**City of Rockville**
**Rockville, Maryland**

# INVITATION FOR BIDS #01-25

# KING FARM FARMSTEAD ELECTRIC INFRSTRUCTURE PROJECT

## Bids Due by 2:00 PM (EST)
## FRIDAY, OCTOBER 11, 2024

ISSUED BY:

Christos Bazekis, Buyer
Procurement Department
City of Rockville, City Hall
111 Maryland Avenue, 1st Floor
Rockville, Maryland 20850
Phone: (240) 314-8430
Fax: (240) 314-8439

**A 5% Bid Bond Is Required for This Invitation For Bid**

Any individual with a disability who would like to receive the information in this publication in another form may contact the ADA Coordinator at
240-314-8100, TDD 240-314-8137

***MFD-V Outreach Program***

***It is the intent of the City of Rockville to increase opportunities for minority, female, disabled or veteran (MFD-V) owned businesses to compete effectively at supplying goods, equipment, and services to the City, within the constraints of statutory purchasing requirements, departmental needs, availability, and sound economical considerations, including subcontracting or mentoring opportunities. Suggested changes and MFD-V enhancements to this solicitation's requirements for possible consideration and/or inclusion in future solicitations are strongly encouraged. Any questions regarding MFD-V outreach or questions/concerns regarding the City's bidding process should be addressed to Pat Ryan, pryan@rockvillemd.gov or 240-314-8434.***

## Statement of "No Bid Submittal"

If you do not intend to submit on this requirement, please complete and return this form prior to date shown for receipt of bids to the buyer listed in this IFB by **email only** to cbazekis@rockvillemd.gov.

I/WE HAVE DECLINED TO BID ON **IFB #01-25**, titled **KING FARM FARMSTEAD ELECTRIC INFRASTRUCTURE PROJECT** for the following reason(s): [Please place a check mark (✓) next to the reason(s) as applicable]

| (✓) | **Reason** |
|---|---|
| | Proposal requirements too "restrictive". |
| | Insufficient time to respond to the Invitation for Bids. |
| | We do not offer this service. |
| | Our schedule would not permit us to perform. |
| | Unable to meet requirements. |
| | Unable to meet insurance or bond requirements. |
| | Scope of Services unclear (please explain below). |
| | Other (please specify below). |

REMARKS:

_____

_____

_____

Are you a Minority, Female, Disabled, or Veteran-Owned (MFD-V) business? _____ Yes _____ No

Company Name: _____

Mailing Address: _____

Telephone Number: _____ Email Address: _____

_____ _____

Authorized Signatory Printed Name

_____ _____

Title Date

**CITY OF ROCKVILLE**
**ROCKVILLE, MARYLAND**

# IFB #01-25
# KING FARM FARMSTEAD ELECTRIC INFRSTRUCTURE PROJECT

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**CITY OF ROCKVILLE**
**ROCKVILLE, MARYLAND**

# IFB #01-25
# KING FARM FARMSTEAD ELECTRIC INFRSTRUCTURE PROJECT

## SECTION I: PROJECT OVERVIEW

**1.1** **SECURED BIDS** will be received electronically via a City designated bid receipt software solution until [TIME] EST [DATE]. The bidder assumes full responsibility for the timely delivery of a bid via the designated solution. Bids delivered in any other fashion will not be considered. Properly submitted bids will be opened in a virtual environment after the time set for receipt of bids and will be read aloud via a City telepresence software solution at the phone number and/or web address provided by the City and contained within this solicitation.

Submission of a bid electronically is consent by the bidder to conduct any or all elements of the procurement by electronic means, in accordance with the terms of this invitation for bids.

Bids presented after the bid receiving deadline will not be received for any reason. The official time clock for receiving bids will be that of the City's third-party software solution provider's computer server system.

**ATTENTION: BIDDERS ARE HEREBY NOTIFIED THAT THE CITY'S THIRD-PARTY SOFTWARE SOLUTION PROVIDER'S COMPUTER SERVER TIME MAY DIFFER FROM THAT OF OTHER ELECTRONIC DEVICES, COMPUTER SOFTWARE AND COMPUTER HARDWARE THAT MAY BE USED TO ELECTRONICALLY SUBMIT THE BID. BIDDERS ARE RESPONSIBLE FOR ALLOWING ADEQUATE TIME TO SUCCESSFULLY DELIVER THE BID TO THE REQUIRED ELECTRONIC LOCATION BY THE REQUIRED TIME.**

**1.2 SITE LOCATION**

The King Farm Farmstead Electric Infrastructure Service Project is located at 16100 Frederick Road /1101 Grand Champion Drive, Rockville, Maryland 20850. The project limits are shown on Appendix A.

**1.3 BACKGROUND**

The King Farm Farmstead property is currently owned by the City of Rockville. Formerly the largest farm in the area, much of the original farm has long since been sold off and developed. The property that remains is comprised of 8 buildings on 7 acres. It is occupied by the typical farm structures including (2) large dairy barns, (1) hay drying barn converted to a sheltered picnic area, (2) tenant houses, (1) horse barn, (1) garage/tenant apartment and (1) manse/farmhouse.

Two wells exist on the property and are operational. One of these serves the main house and the other a community garden area on the property. The garden well is posted as non-potable water. Water and sewer are provided to the adjacent King Farm subdivision by WSSC. The existing farmhouse (the Manse) is connected to a collector sewer that runs parallel to MD 355 (Frederick

Avenue) and located in the south easterly direction near the intersection of Frederick Road and Ridgemont Avenue. At least one of the tenant houses is connected to the sewer system with at least two visible cleanouts. Site water service is not provided to the King Farm subdivision. A major WSSC water storage tank is located to the west of the site.

## 1.4 PROJECT DESCRIPTION

City of Rockville intends to enter into a contract agreement with the "Lowest Responsible Bidder" pursuant with the terms and conditions of IFB #01-25 with a qualified firm to provide construction and construction-related electrical services; which include but are not limited to the construction, repair, retrofit, installation and modernization upgrades for: **King Farm Farmstead Electric Infrastructure Service Project**

**Project Summary Description:** The project includes new electrical power service on the king farm farmstead park property for future renovations and fit out of existing structures on the property. The main electrical distribution and wiring shall be concealed underground, and the project also includes the sediment control and forestry measures necessary to protect the existing topographical and landscape features on the site.

1. The work associated with this project is planned to be scheduled to follow a water and sewer improvements project that will affect roughly the same areas on the site.
2. The water and sewer project will be responsible for installing sediment and erosion control measures as well as root pruning associated with their work, as represented in black print on sheet C-400 and L-100. The intent is to leave the erosion and sediment control measures in place for the electrical power service work.
3. The electrical power service work will need to extend the limits of disturbance and likewise extend the sediment an erosion control measures as represented in the red print on sheet C-400 and L-100. All items shown in red shall be the responsibility of this contract. The electrical power service work will likewise be responsible for any additional root pruning associated with its work.
4. Upon the completion of the electrical service work, the removal of all of the sediment and erosion control measures, tree protection measures and the final grading and planting will be the responsibility of the contractor for the electrical service work. The electrical contractor shall be responsible for closing out the Sediment Control Permit.

## 1.5 PROJECT TIMING/COMPLETION

Contractor shall begin the project within ten (10) calendar days following issuance of a City of Rockville Purchase Order (Notice to Proceed). **All work shall be completed within 5 months (150) consecutive calendar days**. The time allotted for the work is of the essence. Liquidated damages shall be assessed at Four Hundred Dollars ($400) per day for each calendar day the work exceeds beyond the specified time allotted for this contract. The City will issue a Limited Notice to Proceed (LNTP) to allow for mobilization, coordination, field measuring, shop drawing review/approval, submission of work plan and ordering long lead time components, and possible work if mutually agreed upon between the City and the contractor.

## 1.6 PERMITS

The City of Rockville is listed as the applicant for all permits to waive City of Rockville permit fees. It is the contractor's responsibility to comply with all permit terms and conditions, including maintenance and warranty requirements. The Contractor is contractually responsible for implementation and compliance with all conditions of all permits as listed below.

- **City of Rockville Sediment Control Permit-** This City permit is issued by the Department of Public Works and is attached in **Appendix B**; Permit Number SCP2022-00021
- **City of Rockville Forestry Permit-** This City permit is issued by the Department of Public Works and is attached in **Appendix C**; Permit Number FTP2022-00012
- **City of Rockville Electrical-** This City permit is issued by the Inspection Services Division and is attached in **Appendix D**; Permit Number 2023-4655-ELL
- **Pepco Approval Letter WO# 17822971-** This approval letter was issued by Pepco on 10/27/2022 for the King Farm Electrical Upgrades **Appendix H**
- **City of Rockville Historical District Commission (HDC) Approval -** This City approval is issued by the Historical District Commission and is attached in **Appendix I**; Permit Number HDC2022-01074

The Contractor is responsible for all reporting, inspection requests, documentation and notifications associated with these permits. Compensation for implementation of the requirements of the above permits is to be included in appropriate bid items and no special compensation will be made.

## 1.7 PROPOSED SCHEDULE

**A. IFB Release Date – WEDNESDAY, AUGUST 21, 2024**

**B. Pre-Bid Meeting – THURSDAY, SEPTEMBER 5, 2024, 1:00 PM EST @ Rockville City Hall, 111 Maryland Avenue, Rockville, MD. 20850**

**C. Mandatory Site Visits – TUESDAY, SEPTEMBER 17, 2024, OR THURSDAY, SEPTEMBER 19, 2024**

**D. Questions Due – FRIDAY, SEPTEMBER 13, 2024, BY 2:00 PM EST**

**E. IFB Closing Date – FRIDAY, OCTOBER 11, 2024, AT 2:00 PM EST**

## 1.8 MANDATORY SITE VISIT (PRE-BID)

One (1) site visit is **required** for any submittals. Multiple site visit options are available; for **TUESDAY, SEPTEMBER 17, 2024, 9:00AM to 11:00 AM, OR THURSDAY, SEPTEMBER 19, 2024, 1:00 PM to 3:00 PM.** Please RSVP to Mauricio Daza, mdaza@rockvillemd.gov at least four hours before your requested appointment time, with your name. company name, date and time.

The location is:

**16100 Frederick Road /1101 Grand Champion Drive, Rockville, MD**

All individuals interested in viewing the vicinity of the work area shall assume complete responsibility and liability for any and all visits. The City will not be able to answer questions at these Site Visits. See **DEADLINE FOR QUESTIONS** below regarding how questions shall be addressed.

It is **mandatory** that the bidder attend a minimum of one (1) Site Visit as outlined in the preceding paragraph. To record and provide evidence of your visit, all visitors MUST sign-in with Mauricio Daza (please RSVP directly to him at mdaza@rockvillemd.gov **PRIOR** to attendance) All individuals interested in viewing the vicinity of the work area shall assume complete responsibility and liability for any and all visits.

## 1.9 DEADLINE FOR QUESTIONS

Questions pertaining to this bid may be directed to CHRISTOS BAZEKIS, BUYER, via the City's Collaboration Portal **only** at https://contracts.rockvillemd.gov/gateway/Default.aspx, **NO LATER THAN FRIDAY, SEPTEMBER 13, 2024, BY 2:00 PM EST**. Oral answers to questions relative to interpretation of specification or the bid process will not be binding on the City.

## 1.10 BID SECURITY

Bids must be accompanied by an electronic copy of the Bid security made payable to the Mayor and Council of Rockville in an amount of five percent (5%) of Bidder's Total Bid Price and in the form of a Bid Bond (AIA Bid bond form is acceptable) or a certified check, where the original security instrument must be mailed to City of Rockville, Procurement Division, 111 Maryland Avenue, Rockville, Maryland 20850, referencing the solicitation number. The City reserves the right to disqualify any bid, in any instance, where the City cannot locate the mailed, original security instrument. The City shall not be liable for any certified checks it cannot locate, or in any instance where a certified check is cashed by any individual not employed by the City of Rockville.

## 1.11 AGREEMENT/PERFORMANCE & PAYMENT BONDS

The successful contractor shall be required to complete and electronically return a copy of the City's Standard Form of Agreement along with Performance and Payment Bonds in the amount of 100% of the Contract award within fifteen days after the date of issuance (samples attached), where two (2) sets of the original agreement and original bonds must be mailed to City of Rockville, Procurement Division, 111 Maryland Avenue, Rockville, Maryland 20850. No other form of performance or payment security will be permitted. Failure by the contractor to provide both the electronic versions and original versions of the agreement or bonds, as required, shall be just cause for annulment of the award and the forfeiture of the Bid Guarantee which shall become the property of the City, not as a penalty but in liquidation of damages sustained. Any instance where the City cannot locate the mailed versions of the agreement or bonds shall be just cause for annulment of the award and the forfeiture of the Bid Guarantee which shall become the property of the City, not as a penalty but in liquidation of damages sustained.

## 1.12 SUBMITALS

The following information must be submitted with the bid, **where failure to submit requested items may result in rejection of the bid:**

- Bid Proposal Forms
- A certified check or performance bond must be in the amount of five percent (5%) of the total bid amount, made payable to the Mayor and Council of Rockville as in General Conditions and Inspections to Bidders, #25.
- If the bidder intends to subcontract any or part of the work, then the bidder must identify and include references for each qualified subcontractor, together with a description of the proposed subcontract work. This evidence shall be submitted with the bid. A minimum of three references shall be provided; additional project references may be required to meet all the requirements.

## 1.13 SUBMISSION

All bid forms and documents must be electronically filled out, signed, and submitted **via one combined pdf document** using the City's Collaboration Portal **only** at:

**https://contracts.rockvillemd.gov/gateway/Default.aspx**

**At a minimum the file name of the pdf document must contain the Bid Number, Bidders Name and Bid Due Date.**

**Instructions for uploading bid documents can be found within the Vendor Client User Manual and Quick Reference Guides in the Collaboration Portal under document library.**

A virtual, telepresence bid opening will be held a few minutes after the bid submittal due date and time. Individuals interested in attending the virtual bid opening must register below:

**Join Virtual Bid Opening Here:**
**Meeting Link:**
https://rockvillemd.webex.com/rockvillemd/j.php?MTID=mde61a9ce53627cf5eafbc0beb0e420d3
**Meeting Number (access code):** 2630 730 7047
**Meeting Password:** Zhd7qAHkp95
**Join by Phone:** +1-408-418-9388 United States Toll
**Join From a Video System or Application:** Dial 26307307047@rockvillemd.webex.com
You can also dial 173.243.2.68 and enter your meeting number.

## 1.14 ADDENDUM

Oral answers to questions relative to interpretation of specifications or the proposal process will not be binding on the City.

To ensure fair consideration for all bidders, any interpretation made to prospective offerors will be expressed in the form of an addendum to the specifications, if such information is deemed necessary for the preparation of bids or if the lack of such information would be detrimental to the uninformed offeror. Such addendums, if issued, will be posted at the City's Collaboration Portal listed below:

https://contracts.rockvillemd.gov/gateway/Default.aspx

Please note, that it is the bidder's responsibility to check this site frequently for Addendums, which may impact pricing, this documents requirements, terms and/or conditions. Failure to sign and return an Addendum with your response may result in disqualification of proposal.

## 1.15 ENVIRONMENTAL IMPACT

It is the intent of the City of Rockville to purchase goods, equipment, and services having the least adverse environmental impact, within the constraints of its codified purchasing requirements, departmental needs, availability, and sound economical considerations. Suggested changes and environmental enhancements for possible inclusion in future revisions of this specification are encouraged.

## 1.16 NOTICE TO BIDDERS

"Pursuant to 7-201 et seq. of the Corporations and Associations, Article of the Annotated Code of Maryland corporations not incorporated in the State, shall be registered with the Department of Assessments and Taxation, 301 West Preston Street, Baltimore, Maryland 21201 before doing any interstate or foreign business in this state. Before doing any intrastate business in this state, a foreign corporation shall qualify with the Department of Assessments and Taxation."

## 1.17 US TREASURY IDENTIFICATION NUMBER

Bidders must supply with their bids their U.S. Treasury Department Employers' Identification Number as such number is shown on their Employer's quarterly Federal Tax Return (U.S. Treasury Department Form No. 941). This number shall be inserted on the Bid Sheet in the space provided.

## 1.18 QUALIFICATION TO CONTRACT WITH PUBLIC BODY

Bidders must be qualified to bid in the State in accordance with Section 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland which ordains that any person convicted of bribery (upon acts committed after July 1, 1997) in furtherance of obtaining a contract from the state or any subdivision of the State of Maryland shall be disqualified from entering into a contract with the City.

## 1.19 DISABILITY INFORMATION

ANY INDIVIDUALS WITH DISABILITIES WHO WOULD LIKE TO RECEIVE THE INFORMATION IN THIS PUBLICATION IN ANOTHER FORM MAY CONTACT THE ADA COORDINATOR AT 240-314-8100 TDD 240-314-8137.

**CITY OF ROCKVILLE, MARYLAND**

# SECTION II: GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS

## CONSTRUCTION

1. **TERMS AND CONDITIONS** The terms and conditions of this document govern in event of conflict with any terms of the bidder's proposal,and are not subject to change by reasons of written or verbal statement by the contractor unless accepted in writing. Words and abbreviations which have well known technical or trade meanings are used in accordance with such meanings.

