD 700. PAINT SURFACE RACEWAY TO MATCH SURROUNDING SURFACES.
O. FIRE ALARM SYSTEM SHALL BE COMPLETELY OPERABLE AT ALL TIMES DURING CONSTRUCTION. IN THE EVENT A ZONE MUST BE DEACTIVATED, COORDINATE SHUTDOWN IN ADVANCE WITH THE DIRECTOR'S REPRESENTATIVE AND AHJ AND PROVIDE FIRE WATCHERS IN ALL PUBLIC SPACES OF THE AFFECTED ZONE(S) AT ALL TIMES THE BUILDING IS OCCUPIED.
P. FIRE ALARM SYSTEM SHALL BE FULLY OPERATIONAL AT THE END OF EACH WORK DAY.
Q. HONEYWELL TO PRE-TEST THE FIRE ALARM SYSTEM AND VERIFY THE FIRE ALARM SYSTEM IS OPERATING PROPERLY AND IN ACCORDANCE WITH THE ORIGINAL DESIGN. ISSUE A REPORT DETAILING ALL FINDINGS OR DEFICIENCIES TO DIRECTOR'S REPRESENTATIVE. REFER TO SPECIFICATION 283105-3.1.06
R. PRE-TEST REPORT TO INCLUDE: POINTS LIST AND FLOOR PLANS INDICATING THE LOCATION OF ALL FIRE ALARM EQUIPMENT WITH ALL DESCRIPTORS (NAME AND NUMBER) AND DEVICE ADDRESSES.

LINETYPE LEGEND

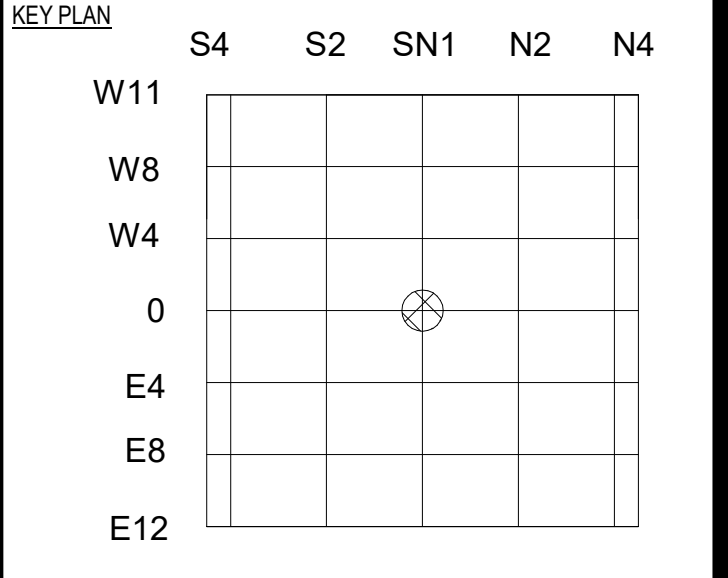
	EXISTING TO REMAIN
	EQUIPMENT TO BE RELOCATED
	ITEM TO BE PROVIDED

WIRE LEGEND

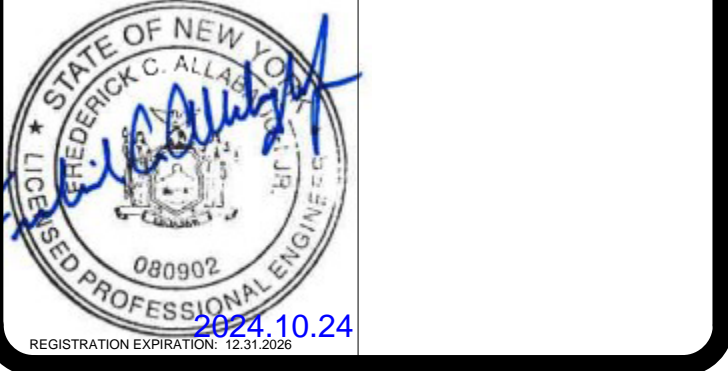
	CONDUIT / HOMERUN TO PANEL.
	#12 AWG UNLESS NOTED OTHERWISE
	PROVIDE NEUTRAL CONDUCTOR UNLESS NOTED OTHERWISE
	#X INDICATES WIRE SIZE OTHER THAN #12 AWG

REVISED DRAWING 10/24/2024

DESIGN & CONSTRUCTION
CONSULTANT
CERTIFICATE OF AUTHORIZATION #: 019598



WARNING:
THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS 'A' MISDEMEANOR.



CONTRACT: **ELECTRICAL**

TITLE: **REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS**

LOCATION: **EMPIRE STATE PLAZA ALBANY, NY**

CLIENT: **OFFICE OF GENERAL SERVICES**

1	2024.10.24	ADDENDUM #4
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:		45604-E
DESIGNED BY:		JTS
DRAWN BY:		JTS
CHECKED:		SRB
APPROVED:		SRB
SHEET TITLE:		

ELECTRICAL SCHEDULES, LEGENDS AND NOTES

DRAWING NUMBER: **E-001**