2. **PRE-BID MEETING** A virtual, telepresence pre-bid meeting may be held for the purpose of describing the project and for answering any questions prospective bidders may have. If applicable, time and date will be shown on the bid announcement page.

3. **SUBMISSION OF BID** All bids are to be submitted electronically, in a pdf format file, via a City designated bid receipt software solution. File name of the pdf document must contain the Bid Number, Bidders Name and Bid Due Date. The following forms must be submitted:

    - Bid proposal page(s) in duplicate
    - Non-collusion/non-conviction affidavit
    - Bid Bond
    - Reference sheet
    - Other forms as required in the bid document.

    The bid proposal form must be filled out and submitted electronically. Conditional bids and bids containing escalator clauses will not be accepted. All bids must be regular in every respect and no interlineation, exclusions, or special conditions shall be made or included. Bids must contain an electronic or scanned signature, in the space provided, of an individual authorized to bind the bidder.

4. **LATE BIDS** It is the bidder's responsibility to assure delivery of the bid at the proper time via the designated electronic, software solution. Bids delivered in any other fashion will not be considered. All bids will be publicly opened in a virtual environment after the time set for receipt of bids and read aloud via a City telepresence software solution. Bidders may attend bid openings at the phone number and/or web address provided by the City.

5. **ADDENDUM** In the event that any addenda to this solicitation are issued, all solicitation terms and conditions will retain in effect unless they are specifically changed in the addendum. It is the responsibility of the bidder to make inquiry as to addenda issued. Oral answers to questions relative to interpretation of specifications or the proposal process will not be binding on the City.

    Such addendums, if issued, will be posted via the city's designated electronic, software solution

    Please note, that it is the bidder's responsibility to check this site frequently for Addendums, which may impact pricing, this document's requirements, terms and/or conditions. Failure to acknowledge an addendum on the bid proposal form or to sign and return an Addendum with your response may result in disqualification of proposal.

6. **BID OPENING** All bids received in response to an Invitation for Bid will be opened at the date, time and place specified and publicly read via a City telepresence software solution. A tabulation of bids received are posted using the City's designated electronic software solution.

7. **ACCEPTANCE OF BIDS** The City will accept or reject any or all bids or any or all items within ninety (90) days after the date of bid opening. Bids may not be withdrawn during that period.

8. **BID WITHDRAWAL** Bids may be electronically withdrawn (deleted) or modified by deleting the initial file uploaded and replacing it with a modified file using the City's electronic, software solution before the time specified for bid opening. Requests received after bid opening will not be considered.

9. **BID AWARD** Award will be made to lowest responsive and responsible bidder complying with all provisions of the Invitation for Bid, provided the price is reasonable and in the best interest of the City to accept. The City reserves the right to award by individual commodities/services, group, all or none or any combination thereof. When a group is specified, all items in the group must be bid.

   In determining the responsibility of a bidder, the following criteria will be considered:

   a. The ability, capacity and skill of the bidder to perform the contract or provide the services required;

   b. Whether the bidder can perform the contract or provide the service promptly, or within the time specified, without delay or interference;

   c. The character, integrity, reliability, reputation, judgment, experience and efficiency of the bidder;

   d. The quality of performance on previous contracts or services;

   e. The previous and existing compliance by the bidder with laws and ordinance relating to the contract or service;

   f. The sufficiency of the financial resources and ability of the bidder to perform the contract or provide the service;

   g. The quality, availability and adaptability of the goods or services to the particular use required;

   h. The ability of the bidder to provide future maintenance and service for the use of the subject of the contract;

   i. Whether the bidder is in arrears to the City or a debt or contract or is in default on a surety to the City;

   j. Such other information as may be secured by the City having a bearing on the decision to award the contract.

**10. ELECTRONIC PAYMENT OPTION**

The Vendor ACH Payment Program of the City allows payments to be deposited directly to a designated financial institution account. Funds will be deposited into the account of your choice automatically and on time. All transactions are conducted in a secure environment. The program is totally free as part of the Finance Department's efforts to improve customer services. Program information and registration can be viewed at the following web address:
https://na3.docusign.net/Member/PowerFormSigning.aspx?PowerFormId=8868c030-9f7e-4b3e-88de-c89fbce65636&env=na3&acct=b56266c3-6d22-426a-8422-e01bcbb466ec&v=2

11. **SENSITIVE DOCUMENTS**

All project participants needing either electronic or hardcopy documents dealing with critical facilities or sensitive information will be required to make application with, and receive approval from the City prior to receiving this information. Permission to receive said documents (herein referred to as "sensitive") will pertain only to the individual approved. Sensitive documents (either electronic or hardcopy documents dealing with

critical facilities or sensitive information) received from the City must be handled consistent with the terms of non-disclosure required for application. Contractor is responsible to restrict use of sensitive documents to project participants only and shall take appropriate measure to prevent distribution of sensitive document to anyone inside or outside of the Contractor's company except Contractor's project participants. After completion of the project, all sensitive documents remaining in the Contractor's possession shall continue to be governed under the terms of non-disclosure and must continue to be stored in a secure manner. After such records are no longer needed for record purposes, the records shall be destroyed or returned to the City.

Where services require the Contractor to access the City's electronic information resources and/or its electronic data assets, the Contractor shall adhere to all requirements, terms and conditions of the City's Contractor/Vendor On-Site and Remote Access Confidentiality Agreement, which can be viewed at the following web address:

https://www.rockvillemd.gov/documentcenter/view/36407

12. **DOCUMENTS, MATERIALS AND DATA** All documents, materials or data developed as a result of this contract are the City's property. The City has the right to use and reproduce any documents, materials and data, including confidential information, used in the performance of, or developed as a result of this contract. The City may use this information for its own purposes, including reporting to state and federal agencies. The contractor warrants that it has title to or right to use all documents, materials or data used or developed in connection with this contract. The Contractor must keep confidential all documents, materials and data prepared or developed by the contractor or supplied by the City.

13. **ERRORS IN BIDS** When an error is made in extending total prices, the unit price will govern. Erasures in bids must be initialed by the bidder. Carelessness in quoting prices or in preparation of the bid will not relieve the bidder from performing the contract. Errors discovered after public opening cannot be corrected and the bidder will be required to perform if the bid is accepted.

14. **MISTAKES** Bidders are expected to be thoroughly familiar with all bid documents, including all addenda. No consideration will be granted for any alleged misunderstanding of the intent of the contract documents. In the process of assembling and binding the bid documents individual pages or drawings may have been inadvertently omitted. Each bidder shall carefully and thoroughly examine these bid documents for completeness. No claim of any bidder will be allowed on the basis that these bid documents are incomplete.

15. **PRICES** Bids must be submitted on a firm, fixed price, F.O.B. destination basis only unless otherwise specified herein.

16. **PROMPT PAYMENT DISCOUNTS** All discounts other than prompt payment are to be included in the bid price. Prompt payment discounts will be considered in the evaluation of your bid if the discount on payment is not conditioned on payment being made in less than thirty (30) days from receipt of invoice.

17. **BIDDER'S PAYMENT TERMS** The City will reject as non-responsive a bid under this solicitation, which is conditioned on payment of proper invoices in less than thirty (30) days. However, this does not preclude a bidder from offering a prompt payment discount for payment of proper invoices in less than thirty (30) days.

18. **INTEREST IN MORE THAN ONE BID AND COLLUSION**
**Multiple bids uploaded/received in response to a single solicitation from an individual, firm, partnership, corporation, affiliate, or association under the same or different names will be rejected.** Reasonable grounds for believing that a bidder is interested in more than one bid for a solicitation both as a bidder and as a subcontractor for another bidder will result in rejection of all bids in which the bidder is interested. However, a firm acting only as a subcontractor may be included as a subcontractor for two or more bidders submitting a bid for the work. Any or all bids may be rejected if reasonable grounds exist for believing that collusion exists among any bidders. Bidders rejected under the above provisions shall be disqualified if they respond to a re-solicitation for the same work.

19. **QUALIFICATION OF THE BIDDER** The City shall have the right to take such steps as it deems necessary to determine the responsibility of the bidder to perform the obligations under the contract and the bidder shall furnish to the City all such information for this purpose as the City may request. The right is reserved to reject any bid where an investigation of available information does not satisfy the City that the bidder is qualified to carry out the terms of the contract.

20. **PLACING OF ORDERS** Orders against contracts will be placed with the Contractor on a Purchase Order (or Procurement Card – currently Mastercard) executed by the Purchasing Agent or designee. Where Master Agreements have been released by the City, orders may be placed directly with the Contractor by authorized personnel in the ordering Department(s). Issuance of all purchase orders will be contingent upon appropriation of funds by the Mayor and Council and encumbrance of such funds after July 1st of each year, as provided by the City Code.

21. **INSPECTION OF THE WORK SITE** Each bidder shall visit the site of the proposed work and become fully acquainted with the existing conditions and fully informed as to any facility involved, and the difficulties and restrictions attending the performance of this contract. Applicable drawings, technical specifications and contract documents should be thoroughly examined. The successful bidder shall in no way be relieved of any obligation due under the executed contract by the failure to examine any form of legal instrument or to visit the site.

22. **RISK OF LOSS AND CONDITION OF SITE** The City makes no representation and assumes no responsibility for the condition of the site or applicable structures on the site. The contractor shall accept the site and the contents thereon in the condition in which they are represented. Any damages or loss whatsoever while the contract is in effect (whether by reason of fire, theft, breakage or other happenings) shall not relieve the Contractor from any obligations under this contract. The Contractor shall store any materials on site as not to damage the materials and shall maintain such storage areas, as directed by the City, in hazard free condition.

**23.** **SUBCONTRACTORS** Nothing contained in the contract documents, shall create any contractual relationship between the City and any subcontractor or sub-subcontractor.

Unless otherwise indicated, the successful contractor who will subcontract the delivery, installation, or portion of the work herein described will submit to the Project Manager, prior to the start of work, the following information: 1) A description of the items to be subcontracted, 2) the subcontractor name, address, and telephone number, and 3) the nature and extent of the work utilized during the life of the contract. Subcontractors shall be considered agents of the Contractor, who shall be held fully accountable for all of the subcontractor services, labor, and materials relative to the contract.

24. **BID BOND** Bids must be accompanied by an electronic copy of a certified check or bid bond for five percent (5%) of the total amount of the bid, made payable to the Mayor and Council of Rockville, where the original security instrument must be mailed to City of Rockville, Procurement Division, 111 Maryland Avenue, Rockville, Maryland 20850, referencing the solicitation number. AIA Bond forms are acceptable. Bonds must be issued by a surety licensed to do business in the State of Maryland. The City reserves the right to disqualify any bid, in any instance, where the City cannot locate the mailed, original security instrument. The City shall not be liable for any certified checks it cannot locate, or in any instance where a certified check is cashed by any individual not employed by the City of Rockville. Bid bonds will not be returned.

25. **EXECUTION OF AGREEMENT/BONDS** Subsequent to award and within fifteen (15) calendar days after the prescribed forms are presented to the Contractor, the Contractor shall execute and electronically deliver to the City the required Agreement and Bonds, where two (2) sets of the original agreement and original bonds must be mailed to City of Rockville, Procurement Division, 111 Maryland Avenue, Rockville, Maryland 20850.

Bonds shall be in effect during the original term of the contract and during the guarantee and warranty period required under the Contract, unless otherwise stated therein.

**PERFORMANCE BOND** The Contractor shall execute and deliver to the City the required Performance Bond for 100% of the bid amount.

**PAYMENT BOND** For a contract exceeding One Hundred Thousand Dollars ($100,000) the payment bond shall be in an amount equal to 100% of the bid amount. For a contract exceeding Twenty-Five Thousand Dollars ($25,000) but not exceeding One Hundred Thousand Dollars ($100,000) the payment bond shall be in an amount equal to fifty percent (50%) of the bid amount. Bonds shall be executed by a surety company authorized to do business in the State of Maryland.

The successful bidder may request that in lieu of bonds, the City accept the equivalent in the form of a certified check or other security. Such requests will be accepted or rejected by the City Manager. If rejected, the successful bidder will be required to furnish the bonds or forfeit the bid bond. The City shall not be liable for any certified checks it cannot locate, or in any instance where a certified check is cashed by any individual not employed by the City of Rockville.

Failure of the successful bidder to execute the agreement and supply both the electronic versions and original versions of the required forms within fifteen (15) calendar days shall constitute a default. Any instance where the City cannot locate the mailed versions of the agreement or bonds shall also constitute a default. The successful bidder shall forfeit to the City as liquidated damages for such failure or refusal an amount in cash equal to the security deposited with the bid.

The City may either award the contract to the next low responsive and responsible bidder or re-advertise the bids, and may charge against the original bidder the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed. If a more favorable bid is received by a re-advertising, the defaulting bidder shall have no claim against the City for a refund.

26. **LEGAL REQUIREMENTS** All materials, equipment, supplies and services shall conform to applicable Federal, State, County and City laws, statutes, rules and regulations. The Contractor shall observe and comply with all Federal, State, County and City laws, statutes, rules and regulations that affect the work to be done. The provisions of this contract shall be governed by the laws of the State of Maryland.

27. **INDEMNIFICATION OF THE COUNCIL** The Contractor shall indemnify and save harmless the Mayor and Council from all suits, actions and damages or costs, of every name and description to which the Council may be subjected or put by reason of injury to persons or property as a result of the work, whether caused by negligence or carelessness on the part of the Contractor, or subcontractors or agents thereof.

28. **DELIVERY** Time is of the essence. The Contractor shall expedite the work and achieve substantial completion within the contract time. If time limits are not specified, state the number of days required to make delivery/completion in the space provided. Defective or unsuitable materials or workmanship shall be rejected and shall be made good by the Contractor, notwithstanding that such materials/workmanship have previously been overlooked and accepted.

29. **CHANGES IN QUANTITIES/ITEMS** The City reserves the right to add or delete any item(s) from the bid in whole or in part at the City's discretion as given in the Bid or Proposal wherever it deems it advisable or necessary so to do and such changes shall in no way vitiate the contract nor affect the bid prices for any item or remaining work. Unit prices submitted in the bid shall not be increased or decreased regardless of changes in quantity. The City may waive minor differences in specifications in bids provided these differences do not violate the specifications' intent nor materially affect the operation for which the items or services are being purchased

The Contractor will be paid for the actual amount of authorized work done or material furnished under any item of the bid at the price bid and stipulated for such item. In case any quantity is increased, the Contractor shall not be entitled to any increased compensation over and above the unit price bid for such item, or any claim for damages on account of loss of anticipated profits should any quantities be decreased. The Contractor shall be responsible for confirming the accuracy of the specified quantities prior to ordering materials or supplies and the City's payment shall be based on the actual quantities incorporated in the work and not the quantities specified in the bid document. The quantities must not exceed the Contract specified quantities without specific written authorization of the Project Manager and it is the Contractor's responsibility to obtain said authorization.

30. **MATERIALS** All materials shall be new and free from defects. They shall be standard products of current manufacture. Unless otherwise noted in the contract documents, the Contractor shall abide by specific manufacturer instructions and recommendations on installation and operation.

31. **BRAND NAME OR EQUAL** Identification of an item by manufacturer's name, trade or brand name, or catalog number is for information and establishment of a quality level desired and is not intended to restrict competition. Bidders may offer any brand which meets or exceeds the specification, unless 'brand name only' is specified. Bids on other makes and/or models will be considered provided the bidder clearly states on the proposal what is being proposed and forwards with the bid complete descriptive literature indicating how the characteristics of the article being offered will meet the specifications. The City reserves the right to accept or reject items offered as an equal.

**32. DEFECTIVE MATERIALS/WORKMANSHIP**
Defective or unsuitable materials or workmanship shall be rejected and shall be made good by the Contractor. If the work shall be found to be defective or to have been damaged before final acceptance, the Contractor shall make good such defect in a manner satisfactory to the City, without extra compensation even though said defect or injury may have not been due to any act or negligence of the Contractor.

33. **TIME OF BEGINNING AND COMPLETION** Unless otherwise stipulated in the bid document, the Contractor shall begin work on the Contract within ten (10) working days after the mailing of a purchase order and shall diligently prosecute the same, so that it shall be fully completed within the time as stated in the contract. The Contractor shall not commence any work under the Contract until a written Purchase Order is received from the Purchasing Agent.

34. **FAILURE TO COMPLETE WORK ON TIME/ LIQUIDATED DAMAGES** The Contractor accepts this contract with the understanding and intention to perform fully and in an acceptable manner within the time stated. Should he fail to complete fully, to all intent and purpose, the work specified in the time specified, or within the time as it may have been extended by the City, the Contractor shall pay, for each calendar day that any work shall remain uncompleted, not including Sundays, the sum of $400 per calendar day or such other amount as specified in the Special Provisions. This sum is hereby agreed upon, not as a penalty, but as liquidated damages and the City shall have the right to deduct the amount of such damages from any moneys due the Contractor under this Contract.

    The City shall recover such Liquidated Damages by deducted the amount thereof out of any moneys due or that may become due the Contractor, and if said moneys are insufficient to cover said damages, then the Contractor or the Surety shall pay the amount due upon demand by the City.

35. **AUTHORITY OF THE CITY MANAGER IN DISPUTES** Except as may otherwise be provided by the final agreement, any dispute concerning a question of fact arising under the agreement signed by the City and the Contractor which is not disposed of by the final agreement shall be decided by the City Manager who shall notify the Contractor in writing of his determination. The Contractor shall be afforded the opportunity to be heard and offer evidence in support of the claim. Pending final decision of the dispute herein, the Contractor shall proceed diligently with performance under the agreement signed by the City and the Contractor. The decision of the City Manager shall be final and conclusive unless an appeal is taken pursuant to the City Purchasing Ordinance.

36. **CONTRACT DELAYS/EXTENSION OF TIME** The
Contractor shall pursue the contract so as to complete all work within the time allotted in the bid document. The completion date as set in the bid document allows for inclement weather, holidays and coordination with other companies. If the Contractor is delayed in the delivery of the supplies, equipment or services by any act of neglect of the City or by a separate Contractor employed by the City, or by any changes, strikes, lockouts, fires, unusual delays in transportation or delay authorized by the City, the City shall review the cause of such delay and shall make an extension of time if warranted. All claims for extensions must be in written notice sent to the Project Manager within ten (10) calendar days after the date when such alleged cause for extension of time

occurred. All such claims shall state specifically the amount of time of the delay the Contractor believes to have suffered. If written notice is not received within the prescribed time the claim shall be forfeited and invalidated.

37. **CONTRACT DELAYS - NO DAMAGE CLAIMS ACCEPTED** The Contractor shall make no claim for extra monetary compensation for delays, whether ordered by the City or not, caused by delays in funding, governmental approvals, private or public companies' actions, inclement weather, site conditions, or from any cause whatsoever. The Contractor shall adjust its operation to continue the work at other locations under the contract, if available, and as directed by the City. If it is necessary to discontinue the work temporarily, the Contractor shall resume work within 48 hours of notice from the City. The City may adjust the completion date to compensate for the lost day(s) on a day-for-day basis, if the City finds that the Contractor could not make up for such lost day(s) by reallocating its forces or rescheduling the work, up to the time remaining on the original schedule at the time of shutdown.

**38. PROGRESS SCHEDULE AND SCHEDULE OF OPERATIONS** The construction of this project will be planned and recorded with an Activities Chart Project Schedule (AC) and Written Narrative (WN) unless specifically determined to be unnecessary by the Project Manager. The AC Project Schedule and Written Narrative will break down, in detail, the time (working days or completion date) involved in performing major construction activities for the duration of the project. The AC Project Schedule shall be used for the coordination and monitoring of major work under the contact including the activities of subcontractors, vendors and suppliers. The AC Project Schedule shall be prepared in accordance with the requirements of the Maryland State Highway Administration Standard Specifications for Construction and Materials dated January 1982, and the errata and addend thereto, subsequent supplement(s) and the Special Provisions as set forth in this Invitation for Bids, unless otherwise directed or approved by the Project Manager. The schedule shall be consistent with the contract specified completion date(s) and/or working days. The Contractor is responsible for preparing the initial AC Project Schedule and Written Narrative.

Preparation of Initial Schedule - Within 10 calendar days after notification that the Contractor is the apparent successful bidder, the Contractor will complete development of a initial AC Project Schedule and Written Narrative (describing the logical time representations as proposed in the AC Project Schedule), and submit 2 (two) copies of each AC and WN to the Project Manager for review and approval.

Updating Project Schedule**:** At any time that it becomes apparent the schedule, created as above and approved by the Project Manager, is not being implemented, either because the work or service is ahead or behind schedule, the Contractor shall immediately notify the Project Manager and shall submit a revised, written, updated AC and WN for the Project Manager's review, revision and approval The contractor shall make every effort to meet the original completion date and/or working days allowed unless otherwise so directed by the Project Manager.

Payment for Schedule AC/WN**:** No special compensation will be paid for preparing or revising the above project AC/WN as the cost shall be considered incidental to the contract with compensation incorporated into the bid items(s).

39. **SPECIFICATIONS** The Construction Specifications for this contract will be those shown below and additions included in the bid document, if applicable. In the event of conflict, the City determination shall govern. The following specifications and standards, listed below, including all subsequent addenda, amendments and errata are made part of this contract to the extent required by the references thereto:

1. Maryland Department of Transportation, State Highway Administration, "Standard Specifications for Construction and Materials" (Maryland Department of Transportation, State Highway Administration), dated January 2008 and all errata and addenda thereto. MDSHA Book of Standards for Highway and Incidental Structures.
2. Montgomery County Department of Transportation "Montgomery County Road Construction Code and Standard Specifications."
3. Standard PROJECT Specifications from Delta and Henry Adams 2023.
4. Pepco Standards and Specifications, Latest Edition.

5. Maryland Dept of the Environment "1994 Standards and Specifications Soil Erosion and Sediment Control"
6. NATIONAL ELECTIC CODE (NEC) LATEST EDITION
7. Montgomery County Noise Ordinance.

40. **CONTRACT DOCUMENTS** The contract documents are complementary and what is required by anyone shall be binding as if required by all. Words and abbreviations that have well known technical or trade meanings are used in the contract documents in accordance with such recognized meanings. On drawings, the figured dimensions shall govern in the case of discrepancy between the scales and figures. Anything shown on the construction plans and not mentioned in the specifications or mentioned in the specifications and not shown on the plans shall have the same effect as if shown or mentioned respectively in both.

    Prior to bidding, the Contractor should obtain clarification of all questions which may have arisen as to intent of the contract document, or any actual conflict between items in the contract documents. Should the Contractor have failed to obtain such clarification, then the City may direct that the work proceed by any method indicated, specified or required, in the judgment of the City, by the contract documents. Such direction by the City shall not constitute the basis for a claim for extra costs by the Contractor. The Contractor acknowledges that he had the opportunity to request clarification prior to submitting his bid to the City and that he is not entitled to a claim for extra cost as a result of failure to receive such clarification.

    Any discrepancies which may be discovered during the execution of work between actual conditions and those represented by the contract documents shall be reported to the City and work shall not proceed until written instruction has been received by the contractor from the City.

41. **INTERPRETATION** Any questions concerning terms, conditions and definitions of the contract and bidding regulations shall be directed in writing to the Contract Officer. Any questions concerning the technical specifications and drawings shall be directed in writing to the Project Manager. The submission of a bid shall be prima facie evidence that the bidder thoroughly understands the terms of the contract documents. The Contractor shall take no advantage of any error or omission in these contract documents.

42. **PRE-CONSTRUCTION CONFERENCE** A pre-construction conference may be held in person or virtually following contract award. The meeting must be attended by the Contractor. No compensation will be made by the City to the Contractor for meetings.

43. **EMERGENCY CONTACT** The Contractor shall provide at least two local telephone numbers which may be used for contacting an official of the Contractor at all times, 24 hours per day, seven days per week: at which numbers person(s) of responsibility will be available to respond to City directives relative to the contract. The Contractor shall have available sufficient personnel and equipment to immediately respond to emergency needs, as determined by the City. There will be no special compensation paid for this requirement but the cost is to be considered incidental to the other contract pay items.

44. **SUPERVISION AND DIRECTION OF WORK** The work shall be under the general supervision of the Project Manager. While it is intended that the Contractor shall be allowed in general to carry on the contract in accordance with such general plan as may appear to the Contractor most desirable, the Project Manager, at the Project Manager's discretion, may from time to time, direct the order in which, and points at which, the work shall be prosecuted and may exercise such general control over the conduct of the work at a time or place, as shall be required, in the Project Manager’s opinion, to safeguard the interests of the City, and the Contractor shall have no claims for damages or extra compensation on account of the fact that it shall have been necessary to carry on the work in different sequence from that which the Contractor may have contemplated. The Contractor shall immediately comply with any and all orders and instructions given by the Project Manager, but nothing herein contained shall be considered such an assumption of control over the work by the City or the Project Manager as to relieve the Contractor of any obligations or liabilities under the contract.

45. **INSPECTION** Work and materials will be inspected promptly to see that the same strictly correspond with the drawings and specifications, but if, for any reason, delay should occur in connection with such inspection, the Contractor shall have thereby no claim for damages or extra compensation. Materials and workmanship shall be

always subject to the approval of the Project Manager, but no inspection, approval or acceptance of any part of the work or of the materials used therein, nor any payment on account thereof shall prevent the rejection of said materials or work at any time thereafter, should said work or materials be found to be defective or not in accordance with the requirements of the contract. Any costs for any "re-inspection" of the job shall be the responsibility of the contractor.

46. **TERMINATION FOR DEFAULT** The contract may be cancelled or annulled by the City in whole or in part by written notice of default to the Contractor upon nonperformance or violation of contract terms and an award made to next low Bidder, or, articles specified may be purchased on the open market similar to those so terminated. In either event, the defaulting Contractor (or his surety) shall be liable to the City for costs to the City in excess of the defaulted contract prices: provided, that the Contractor shall continue the performance of this contract to the extent not terminated under the provisions of this clause.

47. **TERMINATION FOR CONVENIENCE** This Contract may be terminated, in whole or in part, upon written notice to the Contractor when the City determines that such termination is in its best interest. The termination is effective 10 days after the notice is issued, unless a different time is given in the notice. The City is liable only for payment for goods and services delivered and accepted or approved by the City prior to the effective date of the termination.

48. **EMPLOYEES** The Contractor shall employ only competent, skillful persons to do the work, and whenever the Project Manager shall notify the Contractor in writing that any person employed on the work is, in his opinion, incompetent, disobedient, disorderly, discourteous or otherwise unsatisfactory, such person shall be discharged from the work and shall not again be employed for this contract except with the consent of the Project Manager.

49. **NON-WORK DAY** The City observes the following holidays: New Year's Day, Martin Luther King's Birthday, President's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Thanksgiving Friday and Christmas Day, all days of general and congressional elections throughout the State, and a five-day work week.

    The Contractor will not be permitted to do any work which requires the services of the City's inspection, supervisory or line and grade forces on the days on which the above-mentioned holidays are observed by the City or on Saturdays or Sundays, unless otherwise authorized by the Project Manager in writing. However, the Contractor, with verbal permission of the Project Manager, may be permitted to perform clean up and such other items for which no specific payment is involved on Saturdays and holidays.

    The normal number of working hours per day on this Contract will be limited to eight, unless otherwise authorized by the Project Manager in writing.

    In case of an emergency, which may require the services of the City on Saturdays, Sundays, holidays or longer than eight hours per day, the Contractor shall request permission of the Project Manager to work. If, in the opinion of the Project Manager the emergency is bona fide, he will grant permission to the Contractor to work such hours as may be necessary. Also, if in the opinion of the Project Manager, a bona fide emergency exists, the Project Manager may direct the Contractor to work such hours as may be necessary whether the Contractor requests permission to do so or not.

50. **LANGUAGE** The Contractor shall appoint one or more crewmembers or supervisors to act as liaison with the City and emergency services personnel. All liaisons shall be fluently bilingual in English and the Contractor's employees' language(s), and at least one liaison shall be present at each work site at all times when any of the Contractor's employees or agents are at the site.

**51. IMMIGRATION REFORM AND CONTROL ACT**
The Contractor awarded a contract pursuant to this bid shall warrant that it does not and shall not hire, recruit, or refer for a fee for employment under the contract an individual knowing the individual is an unauthorized noncitizen and hire any individual without complying with the requirements of the Immigration Reform and Control Act of 1986 ("the Act"), including but not limited to any verification and record keeping requirements. The Contractor shall further assure the City that, in accordance with the Act, it does not and will not

discriminate against an individual with respect to hiring, or recruit or referral for a fee, of the individual for employment or the discharging of the individual for employment because of such individual's national origin or in the case of a citizen or intending citizen, because of such individual's citizenship status.

52. **EQUAL EMPLOYMENT OPPORTUNITY** The Contractor will not discriminate against any employee or applicant for employment because of age (in accordance with applicable law), ancestry, color, national origin, race, ethnicity, religion, disability, genetics, marital status, pregnancy, presence of children, gender, sexual orientation, gender identity or expression, or veteran status. The Contractor will take affirmative action to ensure that applicants are employed, and the employees are treated fairly and equally during employment with regard to the above. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment, layoff or termination, rates of pay or other form of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. Contractors must also include the same nondiscrimination language in all subcontracts.

    If the Contractor fails to comply with nondiscrimination clauses of this contract or fails to include such contract provisions in all subcontracts that subcontractors will not discriminate against any employee or applicant for employment in the manner described above, this contract may be declared void AB INITIO, cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further contracts with the City of Rockville. Any employee, applicant for employment, or prospective employee with information concerning any breach of these requirements may communicate such information to the City Manager who shall commence a prompt investigation of the alleged violation. Pursuant to such investigation, the Contractor will permit access to the Contractor's books, records, and accounts. If the City Manager concludes that the Contractor has failed to comply with nondiscrimination clauses, the remedies set out above may be invoked.

53. **ETHICS REQUIREMENTS** In accordance with the City's financial disclosure and ethical conduct policy and/or ordinances a prerequisite for payment pursuant to the terms of this contract is that the Contractor may be required to furnish explicit statements, under oath, that the City Manager, and/or any other officer, agent, and/or employee of the City, and any member of the governing body of the City of Rockville or any member or employee of a Commission, Board, or Corporation controlled or appointed by the City Council, Rockville, Maryland has not received or has not been promised directly or indirectly any financial benefit by way of fee, commission, finder's fee, or in any other manner, remuneration arising from directly or indirectly related to this contract, and that upon request by the City Manager, or other authorized agent, as a prerequisite to payment pursuant to the terms of this contract, the Contractor will furnish to the Mayor and Council of the City of Rockville, under oath, answers to any interrogatories to a possible conflict of interest has herein embodied.

54. **DRAWINGS TO BE FOLLOWED** The approved drawings, profiles and cross sections on file with the City will show the location, details and dimensions of the work contemplated, which shall be performed in strict accordance therewith and in accordance with the specifications. Any deviations from the drawings or specifications as may be required by the exigencies of construction in all cases will be determined by the Project Manager. There shall be no such deviations without the written authorization of the Project Manager. On all drawings, etc., the figured dimensions shall govern in the case of discrepancy between the scales and figures. The Contractor shall take no advantage of any error or omission in the drawings or specifications. The Project Manager shall make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the specifications and of the drawings as construed by the Project Manager whose decision shall be final.

55. **CERTIFICATION** Under no circumstances will Contractors be paid for materials utilized on any City contract unless certified to by the Project Manager. The Contractor must not incorporate any materials into a City project without prior authorization and certification of the Project Manager, unless necessary to eliminate or avoid hazardous conditions. Under these emergency circumstances the responsibility for notification to the Project Manager and quantity/quality confirmation rests with the Contractor and must be obtained within 24 hours of the work.

56. **DECISIONS AND EXPLANATIONS BY PROJECT MANAGER** The Project Manager shall make all necessary explanations as to the meaning and intent of the specifications and drawings, and shall give all orders and directions, either contemplated therein or thereby, or in every case in which a difficult or unforeseen condition arises during the prosecution of the work. Should there be any discrepancies or should any misunderstanding arise as to the intent of anything contained in the drawings and specifications, the decision of the Project Manager shall be final and binding. The Project Manager shall in all cases determine the amount, quality, acceptability and estimates of the work to be paid for under the Contract, and shall decide all questions in relation to the work. In case any questions arise between parties relating to the Contract, such decision and estimate shall be a condition precedent to the right of the Contractor to receive payment under that part of the Contract which is in dispute.

57. **WORK TO BE DONE AND MATERIALS TO BE FURNISHED** The Contractor shall do all the work and furnish all the labor, materials, tools, and equipment necessary or proper for performing the work required by the Contract, in the manner called for by the drawings and specifications and within the Contract time. The Contractor shall complete the entire work together with such extra work as may be required, at the prices fixed therefore, to the satisfaction of the Project Manager and in accordance with the specifications and drawings.

58. **NOTIFICATION TO OTHER AGENCIES** The Contractor will be responsible for notifying all concerned agencies affected by the work a minimum of 48 hours in advance of any activity, as prescribed by said agencies, including, but not limited to: the Washington Gas, PEPCO, Verizon Comcast Cable, Transcontinental Gas, City of Rockville Utilities Division, Montgomery County Government, State Highway Administration and the Washington Suburban Sanitary Commission. The Contractor must notify MISS UTILITY at 1-800-257-7777 a minimum of 72 hours and no more than 5 working days prior to removal of any pavement or beginning any excavation. There shall be no measurement or direct payment to the Contractor for such notification, working around, the protection of, or repair of damage to such existing utilities caused by the proposed construction activities directly or indirectly.

59. **PERMITS AND REGULATIONS** Unless stipulated elsewhere in these specifications, the Contractor shall be responsible for obtaining and paying for all applicable permits. Where signatures of the City are required in connection with the obtaining of such permits, certificates, etc., the Contractor shall prepare the proper paperwork and present it to the City for signature. City of Rockville Permit fees shall be waived. If the Contractor ascertains at any time that any requirement of this contract is at variance with applicable laws, ordinances, regulations and/or building codes, notification to the Project Manager shall be made immediately and any necessary adjustment to the contract shall be made. Without proper notice to the Project Manager, the Contractor shall bear all costs arising from the performance of work the Contractor knows to be contrary to such laws, ordinances, etc.

60. **EXCAVATION** Unless specifically provided in the specifications, all trench and roadway excavation is hereby unclassified as to the character of materials. The lump sum or unit price, as specified, for or including excavation shall constitute full payment for removal and disposal of all materials, regardless of type, encountered in trenching and roadway excavation, within the limits of this Contract, as necessary and as shown to be removed on the Contract drawings and/or as directed by the Project Manager, except as otherwise provided for under this Contract. All bidders are hereby directed to familiarize themselves with all site conditions including subsurface and the proximity of adjacent features.

61. **SERVICE OF NOTICES** The mailing a written communication, notice or order, addressed to the Contractor at the business address filed with the City, or to his office at the site of the work shall be considered as sufficient service upon the Contractor of such communication, notice or order; and the date of said service shall be the date of such mailing. Written notice shall also be deemed to have been duly served if delivered in person to the individual or member of the firm or to any officer of the corporation for whom it was intended if delivered or sent by registered or certified mail to the last known address.

62. **PATENT RIGHTS** Whenever any article, materials, equipment, process, composition, means, or things called for by these specifications is covered by letters of patent, the successful bidder must secure, before using or employing such article, material etc., the assent in writing of the Owner or Licensee of such Letters of Patent and file the same with the City.

The said assent is to cover not only the use, employment, and incorporation of said article, material, equipment, process, composition, combination, means, or thing in the construction and completion of the work but also the permanent use of said article, material, etc., thereafter by or on behalf of the City, in the operation and maintenance of the project for the purposes for which it is intended or adapted. The Contractor shall be responsible for any claims made against the City, its agents and employees or any actual or alleged infringement of patents by the use of any such patented articles, etc., in the construction and completion of the work, and shall save harmless and indemnify the City, its agents and employees from all costs, expenses, and damages, including Solicitor's and Attorney's fees which the City may be obligated to pay by reason of any actual or alleged infringement of patents used in the construction and completion of the work herein specified.

63. **CARE AND PROTECTION OF WORK** From the commencement of the Contract until its completion, the Contractor shall be solely responsible for the care of the work and all injury or damage to the same, from whatever cause, shall be made good by the Contractor at the Contractor's own expense, before the final estimate is made. The Contractor shall provide suitable means of protection for all materials intended to be used in the work and for work in progress, as well as completed work.

64. **ABANDONMENT OF OR DELAY IN WORK** If the work under the Contract shall be abandoned by the Contractor, or if at any time the Project Manager shall be of the opinion and shall so certify, in writing, to the Contractor, that the performance of the Contract is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of the Contract or is executing the same in bad faith or if the work is not fully completed within the time specified for its completion, together with such extension of time as may have been granted, the City by written notice, may order the Contractor to discontinue all work there under, or any part thereof, within the number of days specified on such notice. At the expiration of said time the Contractor shall discontinue the work, or such part thereof, and the City shall have the power, by Contract, or otherwise, to complete said work and deduct the entire cost thereof from any monies due or to become due the Contractor under the Contract. For such completion of work the City may, for itself or its Contractor, take possession of and use or cause to be used any or all materials, tools, and equipment found on the site of said work. When any part of the Contract is being carried on by the City, as herein provided, the Contractor shall continue the remainder of the work in conformity with the terms of the Contract and in such manner as not to interfere with the City's workmen.

65. **SUBLETTING OR ASSIGNING OF CONTRACT** The City and the Contractor each bind themselves, their partners, successors, assigns and legal representatives of such other parties in respect to all covenants, agreements, and obligations contained in the contract documents. Neither party to the contract shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of the work provided for therein, or of his right, title or interest therein to any person, firm or corporation without the written consent of the other party, nor shall the Contractor assign any monies due or to become due hereunder without the previous written consent of the City.

66. **NO WAIVER OF CONTRACT** Neither the acceptance by the City or its Project Manager nor any order, measurement, certificate or payment of money, of the whole or any part of the work, nor any extension of time nor possession taken by the City or its Project Manager shall operate as a waiver of any portion of the Contract, or any right to damage therein provided. The failure of the City to strictly enforce any provision of this contract shall not be a waiver of any subsequent breach of the same or different nature.

67. **DUTIES, OBLIGATIONS, RIGHTS AND REMEDIES** The duties and obligations imposed by the contract documents and the rights and remedies available there under shall be in addition to and not a limitation of the duties, obligations, rights and remedies otherwise imposed or available by law, unless so indicated.

68. **IMPLIED WORK** All incidental work required by the drawings or specifications for which no payment is specifically provided and any work or materials not therein specified which are required to complete the work and which may fairly be implied as included in the Contract, and which the Project Manager shall judge to be so included, shall be done or furnished by the Contractor without extra compensation. The intent is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the contract documents together with any authorized alterations, special provisions and supplemental agreements.

69. **MEASUREMENT OF WORK AND MATERIAL** The work and material to be paid for will be measured and determined by the Project Manager according to the specifications and drawings, and the working lines that may be given. No allowance will be made for any excess above the quantities required by the specifications, drawings and lines on any part of the work, except where such excess material has been supplied or work done by order of the Project Manager and in the absence of default or negligence on the part of the Contractor. Should the dimensions of any part of the work or of the materials be less than those required by the drawings or the directions of the Project Manager, only the actual quantities placed will be allowed in measurement.

70. **EXTRA COSTS** If the contractor claims that any instructions by the contract documents or otherwise involve extra compensation or extension of time, a written protest must be submitted to the Project Manager within ten (10) calendar days after receipt of such instructions and before proceeding to execute the work, stating in detail the basis for objection. No such claim will be considered unless so made.

71. **CONTINGENT ITEMS & QUANTITIES** Items and quantities identified as being contingent are provided in the Contract for use when and as directed by the Project Manager. These items shown on the Plans or in the specifications are established for the purpose of obtaining a bid price. The quantities for these contingent items may be increased or decreased without any adjustment to the Contract unit price bid or the contingent items may be deleted entirely from the Contract by the Project Manager without negotiation. The Contractor shall submit no claim against the City for any adjustment to the Contract unit price bid, should the contingent items be increased, decreased or eliminated entirely. Payment for any contingent items used will be made on the basis of the quantities as actually measured and as specified in the Specifications. Materials, Construction Requirements and Basis of Payment shall be as specified elsewhere in the Specifications, Plans or Special Provisions.

72. **CHANGES IN THE SCOPE OR EXTRA WORK** The City, without invalidating the contract, may issue written changes in the work consisting of additions, deletions, or modifications with the contract sum and completion date being adjusted accordingly. All such changes, or additional work must be authorized in writing by the Purchasing Agent prior to starting such work. Costs shall be limited to the cost of materials, labor, field supervision and field office personnel directly involved in and attributed to the change. All costs and/or credits to the City for a change in the work shall be determined by the unit price bid or by mutual agreement.

    The Contractor shall do all work that may be required to complete the work contemplated at the unit prices bid or at a lump sum price to be mutually agreed upon.

    The Contractor shall perform extra work, for which there is no quantity or price included in the Contract, whenever it is deemed necessary or desirable, to complete fully the work as contemplated, and such work shall be done in accordance with the specifications therefore, or in the best workmanlike manner as directed. Where such a price or sum cannot be agreed upon by both parties, or where this method of payment is impracticable, the Project Manager may order the Contractor to do such work on a force account basis, which will be paid for as follows.

73. **FORCE ACCOUNT WORK** When the Contractor is required to perform work as a result of additions or changes to the contract for which there are no applicable unit prices in the contract, the City and Contractor shall make every effort to come to an agreed upon price for the performance of such work. If an agreement cannot be reached, the City may require the Contractor to do such work on a force account basis to be compensated in accordance with the following:

    **A.** Labor**.** For all labor and for foremen in direct charge of the specific operations the Contractor shall receive the actual wages for each and every hour that said labor and foremen are actually engaged in such work.

    **B.** Materials. For materials accepted by the Project Manager and incorporated into the project, the Contractor shall receive the actual cost of such materials, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth). Excess materials delivered to the job site and

not incorporated into the project will not be paid for and it is the Contractor's responsibility to remove said excess material from the job site.

**C.** Equipment. For any machinery or special equipment (other than small equipment tools, whether rented or owned), the use of which has been authorized in writing, by the Project Manager the Contractor shall receive the rates agreed upon in writing before such work is begun which price shall include fuel, oil and miscellaneous necessities, or the Contractor shall receive those rates which may be specified elsewhere in the Special Provisions. For the purpose of definition, equipment with a new cost of $1000 or less will be considered small tools and equipment.

**D.** Materials and Supplies Not Incorporated in the Work. For materials and supplies expended in the performance of the work (excluding those required for rented equipment) and approved by the Project Manager, the Contractor shall receive the actual cost of such materials and supplies used.

**E.** Subcontractors**.** The Contractor shall receive the actual cost of work performed by a subcontractor. Subcontractor's cost is to be determined as in A., B., C., and D. above, plus the fixed fee for overhead and profit allowance computed as in G.

**F.** Superintendence. No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided

**G.** Contractor's Fixed Fee**.** The procurement officer and the Contractor shall negotiate a fixed fee for force account work performed pursuant to this specification by his force and by his subcontractors. The City shall pay 10 percent of A as compensation for overhead and profit for the work performed. The Contractor shall proceed diligently with the performance of the force account work to completion. The Contractor's fixed fee shall include an amount equal to the sum of 65 percent of A, which shall include, but not be limited to the following:

(1) Compensation for all costs paid to, or in behalf of, workmen by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits that may be required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed in the work; and

(2) Bond premiums, property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions and Social Security taxes on the force account work.

In addition, the Contractor's fixed fee may include an amount not to exceed 10 percent of B. unless specifically authorized by the Project Manager in advance of the work; 5 percent of D., and 5 percent of E with the exception of that portion chargeable to equipment as defined above.

**H**. Compensation. The compensation as set forth above shall be received by the Contractor as payment in full for change order work done on a force account basis. At the end of each day, the Contractor's representatives and the Project Manager, shall compare records of the cost of work as ordered on a force account basis. Differences shall be immediately resolved and any unresolved difference shall be brought to the attention of the Project Manager by written notice from the Contractor within two working days of the occurrence.

**I.** Statements**.** No payment will be made for work performed on a force account basis until the Contractor furnishes the Project Manager duplicate itemized statements of the cost of such force account work detailed as to the following:

(1) Name, classification, date, daily hours, total hours, rate, and extension for such workmen. Contractor shall provide certified payrolls

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment. Contractor shall provide original receipted invoices.

(3) Quantities of materials, prices and extensions. Contractor shall provide original receipted invoices.

(4) Transportation of materials. Contractor shall provide original receipted invoices.

If, however, the materials used in the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor which shall certify that such materials were taken from his stock that the quantity claimed was actually used and that the price and transportation of the material as claimed represent actual cost. Any request for payment under this Section should be submitted in the order outlined by the above.

The Contractor shall be responsible for all damages resulting from work done on a force-account basis, the same as if this work had been included in the original Contract.

Work performed without previous written order by the Project Manager will not be paid.

74. **ALLOWANCES** Whenever an allowance is mentioned in the specifications, then the contractor shall include in his contract sum the entire amount of such specified allowances. The expenditure of these allowances is to be at the Purchasing Manager's direction. However, the allowance expenditure is limited to items properly inferable from the title and description of the allowance. Unexpended balances are to be credited to the City. Compensation payable to the contractor for expenditure of allowances directed by the Purchasing Manager shall be based on the cost to the contractor as shown by actual invoices or receipts, and no additional overhead or profit shall be payable to the contractor for such allowances.

75. **PROGRESS PAYMENTS AND RETAINAGE** The Contractor shall submit a detailed application for payment on a monthly basis, preferable on an AIA G702 form. Such application for payment, notarized, if required, must be accompanied by supporting data and documents substantiating the Contractor's right to payment and reflecting a five percent (5%) retainage.

Applications for payment shall not include payment for equipment or materials delivered to the site but not installed or for materials or equipment properly stored off-site unless specifically approved by the Project Manager. If such approval is granted, the Contractor must submit with the application for payment, bills of sale or other such documentation satisfactory to the City to establish the City's title to such materials or equipment or otherwise to protect the City's interest, including applicable insurance and transportation to the site for materials and equipment stored off site. Such approvals are typically reserved for "big ticket" items that individually would exceed five percent (5%) of the bid total. The Contractor shall promptly pay each subcontractor and supplier for work completed upon receipt of payment from the City the amount to which said subcontractor is entitled, reflecting any percentage retained from payments to the Contractor on account of each subcontractor's work. The Contractor shall, by an appropriate agreement with each subcontractor, require each subcontractor to make prompt payments to his subcontractors in a similar manner.

The City shall be under no obligation to pay or to see to the payment of any moneys to any subcontractor except as may otherwise be required by law.

No Certificate of Payment or partial or entire use of the facility by the City shall constitute an acceptance of any work which is not in accordance with the Contract Documents.

Payments Withheld – The City may decline to certify payment or because of subsequently discovered evidence or observations, nullify the whole or any part of any Certification of Payment previously issued, as may be necessary to protect the City from loss because of: (1) defective work not remedied, (2) third party claim filed or evidence indicating probable filing of such claim, (3) failure of the Contractor to make payments properly to subcontractors or suppliers, (4) reasonable evidence that the work cannot be completed for the unpaid balance of the contract sum, (5) reasonable evidence that the work will not be completed within the Contract time, (6) persistent failure to carry out the work.

76. **FINAL PAYMENT REQUEST** Upon reaching substantial completion, as defined by receipt of occupancy permit or when all related punch list items have been completed, whichever date is later, the Contractor may submit a written Application for Final Payment. All supporting documentation and data shall be submitted with the Request for Final Payment as is applicable to the monthly Requests for Payment referenced heretofore.

    Out of the amount representing the total of the final payment request the City shall deduct five (5%) percent, which shall be in addition to any and all other amounts which, under the Contract, it is entitled or required to retain and shall hold said sum for a period of one hundred and twenty (120) days after the date of acceptance of the work by the City.

    Within thirty (30) days after the approval of the final payment request, the City will pay to the Contractor the amount remaining after deducting from the total amount of the final estimate all such sums as have hereto before been paid to the Contractor under the provision of the Contract and also such amounts as the City has or may be authorized under the Contract to reserve or retain.

    Neither the final payment nor the remaining retainage shall become due until the Contractor submits to the Project Manager:
    1. An affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the work for which the City or his property might in any way be responsible, have been paid.
    2. Consent of surety to final payment, and
    3. If requested, data establishing payment or satisfaction of obligations, such as receipt, release and waivers of liens arising out of the Contract;
    4. All punch list items are completed to the satisfaction of the Project Manager.

    If any subcontractor refuses to furnish a release or waiver of liens required by the City, the Contractor may furnish a bond satisfactory to the City to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorney fees.

    Acceptance by the Contractor of final payment shall operate as a release to the Mayor and Council and every officer and agent thereof, from all claims and liabilities to the Contractor for anything done or furnished or relating to the work under the contract.

77. **RELEASE OF RETAINAGE** Upon the expiration of the aforesaid period of one hundred and twenty (120) days succeeding the date of acceptance, the City will pay to the Contractor all sums reserved or retained, less such amount as it may be empowered under the provisions of the Contract to retain.

78. **GUARANTEES / WARRANTIES** All guarantees and warranties required shall be furnished by the Contractor and shall be delivered to the Project Manager before final payment is made. The Contractor guarantees that the items conform to the contract documents.

79. **GUARANTEE PERIOD** The Contractor shall warrant and guarantee the work required under this Contract for a period of twelve (12) months from the date of Final Acceptance. The Contractor warrants and guarantees to the City, that materials and equipment furnished under the Contract shall be of good quality and new unless otherwise required or permitted by the Contract Documents, that all work will be in accordance with the Contract Documents, and that all work will be of good quality, free from faults and defects. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the City, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

    The Contractor's obligation to perform and complete the work in a workmanlike manner, free from faults and defects and in accordance with the Contract Documents shall be absolute. The Contractor shall remedy, at his own expense, and without additional cost to the Owner, all defects arising from either workmanship or materials, as determined by the City, or City's representative. The obligations of the Contractor under this Paragraph shall not include normal wear and tear under normal usage.

If the Contractor does not, within ten (10) days after notification from the Project Manager, signify his intention in writing or in action to correct work, as described above, then the Project Manager may proceed with the work and charge the cost thereof to the account of the Contract as herein before provided.

80. **Substantial Completion.** Sufficient completion of the project or the portion thereof to permit utilization of the project, or portion thereof for its intended purpose. Substantial completion requires not only that the work be sufficiently completed to permit utilization, but that the City can effectively utilize the substantially completed work. Determination of substantial completion is solely at the discretion of the City. Substantial completion does not mean complete in accordance with the contract nor shall substantial completion of all or any part of the project entitle the Contractor to acceptance under the contract.

    At such time as the Contractor has completed the work and prior to requesting a final inspection, the Contractor shall make written request for an inspection for substantial completion. Such request shall be made no less than seven (7) calendar days prior to the requested date of inspection. An inspection will be made by the City and a determination will be made as to whether or not the work is in fact substantially complete and a "punch list" will be developed. "Punch Lists" containing numerous items or items which may affect the intended use of the work will be considered cause to delay issuance of a document of Substantial Completion. Operation and Maintenance manuals shall be submitted and approved prior to issuance of any document of Substantial Completion.

81. **TRANSFER OF TITLE** The Contractor warrants that title to all work, materials and equipment covered by the Application for Payment will pass to the City either by incorporation in construction or upon the receipt of payment by the Contractor, free and clear of all liens, claims, interests or encumbrances, and that no work, materials, or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any person performing the work at the site or furnishing materials or equipment for the project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other persons.

82. **USE OF PREMISES** Whenever, in the opinion of the Project Manager, any portion of the work is completed or is in an acceptable condition for use, it shall be used for the purpose it was intended, however, such use shall not be held as acceptance of that portion of the work, or as a waiver of any of the provisions of the Contract.

83. **DETERMINATION OF CITY'S LIABILITY** The acceptance by the Contractor of the final payment made as aforesaid shall operate as and be a release to the City and every officer and agent thereof, from all claims by and liabilities to the Contractor for anything done or furnished for or relating to or affecting the work under the contract.

84. **NO LIMITATION OF LIABILITY** The mention of any specific duty or liability of the Contractor in any part of the specification shall not be construed as a limitation or restriction upon any general liability or duty imposed upon the Contractor.

85. **PRESERVATION OF MONUMENTS AND TREES** The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, highway signs, markers, fences, and curbs or other appurtenances, and shall use every precaution to prevent damage or injury thereto. Any expense necessary to provide adequate protection, whether such designated item be on or off the right-of-way, shall be assumed by the Contractor.

86. **PUBLIC ACCESS** The Contractor shall at all times conduct the work in such a manner as to insure the least obstruction to traffic practicable. The convenience and safety of the general public and the residents along the improvement shall be provided for in an adequate and satisfactory manner. Fire hydrants shall be kept accessible to fire apparatus at all times. Handicap access shall remain accessible.

87. **HAZARDOUS AND TOXIC SUBSTANCES** Manufacturers and distributors are required by Federal “Hazard Communication” provision (29 CFR 1910.1200), and the Maryland “Access to Information About Hazardous and Toxic Substances” law to label each hazardous material or chemical container, and to provide Material Safety Data Sheets to the purchaser. The Contractor must comply with these laws and must provide the City

with copies of all relevant documents, including Material Safety Data Sheets, prior to performance of services or contemporaneous with the delivery of goods.

88. **MAINTENANCE OF VEHICULAR TRAFFIC (if applicable** Unless otherwise directed by the Project Manager, traffic must be maintained on all roadways within the construction area continuously or with the least amount of interruption during the construction period necessary to minimize accidents and accident severity and maintain safety while at the same time minimizing inconvenience to the traveling public and the Contractor. The Project Manager shall have the exclusive right to order a road to be closed or to remain open. No equipment will be stored or permitted to stand within the limits of the roadway right-of-way where traffic must be maintained. Any earth dropped on the surface of the existing road shall be removed immediately to avoid possible hazardous conditions. The Contractor shall prepare and submit a Traffic Control Plan (TCP) for the Project Manager's review, revision, and approval, at least ten days before beginning work, unless otherwise directed.
All Traffic Control Devices shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), latest edition (and all revisions). With the approved TCP implemented, the Contractor will be permitted to work with the following provisions: All traffic lanes must be restored at the end of each day unless specifically authorized otherwise, in advance, by the Project Manager:

The City reserves the right to modify or expand on the methods of traffic control specified and to restrict working hours if, in the opinion of the Project Manager, the Contractor's operations are a detriment to traffic during rush hour periods.

Signs on fixed supports shall be mounted on two posts. Signs mounted on portable supports are suitable for temporary conditions. During periods of partial shutdown, or extended periods when no work is being performed, the Contractor shall remove or adequately cover all construction signs as directed by the Project Manager.

The Contractor shall be responsible for removing, storing, covering, and resetting all existing traffic signs and delineators that become inapplicable and will confuse traffic during the various stages of construction, the cost of which shall be included in the price for Maintenance of Traffic or in the absence of such a pay item it shall be accomplished at no additional compensation, as incidental to the contract. Any signs lost or damaged will be replaced by the Contractor at its expense.

The Contractor shall provide, maintain in new condition, and move when necessary or directed all traffic control devices used for the guidance and protection of vehicles.

The Contractor shall be responsible for providing the appropriate signs to reflect varying traffic patterns prior to the commencement of a new stage of construction.

Traffic must be safely maintained at all times throughout the entire length of the project. No additional compensation shall be paid to the contractor for traffic maintenance, even if the contract time exceeds the contractually specified completion date or working days.

When required lane shifts are implemented, existing painted lane markings no longer applicable shall be removed to the satisfaction of the Project Manager.

Temporary crash cushions are to be installed as shown on the Plans. Unless otherwise specified, sand containers shall be used. The crash cushions shall conform to Subsection 104.10 of the MDSHA Specifications.

Crash cushions shall be reset to reflect changing traffic patterns caused by different stages of Traffic Control. The crash cushions shall be reset at locations shown on the Plans or as directed by the Project Manager.

Should any of the sand container components be damaged during the resetting of the system or during the course of the project, the Contractor shall replace the damaged components at its own expense.

The Contractor shall have flaggers on this Project for the purpose of controlling traffic while maneuvering heavy equipment. This may require a temporary lane closure in any of the specified Traffic Control Phases. These temporary lane shutdowns shall be kept to a minimum and the normal traffic pattern for the Traffic Phase shall be restored as quickly as possible. The Contractor shall comply with Section B-20 of the MUTCD regarding flagger signing.

Prior to stopping work each day the Contractor will be required to reshape all graded areas and eliminate all drop-offs not protected by barriers by filling with compacted stone at maximum of 8:1 slope.

All barriers and barricades shall be adequately illuminated at night, as specified herein, and all lights for this purpose shall be kept operative from sunset to sunrise.

No work shall be commenced in any stage of construction until the barriers and barricades for that stage, indicated on the Plans, or as specified by the Project Manager, are completely in place. The Contractor will be solely responsible for all accidents and damages to any persons and property resulting from its operations. Compliance with prescribed precautions contained herein or in the MDSHA Specifications or Manual On Uniform Traffic and Control shall not relieve the Contractor of its primary responsibility to take all necessary measures to protect and safeguard the work, nor relieve the Contractor from any responsibilities prescribed by GP-7 of the January 2001 MDSHA Standard Specifications for Construction and Materials.

The Contractor shall notify and obtain approval in writing from the Project Manager, at least 48 hours before changing any Traffic Control Phase.

Any construction materials or debris dropped on the roadway surface shall be removed immediately to avoid possible hazardous conditions.

Materials The Contractor shall provide, maintain in first class condition, replace and move when necessary or directed all materials, devices, flagging, etc., required to maintain traffic in accordance with the Traffic Control Plans or as directed by the Project Manager. Reference is made to the latest edition of the MUTCD, wherein all such items are fully described with regard to use, application, warranties, size, color, placement, etc., and wherein typical traffic control device layouts are shown, as all such devices and techniques planned for use on this project shall strictly conform to the Manual's request except as noted on the Plans.

When any of the following items have been established on the Plans or as directed by the Project Manager, the Specifications will be adhered to in accordance with the respective sections.

Lights, Warnings, Etc: - All banners and imitation barrels shall be adequately illuminated at night, and all lights for this purpose shall be kept operative from sunset to sunrise.

Steady burning warning lights shall be used to delineate channelization through and around obstructions in a construction or maintenance area, on detour curves, on lane closures, and in other similar conditions (MUTCD 6E-4, 6E-5). Flashing warning lights shall be the means for identifying a particular and individual hazard and shall not be used in sequence, in clusters, or for delineation (MUTCD: 6E-5, 6E-6).

Where noted on the plans the first two (2) warning signs shall include a "High Level Warning Device." In addition to the flags the signs shall also be equipped with a Type "B" High Intensity Flag Warning Light. This device must meet the requirements of MUTCD 6C-11 and 6E-5. The device shall be incidental to the Temporary Traffic Sign item if provided for, otherwise the costs shall be considered incidental and no special compensation will be paid.

Barriers**:** Temporary concrete barriers shall be installed on the roadway approaches as shown on the plans or as approved in writing.

Any permanent facilities damaged as a result of anchoring temporary concrete barriers (anchor holes. etc.) shall be repaired to the satisfaction of the Project Manager using an epoxy grout or other material as may be specified

by the Project Manager. Epoxy grout shall consist of sand and epoxy, mixed by volume according to manufacturer's recommendations.

Method of Measurement and Basis of Payment: All work and materials required under the TCP not covered or specified as a pay item on the price proposal form will be included in the lump sum price bid for Maintenance of Traffic. In the absence of such an item the Contractor agrees that there will be no special compensation paid for maintenance of vehicular traffic as described above and the cost shall be considered incidental to the contract and compensated as part of other contract bid item(s).

89. **PARKING, STORAGE AND STAGING AREAS** Parking, storage and staging areas for the Contractor's use during the Project must have prior approval of the Project Manager. All areas used for storage of equipment or material shall be restored to their original condition, immediately upon completion of the work. No additional compensation will be provided for restoring, re-grading, placement of topsoil, and seed and mulch in these areas.

90. **PEDESTRIAN TRAFFIC** Pedestrians shall be safeguarded by the use of signs lights, barricades and barriers as shown on the traffic control plan and/or directed by the Project Manager. Pedestrian traffic shall be maintained at all times unless specifically authorized otherwise, in advance, by the Project Manager. The Contractor shall submit a pedestrian traffic safety plan in accordance with the MUTCD, incorporating safety measures and other provisions to fully implement the intent of this paragraph. All work and materials required to prepare and implement the pedestrian traffic safety plan shall be considered incidental to the contract and there shall be no special compensation paid for this item unless special pay items are included in the Price Proposal page. No additional compensation shall be paid for maintenance of vehicular and pedestrian traffic if for whatever reason the project time extends beyond the contract specified completion date or working days.

91. **HANDICAP ACCESS** Where handicap access exists within the line of work under this contract it will be the contractor’s responsibility to maintain said access during the life of this contract. This service is considered to be incidental to this contract and no special compensation will be paid for this service unless provided on the Price Proposal page.

92. **TOILET FACILITIES** Toilet facilities meeting MOSHA standards shall be provided at the job site for all projects exceeding $100,000 in value and at all other job sites when directed by the City. No special compensation shall be paid unless specifically provided for in the Price Proposal page of this solicitation.

93. **STAKEOUT-CONSTRUCTION CONTROL** Survey construction control provided by the City shall be limited to the baseline with stations not over 100 feet, and the elevation of the top of each marked point. P.C.s, P.T.s. P.I.s, P.V.T.s, and at least one point on the tangent beyond the end of each curve will be staked. The Contractor shall request baseline stakeout a minimum of five days in advance of construction. Stakeout data other than stated above will be furnished by the construction Contractor per MDSHA Section 815 for structures, otherwise per WSSC specs. section 01000(H) and as described in detail below and in these specifications. The City's responsibility for stakeout for the entire project shall be limited to that data described above and this shall be provided only once. The Contractor shall preserve or otherwise ensure adequate survey controls exist throughout the life of the contract.

    Surveys and stakeout shall be accomplished by the Contractor as outlined above and in conformance with WSSC specifications Section 01000-10-l l(H), entitled "Construction Stakeout By Contractor."

    The provisions therein are primarily for pipeline stakeout. The Contractor's responsibilities under this contract are hereby expanded to include, in addition to pipeline stakeout, similar responsibilities for all phases of stakeout necessary to construct all facilities under this contract including but not limited to clearing and grubbing excavation, pavement, curbs and gutters, storm drainage pipes and facilities, culverts, structures, storm water management facilities, street lights, traffic signal conduits and components, noise walls, retaining walls, ditches and sediment control features.

    The stakeout and survey record data shall be preserved and turned over to the City for filing following completion of specific components of work.

Method of Measurement and Payment Generally, stakeout shall be considered incidental to the contract and no special compensation shall be paid, unless a specific pay item is included in the contract Price Proposal page of this contract. Where payment is provided, progress payments for stakeout shall be made based on the percentage resulting from the price bid for stakeout divided by the total bid, multiplied by the monthly payment exclusive of the stakeout payment, except the final payment shall be adjusted as necessary to equal the total price bid for stakeout.

Grade Sheet by Contractor: Grade sheets showing hub and design elevations for roadway, water mains, drainage structures and piping, walks, lights, infiltration facilities clearing/grubbing, excavation, and related components will be provided by the construction Contractor at least 8 hours in advance of construction and will be subject to approval by the Project Manager. Stakeout for curb and gutter in all vertical and horizontal curves is to be at intervals of 25 feet or less unless otherwise specifically authorized by the Project Manager. This work is considered incidental to the contrast and no extra compensation will be paid.

94. **DEBRIS** Under no circumstance will any open fires be permitted within the City of Rockville. All debris will be removed and hauled from site (except when otherwise specifically authorized in the bid document) and disposed in accordance with Local, State and Federal laws in effect at the disposal site. No special compensation will be paid as all costs for off-site disposal shall be included in the applicable bid prices and considered incidental to the contract.

95. **CLEAN UP** In addition to any provisions regarding clean up in the bid document, clean up, including the restoration of areas of construction, shall proceed as quickly as is practicable. The period between construction and final clean up shall normally not exceed one week. If at any time during the course of the work the cleaning operation in any given area becomes delinquent in the opinion of the Project Manager he may order that construction be stopped until such cleaning is completed. Any such order shall not extend the Final Completion date under this contract. Unless otherwise indicated, all materials razed, demolished, or otherwise removed from the work site shall become the property of the Contractor and shall be disposed of legally and properly off site at his expense.

    Upon Final Completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the street, footways, lawns, and adjacent property, all surplus and discarded materials, rubbish and temporary structures, restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work and shall leave the work area in a neat and presentable condition throughout the entire length of the project under contract.

    If the Contractor fails to clean up at Final Completion of the work, the City may do so and the cost thereof shall be charged to the Contractor.

# INSURANCE REQUIREMENTS

Prior to the execution of the contract by the City, the Contractor must obtain at their own cost and expense and keep in force and effect during the term of the contract including all extensions, the following insurance with an insurance company/companies licensed to do business in the State of Maryland evidenced by a certificate of insurance and/or copies of the insurance policies. The Contractor's insurance shall be primary. The Contractor must electronically submit to the Procurement Division a certificate of insurance prior to the start of any work. In no event may the insurance coverage be less than shown below.

Unless otherwise described in this contract the successful contractor and subcontractors will be required to maintain for the life of the contract and to furnish the City evidence of insurance as follows:

**MANDATORY REQUIREMENTS FOR INSURANCE**
Contractor's insurance coverage shall be primary insurance as respects the City, its elected and appointed officials, officers, consultants, agents and employees and any insurance or self-insurance maintained by the City, shall be excess of the Contractor's insurance and shall not be called upon to contribute with it.

| Type of Insurance | Amounts of Insurance | Endorsements and Provisions |
|---|---|---|
| 1. ***Workers' Compensation***<br>2. ***Employers' Liability*** | Bodily Injury by Accident:<br>$100,000 each accident<br><br>Bodily Injury by Disease:<br>$500,000 policy limits<br><br>Bodily Injury by Disease:<br>$100,000 each employee | Waiver of Subrogation:<br>**WC 00 03 13 Waiver of Our Rights to Recover From Others Endorsement signed and dated.** |
| 3. ***Commercial General Liability***<br><br>a. Bodily Injury<br>b. Property Damage<br>c. Contractual Liability<br>d. Premise/Operations<br>e. Independent Contractors<br>f. Products/Completed Operations<br>g. Personal Injury | Each Occurrence:<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage.<br>**CG 20 37 07 04 and CG 20 10 07 04 forms to be both signed and dated.** |
| 4. ***Automobile Liability***<br><br>a. All Owned Autos<br>b. Hired Autos<br>c. Non-Owned Autos | Combined Single Limit for Bodily Injury and Property Damage - (each accident):<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage.<br>**Form CA20 48 02 99 form to be both signed and dated.** |
| 5. ***Excess/Umbrella Liability*** | Each Occurrence/Aggregate:<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage. |
| 6. ***Professional Liability*** | Each Occurrence/Aggregate:<br>$1,000,000 | |

Alternative and/or additional insurance requirements, when outlined under the special provisions of this contract, shall take precedence over the above requirements in part or in full as described therein.

**POLICY CANCELLATION**
No change, cancellation or non-renewed shall be made in any insurance coverage without a thirty (30) day written notice to the City Procurement Division. The Contractor shall electronically furnish a new certificate prior to any change or cancellation date. The failure of the Contractor to deliver a new and valid certificate will result in suspension of all payments and cessation of on-site work activities until a new certificate is furnished.

**ADDITIONAL INSURED**

**The Mayor and Council of Rockville, which includes its elected and appointed officials, officers, consultants, agents and employees must be named as an additional insured** on the Contractor's Commercial and Excess/Umbrella Insurance for liability arising out of contractor's products, goods, and services provided under this contract. Additionally, The Mayor and Council of Rockville must be named as additional insured on the Contractor's Automobile and General Liability Policies. Endorsements reflecting the Mayor and Council of Rockville as an additional insured are required to be submitted with the insurance certificate.

**SUBCONTRACTORS**

All subcontractors shall meet the requirements of this Section before commencing work. In addition, Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

**CERTIFICATE HOLDER**

**The Mayor and Council of Rockville**
**(Contract #, title)**
City Hall
111 Maryland Avenue
Rockville, MD 20850

**CITY OF ROCKVILLE**
**ROCKVILLE, MARYLAND**

# IFB #01-25
# KING FARM FARMSTEAD ELECTRIC INFRSTRUCTURE PROJECT

## SECTION III: SPECIAL PROVISIONS

### 3.1 Point of Contact

To ensure fair consideration for all Bidders, the City prohibits communication to or with any department, elected official or employee during the submission process, other than the Procurement Division, regarding the requirements for this submittal. Any such contact may be considered grounds for disqualification. The City shall not be responsible for oral interpretations given by any City employee or its representative.

All inquiries concerning clarifications of this solicitation or for additional information shall be submitted via the City's Collaboration Portal.

All responses to questions/clarifications will be sent to all prospective Bidders in the form of a written addendum. Material changes, if any, to the scope of work, or bid procedures will also be transmitted by written addendum.

### 3.2 Minimum Qualification Requirements

1. At a minimum, Bidders must provide written evidence (through references) of five (5) years prior experience with the scope of work as detailed in the specifications.
2. And in addition, Bidders must have experience working with Pepco.
3. Work must be performed by a Pepco-Approved Utility Contractor familiar with all NEC code standards and details.
4. If the bidder intends to subcontract any or part of the work, then the bidder must identify and include references for each qualified subcontractor, together with a description of the proposed subcontract work. This evidence shall be submitted with the bid, or the City, at its discretion, may determine the bid to be unresponsive. The City reserves the right to require references for such subcontractors.

The City shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform the work and reserves the right to request additional information. The right is reserved to reject any bid where an investigation of the evidence or information submitted by such Bidder does not satisfy the City that the Bidder is qualified to properly carry out the terms of the Bid Document.

### 3.3 Contract Term

The anticipated terms of this contract shall be for one (1) year.

The City may issue a Limited Notice to Proceed (LNTP) to allow for mobilization, coordination, field measuring, shop drawing review/approval, submission of work plan and ordering long lead time components, and possible work if mutually agreed upon between the City and the contractor.

**3.4 Option to Renew Contract Period**

This contract will have no renewal options; however, it may be extended pursuant to Section 3.5 – Extension of Contract.

**3.5 Extension of Contract**

The City reserves the right to extend the contract for any reason for a period or periods up to but not to exceed 12 months. This extension clause must be exercised when the City determines that an extension of the contract is advantageous to the City. Any extension beyond 12 months will be subject to the City's option to renew clause as set forth in this contract. This provision in no way affects or alters the City's ability to renew the contract consistent with the renewal option clause. If it is then decided to renew the resulting contract, the renewal date will commence on the day following the last day of the contract extension.

**3.6 Notice to Proceed and Completion Schedule**

The specified completion date and time shown herein below is to be strictly adhered to unless authorized or directed otherwise in writing by the City's Project Manager. The completion date, where specified, has an allowance for inclement weather and holidays. Time extensions for unusual conditions causing project delays not covered in these special provisions will be subject to the conditions covered under the GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS; however, no compensation above that indicated herein for specific items shall be paid to the Contractor for any delay, regardless of the source of delay.

The Contractor shall provide a bar-chart schedule at the Project Kick-Off Meeting or at such time as directed by the City Construction Manager, but not more than once per month or with any change order. In addition, the contractor shall verbally provide updates to the Project Inspector as requested.

**3.7 Construction Work Hours**

Work is permitted between 7:00 am to 5:00 pm, Monday through Friday except on adopted City Holidays. Working outside of these hours must first be approved in writing by the City. Work on any street, other than secondary residential (generally 26' in width) shall be limited to 9:00 am to 3:00 pm Monday through Friday. No work shall be permitted outside these hours unless written approval is obtained from the City Project Manager or his designee.

**3.8 Contract Documents**

In addition to the requirements of Section 2.40 – Contract Documents, in the case of discrepancies in the Contract Documents and the need for interpretation, the documents will be given precedence in the following order:

- Change Orders
- Addenda
- Drawings
- Special Provisions
- Technical Specifications
- General Conditions and Instructions to Bidders (City of Rockville)
- Standard Details by others

- City of Rockville Standard Details for Construction
- Applicable Standards listed below

Any questions, requests for information or revisions to the specifications must first be reviewed and approved by the City of Rockville.

**3.9 Applicable Standards**

As a minimum standard of quality workmanship, all work is to comply with the latest provisions and recommendation of the following documents in the following order of precedence. In the event of conflict, the City's determination shall govern.

- National Electric Code (NEC latest edition)
- City of Rockville Standards and Details for Construction, dated January 1988.
- Current Montgomery County Department of Public Works and Transportation Design Standards
- MDE, WMA and SCS 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control
- American Society for Testing and Materials, "ASTM Standards", latest edition.
- American Water Works Association Standards (AWWA Standards), latest edition
- American Association of State Highway and Transportation Officials, "AASHTO Standards", latest edition
- American Concrete Institute (ACI) Standards, latest edition.
- US Access Board Americans with Disabilities Act (ADA)
- The Code of Maryland Regulations (COMAR)
- NSF/ANSI 61
- Safe Drinking Water Act

**3.10 Project Kick-Off Meeting and Pre-Construction Meetings**

Upon issuance of the Notice to Proceed, the City may arrange a project kick-off meeting with all appropriate City staff and the Contractor. This will be an on-site meeting to review the project requirements. The City will decide which City staff will attend. The Contractor shall arrange any pre-construction meetings required by associated permits. These pre-construction meetings shall be held on the project site between the Contractor, the design engineer's representative, and appropriate City staff, including the Project Inspector, Sediment Control Inspector, and Engineering Project Manager. In addition, the contractor shall invite the following agency representatives to the pre-construction meeting and shall provide at least four (4) business days' notice.

All subsequent notifications for inspection and coordination with the City and all other agencies are the responsibility of the Contractor.

**3.11 Mobilization/Demobilization**

Mobilization shall include all activities and costs for transportation of personnel, equipment, and operating supplies to and from the site; establishment of offices, and other necessary facilities for the Contractor's operations at the site; premiums paid for performance and payment bonds, including coinsurance and reinsurance agreements as applicable; and other items as specified in this specification. Demobilization shall include all activities and costs for transportation of

personnel, equipment, and supplies not included in the contract from the site; including the disassembly, removal and site cleanup/repair of offices, buildings, and other facilities assembled on the site for this contract. This work includes mobilization and any additional mobilization and demobilization activities, and costs as required during the performance of the contract. The Contractor shall provide and pay all the cost for temporary utilities including electricity, telephone, and water. All temporary facilities shall be available for the duration of the project. The Contractor shall be responsible for compliance with code ordinances and requirements of local officials for temporary facilities, controls, and related health and safety requirements. It shall be the responsibility of the Contractor to provide all necessary electrical service. In the event electrical power will not be available, it shall be the Contractor's responsibility to provide any necessary generator to continue construction. The Contractor shall provide and pay all the cost for toilet facilities for all workmen, as required by local ordinances for complete and adequate sanitary arrangements. Sanitary facilities and the surrounding shall be always kept clean and neat. They shall be located on the project site as approved by the City.

The cost of mobilization shall be considered as incidental to the cost of the entire project. No separate bid item is provided.

**3.12 Emergency Contact Information**

The Contractor shall provide the name(s) and phone number(s) of a representative(s) of the Contractor who can be reached in case of an emergency. This shall be submitted to the City prior to the start of construction.

**3.13 Emergency Information**

The Contractor shall post information concerning emergency medical, fire, rescue, and hazardous waste phone numbers from which personnel on the site can obtain information if needed. The Contractor shall also list the name and number of at least two representatives of the Contractor who can be reached in case of an emergency. The representatives must be fluent in English. The emergency information shall be in a central position, so it is visible and accessible 24 hours a day. The emergency information shall be posted for the entire length of the Contract.

**3.14 Project Signs**

Prior to the start of construction, the contractor shall provide and erect a project sign at a prominent location at the construction site. The signs shall be prepared in accordance with the instructions below and as shown on the construction plans:

- Submit 8.5"x11" or greater size scaled shop drawings or sketch indicating dimensions, layout, content, and materials for each sign, for approval by the Chief of Construction Management.
- Locations to be flagged and approved or otherwise verified with DPW Project Inspector.
- The sign shall be 4' x 8' in size, constructed of 3/4" exterior density overlaid plywood or equal, and shall have a smooth white finish.
- Lettering shall be black latex or adhesive vinyl firmly affixed to the plywood surface, and each letter shall be a minimum of 3" in height. Letters shall be legible graphic type, as approved by the DPW Project Inspector.
- The sign shall be mounted on two 4" x 4" timber posts with adequate bolts and fittings to ensure proper stability. If unacceptable reflection or other viewing or safety issues are identified by the DPW Project Inspector, the sign's positioning shall be adjusted by the Contractor.

- The sign shall be posted at a proper location and erected at a height where the bottom of the sign is a minimum of 5’ from the ground or as directed to permit public viewing.
- If applicable, the MDE decal shall be provided by the Maryland Department of the Environment.
- If peeling or damage occurs due to weather, construction activity or vandalism, it shall be the Contractor’s responsibility to restore the sign to its original condition at no cost to the City.
- At the completion of the project, the Contractor shall remove the sign from the project site and restore the area to original condition.

Costs associated with project signs shall be incidental to the work and no specific payments will be made.

**3.15 Public Utilities**

Comply with MDSHA Specifications under Sections GP 5.05, and GP 7.17 regarding public utilities.

It shall be the Contractor's responsibility to cooperate to the fullest extent possible with the utility owners in their work of adjusting the existing utilities to suit the proposed construction under this contract. All utilities, unless provided for on the Engineering Drawings, shall be relocated or constructed by their respective owners.

The location of existing utilities shown on the plans and profiles are approximate only and it shall be the Contractor's responsibility to determine the exact location of the utilities prior to commencing work in all areas of possible conflict. All test pits must be completed in coordination with the City and the affected utility companies. The existence of utilities other than those shown on the plans is not known. If, during construction operations, the Contractor should encounter additional utilities, he shall immediately notify the City and take all necessary and proper steps to protect the continuance of service of such facilities.

The Contractor shall notify the utility owner and City when previously unknown or different utilities are encountered. The Contractor shall support and protect existing utilities whether shown on the plans at no additional cost to the City. The Contractor shall not receive compensation for the temporary relocation of or temporary installation of utilities that are constructed for the convenience of the Contractor.

In case of any damage to utilities by the Contractor, either above or below ground, the owner shall be immediately notified. The Contractor shall arrange for restoration of such utilities to a condition satisfactory to the utility company at the Contractor's entire cost and expense.

The Contractor shall take into consideration when preparing his bid, the costs associated with the coordination during construction with various utility companies for any relocation or installation by the utility companies which may be necessary in areas within, or adjacent to, the limits of his contract. No additional compensation or time extensions will be allowed the Contractor for work interruptions, changes in construction sequences, changes in methods of handling excavation and drainage, and changes in types of equipment used, made necessary by others performing work within, or adjacent to, the limits of this contract. The contract time as stated in this contract includes the time needed for utility adjustments and no extension of time will be granted for delays caused by utility adjustments.

All other expenses likely to be incurred by the Contractor as a result of working around and protecting utilities, as well as cooperating with the owners of same during the relocating of such facilities, will not be measured or compensated for under any stipulated pay item.

## 3.16 Contacts

The following utility companies and City departments may be affected by this project. It shall be the Contractor's responsibility to notify all utilities and/or City departments and coordinate his construction operations with them to avoid unnecessary delays.

- **Pepco**

**Inspector, Wayne Josey**
202-702-3605

- **Pepco**

**Distribution Designer, Benet Tribble**
410-294-1110

- **Pepco**

**Planner/Scheduler, Michelle Suggs**
301-548-4341

- **City of Rockville**

**Forestry Division**
Mrs. Natasha Shangold
240-314-8205

- **City of Rockville**

**Project Manager/Parks and Facilities Development Coordinator**
Mr. Mauricio Daza
240-314-8608

- **City of Rockville**

**Senior Construction Manager**
Mr. Eric Grieshaber
240 -314-8609

- **City of Rockville**

**Sediment Control Inspector**
Mr. Arthur Simpson
240-314-8700

- **City of Rockville**

**Water and Sewer Utilities**
240-314-8567

- **MISS UTILITY**

1-800-257-7777 or 811

For Locations of Utilities, call "MISS UTILITY", at 811, 1-800-257-7777 or http://www.missutility.net/
Before interfering with any utility service, the Contractor shall notify the affected utility companies and affected property owners in advance and coordinate any required service interruption with the owner and City. For any water service shutdown, the Contractor must provide at least 21 calendar days' notice such that the City can provide proper notification.

The Contractor shall be responsible for contracting Miss Utility for the location of all utilities prior to the start of work.

**3.17 Protection of Work, Property and Persons**

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with this project. All necessary precautions shall be taken: to prevent injury to the Contractor's employees and other persons who may be affected by the project; to prevent damage to or loss of materials or equipment incorporated into the project; and to protect other property at or adjacent to the site including but not limited to trees, shrubs, lawns, walks, fences, pavements, roadways, utilities, structures, buildings, playgrounds and park facilities not designated for removal, relocation, or replacement in the course of construction; to provide warning signs as directed by the City for personnel and the public. Costs associated with this work are incidental to the work and no specific payments will be made.

**3.18 Weather Protection/Limitations**

*Weather Protection* means the temporary protection of that Work adversely affected by moisture, wind, and cold by covering, enclosing, and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the City and consistent with the construction schedule to permit the continuous progress of all Work necessary to maintain an orderly and efficient sequence of construction operations. The Contractor shall furnish and install "Weather Protection" material and be responsible for all costs, including heating required to maintain a minimum of 40 degrees F. at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials, or the applicable conditions set forth in the Contract Documents with added regard to performance obligations of the Contractor. Weather protection costs associated with this work are incidental to the project and no specific payments will be made. The City reserves the right to stop work if the weather does not meet specifications, manufacturers recommendations and industry standards and specification to complete the work scheduled daily.

**3.19 Site Access**

Access to the site is by public streets and thoroughfares. After the completion of the project, all roads, driveways, parking lots, sidewalks, landscaping, fences, utilities, structures, buildings, lawns, and other facilities not designated for removal, relocation or replacement that are damaged by the Contractor's actions shall be restored to the same condition or better. Prior to any construction activities, it is the Contractor's responsibility to document any existing damage or conditions indicative of substandard facilities. Costs associated with this work shall be included with the appropriate Pay Item.

Access to parks, easements across private property and other City-owned property in wooded areas must be coordinated with the City and the private property owners prior to the Contractor entering the property. Due to the proximity of public park property, private property and natural resources,

the Contractor shall exercise extreme care in their construction operations. All work must be kept within these limits and within the "Limits of Disturbance" as shown on the Engineering Drawings.

It should be noted that the park will be open to the public during construction. The Contractor shall exercise prudence regarding site security, storage, staging, safety, worker identification/background and other matters that may impact the public. The Contractor must be sensitive to the community and adjacent property owners. The Contractor shall immediately advise the Engineer and/or the City Project Manager of any problems involving the community.

Due to project location, the potential for trespassers is high. The job site will need to be secured every day. The Contractor shall be held responsible for securing their own equipment.

**3.20 Access to Adjacent Properties**

Access must be maintained to all properties always abutting this project. All work affecting private properties is to be coordinated with the property owner by the Contractor. The Contractor shall always maintain access to private driveways unless specifically approved in advance by the City.

**3.21 Preservation and Restoration of Property & Monuments**

The Contractor is to carefully examine the plans provided with the Engineering Drawings to ensure a clear understanding of the private property limits and work limits. The Contractor shall not enter upon private property for any purpose without first obtaining permission from the City and written permission from the property owner. The Contractor shall be responsible for the preservation of all public and private property, including but not limited to plants (trees, shrubs, and seasonal vegetation), lawns, walks, fences, pavements, roadways, utilities, structures, buildings, playgrounds, and park facilities not designated for removal, relocation, or replacement, along and adjacent to the work areas, and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall take suitable precaution to prevent damage to underground or overhead public utility structures and must protect carefully from disturbances or damages all land monuments and property markers until the Project Inspector has witnessed or otherwise referenced their locations. All disturbed monuments and markers must be reset to their correct location by the Contractor at no additional compensation.

The Contractor shall be responsible for all damages or injury to public or private property of any character during the prosecution of the work, resulting from any act, omission, neglect or misconduct in his manner or method of executing said work satisfactorily, or due to the non-execution of said work, or at any time due to defective work or materials. When or where any direct or indirect damage or injury is done to public or private property or on account of any act, omission, neglect or misconduct in the execution of the work or in consequence of the non-execution thereof on the part of the Contractor, the Contractor must restore, at its own expense, such property to a condition similar or equal to rebuilding or otherwise restoring as may be directed by the City, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property in a reasonable amount of time or make good such damage or injury the City may, upon 24 hours' notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due, or which may become due the Contractor under this Contract. City crews or another Contractor may accomplish said work.

After the completion of the project, all plants (trees, shrubs, and seasonal vegetation), lawns, walks, fences, pavements, roadways, utilities, structures, buildings, playgrounds and park facilities and other facilities not designated for removal, relocation or replacement that are damaged by the Contractor's actions shall be restored to the same condition or better. Prior to any construction

activities, it is the Contractor's responsibility to document any existing damage or conditions indicative of substandard facilities. The Contractor shall provide pre-project photographs or videotape of the project work areas to the DPW Project Inspector. Costs associated with this work are incidental to the work and no specific payments will be made.

All the requirements outlined above shall be considered incidental to this contract and no special compensation shall be paid.

## 3.22 Site Conditions

The Contractor shall visit each work site prior to performing the work to verify the existing conditions.

The geotechnical data on the Engineering Drawings is provided for the Contractor's information only. The City does not warrant or guarantee the accuracy or completeness of the data. The Contractor should note the date and method(s) of data collection. The interpretation of the data and its applicability to the project is the responsibility of the Contractor and they are responsible for satisfying themselves as to the actual conditions and/or confirming the data provided prior to submitting their bid. There is no warranty or guarantee that geotechnical conditions other than those identified will not be encountered.

The topography shown on the Engineering Drawings represents the existing conditions at the time of the survey. However, the Contractor shall satisfy themselves as to all conditions at the time of bidding this project and include in their proposal any changes necessary to accomplish a complete and functional project. The Contractor will only be permitted to bring discrepancies in earthwork quantities to the attention of the City at the time of bidding. After award of Contract, payment for Earthwork pay items will be considered fixed.

Should there be any discrepancies between Engineering Drawings, specifications and/or field conditions after bidding and prior to the beginning of work, the Contractor shall bring such discrepancies to the attention of the City of Rockville at the pre-construction meeting.

The Contractor shall use the horizontal and vertical survey control points shown on the Engineering Drawings to layout the lines of work, stake out the location of all proposed structures, and test the levels of all construction. No other datum or control points will be accepted.

The Contractor shall create a video record of the project areas prior to beginning work. The City shall be notified 48 hours prior to the scheduled video recording of the site and will have a representative present to identify other areas that may be affected by the proposed construction. The Contractor shall be responsible for the repair, replacement and/or reconstruction of any property destroyed or damaged as a result of this Contract. This shall include all public and/or privately constructed driveways, fences, gates, buildings, landscaping, utility lines and other permanent items. All claims will be verified by the City through the video record of the area. The video record shall be submitted to the City prior to mobilization of any equipment for the Contract.

## 3.23 Contractors Staging and Storage

The Contractor will establish temporary staging areas as approved by the City. Cleanup of each staging area shall occur daily. Contractor shall cover topsoil, stone, and aggregate stockpiles with tarps to prevent sedimentation of the street.

Submit a sketch (a marked up set of plans is acceptable) and brief description for approval by the City's Project Manager showing the location of equipment and materials, location of portable sanitary toilet, and means and methods to protect pedestrians and existing public facilities (including trees) within the area as shown on the plans. This plan may have to be approved by the City Forester, if any grassed or tree areas will be utilized.

There shall be no payment for this work. It shall be considered incidental to the contract.

**3.24 Temporary Utilities**

The Contractor shall pay all fees, obtain necessary permits, and have meters installed for temporary utilities as may be required for the execution of this contract. As needed, the Contractor through direct local arrangements must obtain temporary electric service for the purpose of this contract with the electric company, PEPCO. The Contractor shall furnish and install all necessary temporary service drops, wiring, connections, etc., necessary for temporary service required by the Contractor. All costs associated with any temporary electric service required by the Contractor are considered incidental to other pertinent pay items. This item shall not be measured for payment.

The Contractor shall, at the beginning of the project, provide suitable temporary sanitary toilet facilities on the premises, in accordance with the GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS. The City shall approve the location of the sanitary toilet.

**3.25 Construction Stakeout and As-Builts**

Construction Stakeout shall be in accordance with Section 107 of the MDSHA "Standard Specifications for Construction and Materials", dated July 2018, with the following exceptions:

The Contractor shall be responsible for all construction stakeout. The Contractor shall complete project as shown on approved plans. The City will not provide any construction stakeout for this project. Contractors are to use benchmark and layout information as shown on the plans.

The Contractor shall provide as-built information. One set of redline as-builts shall be always maintained and kept on-site. Any deviations from approved plans shall be marked, in red, on the as-builts. As-built information shall consist of any deviation to the approved plan such as grading limits, slopes, types/length/height of restoration features, and any modifications to typical details. As-built requirements do not include any topographic survey.

Upon completion of project, submit as-builts for approval. Retainage shall not be released until as-builts are approved.

A copy of the Department of Public Works As-built Plan Requirements is attached in Appendix K.

The City will provide an electronic CAD file of the layout information for the Contractor. The Contractor must complete an agreement for receipt of the electronic file.

**3.26 Aerial Electric Lines**

The Contractor shall be aware that State law requires that a 10-foot radial clearance shall be maintained for all construction equipment and materials in relation to electric lines carrying 750 volts or more. Because the State law is more stringent than the Federal laws, the State law shall be considered the minimal distance.

**3.27 Noise Control Measures**

All work must comply with the noise ordinance requirements for Montgomery County. A copy of the ordinance enforced by the Department of Environmental Protection (DEP) is attached to these contract documents in Appendix J for observation and compliance. With City approval, the Contractor may request a waiver through Montgomery County. The Contractor is fully responsible to submit the request and comply with any conditions of the waiver approval. The Contractor shall consider the processing time of this request, which includes a public notice element, when scheduling their work.

**3.28 Water Pollution Control Measures**

The Contractor shall not discharge or permit discharge into the waters, canals, ditches, or drainage system any fuels, oil, bitumen, garbage, sewage, or other materials which may be harmful to fish, wildlife, or vegetation or that may be detrimental to outdoor recreation. The Contractor shall be responsible for investigation and complying with all applicable federal, state, and local laws and regulations governing pollution of water. All work under this Contract shall be performed in such a manner that objectionable conditions will not be created in waters through or adjacent to the project areas.

**3.29 Air Pollution Control Measures**

All fine-grained, loose materials hauled to or from this project shall be covered to prevent spillage and blowing. Material, which is not covered after notification by the City, will not be accepted for use on this project. This material will not be included in measurement for payment.

Burning will not be permitted.

**3.30 Environmental Protection Measures**

Impervious barriers, (i.e., plastic, metal drip pans, etc.) shall be placed under any compressors, generators, welding machines, etc., to prevent oils, solvents, organic compounds, or other contaminants from leaching into the soil. Any oils, solvents, organic compounds, or contaminants spilled on the site during the process of the work shall be immediately removed and cleaned up by the Contractor. Any earth contaminated by a spill shall also be removed and replaced with new certified clean material to the satisfaction of the City and the Maryland Department of the Environment (MDE). If the City has to remove the oils, solvents, organic compounds, contaminants, or earth, the City may deduct the costs of removal and clean up from the total contract amount owed the Contractor.

**3.31 Erosion and Sediment Controls**

The Contractor is responsible for adhering to the City's laws and ordinances regarding sediment control. The Contractor shall be responsible for coordinating all work, and for notifying the City:

- Upon installation of all erosion and sediment control devices to schedule a “Notice to Proceed” inspection prior to commencing work.
- Prior to removing sediment control devices; and
- Upon completion of final grading, establishment of ground covers and approved land stabilization.
- During the progression of all work, the Contractor shall make periodic inspections and maintain sediment control devices, including cleaning and routine maintenance as directed

or necessary, to ensure that the intended purpose is accomplished. Under no circumstances shall sediment be allowed to enter private properties, stormdrains, or City waterways.

When directed in the field by the Project Inspector, the Contractor shall be required to make adjustments in location and/or increase or decrease quantities of sediment control measures and provide temporary stabilization measures.

All sediment control measures shall be installed and maintained as shown on the Contract Documents, City Notes in Section VII, approved plans and details per latest City of Rockville Standards, Maryland Department of the Environment's 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control, in compliance with the MDE/WMA Notice of Intent (NOI) General Permit for construction activities, and as directed by the Project Inspector. Please refer to Maryland Department of Transportation, State Highway Administration's Specifications entitled, "Standard Specifications for Construction and Material" dated May 2017, revisions thereof, or additions thereto. Comply with MSHA specifications section 308.02 Material and section 308.03 Construction.

Furnish and install temporary erosion and sediment controls. The Contractor is to protect the integrity of the erosion control measures installed. The erosion control measures shall be provided until such times as the temporary ground cover is sufficiently developed, and the Project Inspector gives written authorization to remove said measures. The Contractor shall comply with all local, state, and federal laws, ordinances, and regulations pertaining to erosion, sediment, and pollution control, including those promulgated by the State of Maryland, and shall indemnify and hold harmless the City from and against all claims, damages, losses, and expenses resulting from such work.

The Contractor shall always have an employee present on site who has met the requirements for certification of the Responsible Personnel training in erosion and sediment control according Maryland State Law. This employee shall have sufficient authority to install, maintain, adjust, or otherwise implement approved sediment control measures.

The Contractor shall take all measures to control erosion and sedimentation at construction site, including borrow and waste areas and temporary access roads, and at off-site areas especially vulnerable to damage from erosion and sedimentation. All erosion and sediment control measures will be subject to approval by the City. All erosion and sediment control measures shall be implemented prior to any construction occurring. All temporary erosion and sediment control measures shall be removed within thirty (30) days after completion of construction and establishment of permanent erosion control.

Work shall be scheduled so that areas subject to erosion are exposed for the shortest possible time. Only those trees, shrubs and grasses shall be removed that are necessary for construction as designated by the forest conservation plan and/or approved plans; those remaining shall be protected to preserve their aesthetic and erosion control values. Temporary on-site structures and buildings shall be located to preserve the existing landscape and to minimize erosion, including that from construction traffic. If practicable, work shall be scheduled in seasons when erosion is less of a hazard, particularly for sites with steep slopes and erodible soils.

Temporary protection shall be required for disturbed areas until final grading is completed, and permanent vegetation is established, and shall consist of planting temporary grass cover or other vegetation when feasible. Other short-term protection shall include covering disturbed areas,

stockpiles, and topsoil piles with a mulch of hay, straw, or wood chips, stabilizing with netting, or covering with plastic sheets. Graded slopes and fills shall be limited to an angle and to lengths that will maintain stability and allow easy maintenance. Construction equipment shall not be operated in a way to make the land more susceptible to erosion, such as leaving tracks up and down slopes. Access roads shall be located and constructed to prevent erosion.

Controls for surface water runoff shall be constructed as early as possible to prevent the formation of gullies or rills. These controls shall be maintained during the entire construction period or until permanent storm drains/revetments are completed. Diversion channels or berms, slope drains, flow barriers, dikes, or other structures, which retard or spread water flow, shall control runoff. Compacted embankments, ditches, furrows, or temporary diversions across slopes shall be provided to intercept runoff before it reaches erodible areas. Diversions and drains shall be directed into stabilized areas where the discharge can be spread out and dissipated.

If unusually intense storms cause planned control measures to fail, prompt restoration and cleanup of sediment deposits shall be made, including damage to adjacent property. If construction is delayed or shut down, temporary cover of exposed and disturbed areas shall be provided.

**3.32 Forest and Tree Conservation Requirements**

The Contractor shall complete all forest and tree conservation requirements according to the approved. contract documents:

- All forestry related work shall be under the direct supervision of someone who is both certified by the International Society of Arboriculture and registered in the State of Maryland as Licensed Tree Expert. Provide proof of both prior to on-site Forestry pre-construction meeting.
- Promptly replace any existing trees designated to remain that are damaged or destroyed during development.
- Perform all site preparation, including removal of pavements, structures, and inclusion of soil amendments, PRIOR to installing plantings.
- Maintain and monitor all tree plantings in accordance with the contract documents, for a period of two years from the date the plantings are inspected and approved by the City Forester. Such maintenance shall include when appropriate, but not necessarily be limited to:
    - o Watering, fertilizing and control of competing vegetation during the initial planting and through the two (2) year maintenance period as may be necessary or as dictated by the FTP Permit.
    - o Pruning, mulching, tightening and removal of guys and stakes within six (6) months, resetting of plants to proper grades or upright position, and furnishing and applying such sprays or other items necessary to thwart damage from insects and disease.
    - o Providing protection measures such as fencing and interpretive signs as necessary, to prevent destruction or degradation of the planting site.
    - o Eradicate, suppress, and control non-native invasive plant species, as approved by the City Forester, to maintain the health of the trees planted.

- Guarantee survival of 100% of landscape tree plantings and 85% of forest plantings under 2" caliper in good health and in flourishing condition of active growth for a minimum period of two years from the date that the plantings are inspected and approved by the City Forester.
- Replace, as soon as weather permits, any dead plantings to ensure compliance with the above minimum survival requirements; provided, however, that dead trees and plantings shall be removed immediately.

Special attention must be given the existing landscape features and special care taken to protect the natural surroundings. The roots of such trees or shrubbery will not be cut unnecessarily. The Contractor will be required to root prune the tree roots, which extend into grading limits and/or from trees intended to be left in an undamaged state or otherwise prevent damage to roots of trees. No road machinery of any description, which might throw off gas or smoke in such volume as to damage vegetation, shall be allowed to stand under such trees or shrubbery.

Any tree that in the opinion of the City, may be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or operations must be protected prior to the start of work by means acceptable to the City. Contractor must verify all saved trees prior to construction. Prior to commencing construction, all tree protection techniques must be approved by the City Forester's office.

Any tree, or landscape features scarred or damaged by the Contractor's operations must be removed, correctively pruned, restored, or replaced as nearly as possible to the original conditions, as required by the Project Inspector and at the Contractor's expense. No ropes, cables or guys are to be fastened to or attached to any nearby trees for anchorage or in lieu of placing of dead men.

**3.33 Care of Water During Construction**

The Contractor shall furnish, install, test, operate, monitor, and maintain dewatering systems of sufficient scope, size, and capacity to control water flow into excavations and permit construction to proceed on dry, stable sub-grades. Dewatering operations shall be maintained to ensure erosion control, stability of excavations and constructed slopes, prevent excavation from flooding, and prevent damage to sub-grades and permanent structures.

The Contractor shall provide a suitable watercourse (i.e., fire hose, etc.) to direct the flow of water to have minimal impact upon the environment, private property, roadway, and pedestrian traffic. Any damage caused by discharge of water is the responsibility of the Contractor. The Contractor shall not discharge any water so as to cause sediment to reach any storm drain inlet or water course.

The Contractor shall provide shoring, bracing and cofferdams during construction as necessary to protect personnel, structures, and equipment. No special payment will be made for shoring, bracing or cofferdams. The Contractor is responsible for ensuring the safety of his employees and sub-contractors, and for complying with all applicable provisions of Maryland Occupational Safety and Health Administration.

The Contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations. The Contractor shall provide an adequate system to lower and control water to permit excavation, construction of structures, and placement of fill materials on dry sub-

grades. The Contractor shall install sufficient dewatering equipment to drain water-bearing strata above and below bottom of ponds and other excavations.

Work areas shall be dewatered in a manner that avoids endangering public health, property, and portions of work under construction or completed. The Contractor shall provide sumps, sedimentation tanks, dewatering basins or non-woven dewatering bags as required by the Project Inspector. Standby equipment shall be provided on-site, installed, and available for immediate operation, to maintain dewatering on continuous basis if any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, the Contractor shall restore damaged structures and foundation soils at no additional expense to the City. The Contractor shall remove all dewatering systems from project site on completion of dewatering.

All pumps and generators utilized for bypass and dewatering operations shall be "quiet" rated with a full-load noise level of less than 63 dB at 23 feet or as approved by the Construction Manager. The City may require additional measures, such as the use of straw bale baffle walls, for work approved outside of normal working hours.

Care of water during construction shall be considered incidental to the appropriate pay item.

**3.34 Daily Clean-Up**

The Contractor shall always keep the work areas clean and orderly and shall promptly remove all waste and rubbish. The daily debris shall be collected in covered containers and disposed of in proper fashion. All directions from authorized public officials having jurisdiction over health and safety shall be obeyed. The site will be "broom cleaned" at the end of each working shift. Open excavations may not be left unattended. Site must be secured each night.

The Contractor shall clean every street upon which any work has been performed under this contract daily. The cleanup shall be accomplished by use of a vacuum assisted sweeper truck, manual (push) broom sweeping, or other method as directed and or approved by the Project Inspector. Under no circumstance shall the contractor use compressed air or jet water sprays for cleanup purposes.

**3.35 Submittals of Materials**

The Contractor shall submit two (2) copies of all delivery tickets, shop drawings, inspection, testing or certification reports, obtained approvals or permits, and other submittals required for this project to the City Project Manager.

**3.36 Inspection and Certification**

All materials shall be subject to inspection or test by the City and/or Pepco prior to installation and no previous certification or inspection shall bar rejection if the material is found to be inferior, damaged, or defective. The certification requirements may be waived for any or all of the materials at the discretion of the City.

**3.37 Inspection and Repairs**

The City and Pepco reserves the right to inspect all work either in progress or completed. All work shall be inspected prior to backfill. Any portion of the work that is backfilled prior to inspection shall be uncovered at the contractor's expense to enable the Project Inspector to adequately inspect. If the work is found to be unsatisfactory or in conflict with the provisions in these specifications the City may hold back payment for work completed. The City's Recreation and Parks Project

Manager will give written notification of the unsatisfactory work to the contractor. The Contractor shall have no more than 10 days to correct the condition.

**3.38 Contractor's Employees**

Contractor's employees are to present a professional appearance, shall be neat, clean, well groomed, courteous, and conduct themselves in a respectable manner while performing duties and while on City and/or private property.

The Contractor's employees shall conduct themselves in a professional manner. They shall minimize their impacts to the surrounding properties, including when they arrive to the site, take breaks, eat lunch, and depart the site. Contractor's employees shall be respectful and polite to inquiries from residents or individuals not associated with the project. Any inquiries beyond basic information should be referred to the City. The Contractor shall inform the City of any inquiries that occur that is beyond providing basic information.

The Contractor shall provide the City with a listing of all personnel assigned to the contract. In addition, the Contractor shall provide a listing of names, and emergency telephone numbers of supervisory personnel assigned to the contract. It will be the Contractor's responsibility to keep this list up to date.

The City reserves the right to request that the contractor remove any employee if it is determined that services are not being performed in accordance with the terms and conditions of the contract.

**3.39 Sub-Contractors**

The Contractor shall have the right to sub-contract but shall be fully responsible and cannot be relieved of any liability under this contract on account of any sub-contractor. All sub-contracting must have prior written City approval. The City reserves the right to approve or reject any sub-contractor if they do not possess a Pepco/Master license or certification.

Nothing contained in the contract documents shall create any contractual relationship between the owner and any subcontractor or sub-subcontractor. Vendors who will subcontract the delivery, installation, or any other portion of the work herein described will submit, prior to construction, the following information:
A description of the items to be subcontracted, and the subcontractor's name, address, and telephone number. During the life of the contract, the Contractor shall provide the name, nature, and extent of all subcontractors.

Subcontractors shall be considered an agent of the Contractor, who shall be held fully accountable for all the subcontractor services, labor, and materials relative to the contract.

**3.40 Changes in Work**

If an event arises which the contractor considers may result in the addition, deletion or modification to the contract, the Contractor shall notify the City prior to commencing work under that change.

All such changes, or additional work must be authorized in writing by the City Project Manager prior to starting such work.

**3.41 Invoices and Payment**

The Contractor shall submit a detailed invoice to the City's Project Manager, for payment at the end of each month for all work completed and accepted by the City during that month. The Contractor shall attach to each monthly invoice, all required documentation of testing results. It is

possible that the City may issue a Limited Notice to Proceed (LNTP) to allow for mobilization, coordination, field measuring, shop drawing review/approval, submission of work plan and ordering long lead time components, and possible work if mutually agreed upon between the City and the contractor.

**3.42 Conditions for Approval for Access to City of Rockville Facilities**

All Contractor and subcontractor employees that will work on the job site or who have access to sensitive information are to have initial background checks performed by the City to assure the City information used and generated by this project will not end up in unauthorized hands. The initial background checks are valid for one year and subject to annual renewal for employees continuing to work on the project. The Contractor shall allow 4 weeks, from date of submission of personnel information or from the date of Notice to Proceed, whichever is later, for the City to perform background checks.

"Sensitive" documents and information are defined as those that could reasonably be used to aid in or plan for contaminating or damaging the City's system or City customers. Examples of such documents include, but are not limited to:

- plans/blueprints, as-built drawings, or contract documents of City facilities
- plans/blueprints, as-built drawings, contract documents, or 200-foot sheets of the water distribution system or the wastewater collection system

For any document or information to be provided to the Contractor where there is uncertainty whether it is "sensitive", the City shall have sole discretion to make such determination.

The contractor shall issue contractor's project participants photo identification cards. Identification cards must be always worn while on any City property. Contractor employees found on-site without proper identification will be immediately removed from City property. The design of identification cards shall be reviewed and approved by the City prior to issuance. Identification cards for employees who are no longer associated with the project, for any reason, will be immediately recovered by the Contractor. The Contractor is responsible to control and inventory all identification cards issued so those cards are not obtained or used by unauthorized individuals.

**3.43 Technical Contact/Project Engineer**

**David Asofsky, AIA Project Architect**
*Chevy Chase Group Director*

**Engineers, Architects, & Surveyors**
8401 Connecticut Ave, Suite 350 Chevy Chase, MD 20815 240.744.1076
Cell-301-385-5235
Email: DAsofsky@delta-eas.com

**3.44 Estimated Quantities**

No warranty is given or implied by the City as to any components listed in this Bid and are considered to be estimates for the purpose of information only. The City reserves the right to accept all or any part of the bid and to increase or decrease quantities of Bidder's bid to meet additional or reduced requirements of the City.

**3.45 Additional Items/Duties**

The City may require additional items/duties of a similar nature, but not specifically listed in the contract. The Contractor agrees to provide such items/duties, and shall provide the City prices on such additional items or duties based upon a formula or method which is the same or similar to that used in establishing the prices in the bid. If the price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to purchase those items from other vendors, or to cancel the contract upon giving the Contractor thirty (30) days written notice.

**3.46 No Exclusive Contract/Additional Services**

Contractor agrees and understands that the contract shall not be construed as an exclusive arrangement and further agrees that the City may, at any time, secure similar or identical services at its sole option.

**3.47 Exceptions**

An exception is any condition, limitation, restriction, term or other deviation from the requirements of the Invitation for Bids that is a condition of the bidder's bid or that the bidder expects to become part of a contract with the City. Bidders are strongly discouraged from taking exceptions to the requirements of the Invitation for Bids. Exceptions may result in the City declaring the bidder's bid to be non-responsive. Any exceptions taken must refer to the specific language of the Invitation for Bids to which the bidder objects and must be included with the bid on a separate page. The City shall be entitled to assume that the absence of any exceptions constitutes the bidder's willingness to comply with all requirements of all parts of the Invitation for Bids.

**3.48 Complete Information Required on Bid Form**

All bids must be submitted on the attached Bid Form with all sections completed. To be considered a valid bid, the bid form pages and required forms must be returned, properly completed, as outlined in the General Conditions.

**3.49 Cooperative Procurement**

The Contractor may extend all of the terms, conditions, specifications, and unit or other prices of any award resulting from this solicitation to any and all other public bodies, subdivisions, school districts, community colleges, colleges, and universities. The City assumes no authority, liability or obligation, on behalf of any other public entity that may use any contract resulting from this solicitation.

**3.50 License and Support Agreements**

In the event a bidder or manufacturer requires an agreement to be signed the agreement must be returned with the bid for review prior to any subsequent award. The City reserves the right to refuse consideration of an agreement and may hold the bidder to any agreement entered into as a result of a purchase order being issued as a result of this IFB without prior knowledge that the bidder and/or manufacturer will require an additional document, contract or agreement to be executed.

# PROJECT MANUAL

# King Farm Electrical Upgrades

**King Farm, Rockville, MD 20852**

PREPARED FOR:
City of Rockville

Delta Project No. 2019.331.006

March 1, 2023

PREPARED BY:

DELTA ENGINEERS, ARCHITECTS, & LAND SURVEYORS, DPC
8401 Connecticut Avenue, Suite 350, Chevy Chase, MD 20815
Phone: 301-718-0080
Fax: 301-718-9520
www.delta-eas.com

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 PROJECT IDENTIFICATION

A. Project Name and Location: King Farm Electrical Upgrades, King Farm Farmstead, Piccard Drive & Grand Champion Drive, Rockville, Maryland 20850

B. Project Summary Description: The project includes new electrical power service on the king farm farmstead park property for future renovations and fit out of existing structures on the property. The main electrical distribution and wiring shall be concealed underground, and the project also includes the sediment control and forestry measures necessary to protect the existing topographical and landscape features on the site.

C. Architect: The term Architect refers to the project designer. The Architect's status relative to the construction will be delineated in writing by the Contracting Officer prior to the pre-construction conference. The project was designed by: Delta Engineers, Architects, and Land Surveyors, 8401 Connecticut Ave., Suite 350, Chevy Chase, MD, 20854, 301-718-0800; David Asofsky. All correspondence from the Contractor to the Architect will be through the Contracting Officer.

D. The Project Officer for the project is Mr. Mo Daza of the City of Rockville.

1.2 WORK SEQUENCE

A. The work shall be substantially complete, ready for occupancy, within **150** calendar days after notice to proceed.

1.3 WORK UNDER OTHER CONTRACTS

A. The Contractor shall cooperate with other contractors performing related work, including providing labor, materials and other costs necessary to satisfactorily coordinate the Contract work with work performed under other contracts.

1.4 MISCELLANEOUS PROVISIONS

A. Work in the extension of existing conditions shall correspond in all respects with the existing conditions to which it connects, or to similar existing conditions, in materials, workmanship and finish.

B. Alterations to Existing Conditions: Existing conditions shall be cut, drilled, removed, temporarily removed, or removed and replaced, as necessary for performance of work under the contract.

1. Replacements of existing conditions that are removed shall match similar existing conditions.

2. Unless otherwise indicated, existing structural members shall not be cut or altered without authorization by the Project Officer.
3. Conditions remaining in place, which are damaged or defaced during the work, shall be restored to the condition existing at time of award of contract.
4. Discolored or unfinished surfaces exposed by removal of existing conditions, that are indicated to be final exposed surfaces, shall be refinished or replaced as necessary to produce uniform and harmonious contiguous surfaces.

C. Existing structures will remain in place

D. Existing structures have been or will be removed, at no expense to the Contractor, to top of foundation walls or ground level, unless otherwise indicated.

E. Existing structures shall be removed to top of foundation walls or ground level, unless otherwise indicated.

F. Existing utility services with related meters and equipment will remain in place.

G. Existing utility services with related meters and equipment have been removed at no expense to the Contractor.

H. Existing utility services shall be disconnected and removed to the extent indicated.

I. Outside Utility Connections: Underground and overhead utility services shall be provided complete to all points of connection indicated, and any "Limit of Contract" lines or other general limits indicated shall not apply to utility services and connections outside of these lines or limits.

SPECIFICATION FORMATS AND CONVENTIONS

J. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.

1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the specifications are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the specifications to determine numbers and names of sections included in the Contract Documents.

K. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for

clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 011000

# SECTION 011400 - WORK RESTRICTIONS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section documents conditions and procedures on the City of Rockville park that may impact the performance of work by the contractor including the following:

1. Contractor use of premises
2. City of Rockville occupancy prior to substantial completion
3. Working hours

B. Related Sections: This specification section is related to any and all specification sections with explicit or implicit reference to work restriction documentation including but not limited to the following Division 1 specification sections:

1. Division 1 Section "Summary"
2. Division 1 Section "Project Management and Coordination"
3. Division 1 Section "Construction Progress Documentation"
4. Division 1 Section "Submittal Requirements"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "Construction Quality Control"
7. Division 1 Section "Temporary Facilities and Controls"
8. Division 1 Section "Safety and Health"
9. Division 1 Section "Execution Requirements"
10. Division 1 Section "Cutting and Patching"
11. Division 1 Section "Selective Demolition"
12. Division 1 Section "Closeout Procedures"
13. Division 1 Section "Project Record Documents"

### 1.3 CONTRACTOR USE OF PREMISES

A. The Project Officer will conduct a pre-construction survey with the Contractor to review and document the existing conditions surrounding the project premises prior to the beginning of any construction activity.

B. During the construction period, the Contractor shall have full use of the premises for construction operations, including full use of the site as defined in the contract documents, limited only by the right of CITY OF ROCKVILLE to perform work or retain other contractors to perform work on portions of the project

C. The Contractor shall limit use of the site and premises to the work in areas indicated in the contract documents, to allow for City of Rockville occupancy and public use.

D. The Contractor shall schedule his work so as to cause the least amount of interference with City of Rockville campus operations. All work schedules shall be approved by the Project Officer.

E. Permission to interrupt any building services and/or utility services shall be requested in writing a minimum of fifteen (15) working days prior to the desired date of interruption. City of Rockville reserves the right to refuse any request and to schedule such interruption on a later or earlier date and time which is mutually agreeable to City of Rockville and the Contractor.

F. The Contractor, his employees and all subcontractors shall become familiar with and comply with all City of Rockville regulations, including fire, traffic, safety, and security regulations.

G. All personnel employed by the Contractor or subcontractors and working on the City of Rockville campus shall keep within the limits of the work and avenues of ingress and egress. Entry to any restricted area is strictly forbidden unless they are required to do so and are cleared for such entry in writing by the Project Officer.

H. The Contractor's equipment shall be conspicuously marked for identification purposes.

I. Confine operations at the site to areas indicated. Do not disturb portions of the site beyond the areas in which work is indicated.

J. Keep driveways and entrances serving the premises clear and available at all times to City of Rockville employees and visitors. Do not use these areas for parking or storage of materials.

K. Lock automotive type vehicles, such as trucks or other mechanized or motorized construction equipment, when parked and unattended so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

L. Schedule deliveries to minimize space and time requirements for storage of material and equipment on site.

M. Maintain existing building in a safe and weather tight condition throughout the construction period. Provide temporary heating and cooling as required to keep indoor temperatures between 65 degrees F and 80 degrees F. A heating and cooling plan shall be submitted to the Project Officer within 14 calendar days of the Notice to Proceed for approval.

N. Repair damage caused by construction operations. Take precautions to protect the building, its occupants and the public during the construction period.

O. Keep public areas, such as hallways, stairs, lobbies and toilet rooms, free from accumulation of waste material, rubbish, construction debris, and construction materials and remove such daily.

P. For all work in Building 10/ACRF, all demolition and construction debris shall be taken to the construction dumpster at the B2 level East loading dock only.

Q. The Contractor will not be allowed any storage area, other than within the limits of construction. Coordinate the storage of materials to maintain safe passage and emergency egress through the site at all times. If additional storage is necessary, obtain and pay for such storage off site. Payment for stored materials will not be permitted.

R. Existing materials and equipment that are removed as part of the construction operations, and that are not reused or designated to be salvaged as City of Rockville or other's property, shall be removed from the site. Storage or sale of excess salvageable materials and equipment is not permitted on site.

1.4 CITY OF ROCKVILLE OCCUPANCY OF ADJACENT PREMISES

A. City of Rockville will occupy the site and the existing building areas immediately adjacent to the construction site during the entire period of construction, unless otherwise specified.

1. Cooperate with City of Rockville representatives during construction operations to minimize conflicts and facilitate City of Rockville usage. Perform the work in a manner that does not interfere with City of Rockville operations. Delays may be incurred. If the Project Officer determines that the safety and health of building occupants is in jeopardy, the Contractor must modify his construction plan and procedures to avoid the potential hazard before continuing with construction.
2. Some areas within the limits of the contract may be occupied during performance of work under this Contract. In addition, City of Rockville reserves the right to complete the work not specifically in this contract, but within the physical limits of the contract, by City of Rockville or City of Rockville contract personnel.

1.5 CITY OF ROCKVILLE OCCUPANCY PRIOR TO SUBSTANTIAL COMPLETION

A. City of Rockville reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the work. City of Rockville installation of equipment and partial occupancy shall not constitute acceptance of the total work.

1. Prior to partial City of Rockville occupancy, mechanical and electrical systems for the space shall be fully operational, and required inspections and tests shall be successfully completed. Upon occupancy, City of Rockville will operate and maintain mechanical and electrical systems serving the occupied portions of the building.
2. Upon occupancy, City of Rockville will assume responsibility for maintenance and custodial service for the occupied portions of the building.
3. The warranty period for the occupied portion of the building only will commence on the date of occupancy by City of Rockville.

1.6 WORKING HOURS

A. Contractor's General Working Hours: The normal work day is between the hours of 6:30am to 4:30pm Monday through Friday, except for the holidays and other times as listed in Section H of the Contract**.**

B. Work shall not be performed during other than General Working Hours except when such timeliness of performance is required to safeguard life or property. Other deviations may be authorized by the Project Officer.

C. Requests for deviations from General Working Hours, including work on holidays, shall be submitted in writing to the Project Officer not less than fifteen (15) calendar days in advance of the proposed work period. Once approved, the schedule must be delivered to the City of Rockville prior to the start of work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 011400

# SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS.

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

### 1.2 SUMMARY

A. This Section includes administrative provisions for managing and coordinating construction operations including, but not limited to, the following:

1. General project coordination.
2. Utility service interruptions.
3. Coordination drawings.
4. Conservation.
5. Administrative and supervisory personnel.
6. Conferences and meetings.
7. Cleaning and protection.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Construction Progress Documentation"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "Construction Quality Control"
7. Division 1 Section "Temporary Facilities and Controls"
8. Division 1 Section "Safety and Health"
9. Division 1 Section "Product Requirements"
10. Division 1 Section "Execution Requirements"
11. Division 1 Section "Cutting and Patching"
12. Division 1 Section "Selective Demolition"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"
15. Division 1 Section "Operation and Maintenance Documentation"
16. Division 1 Section "Demonstration and Training"

1.3 GENERAL PROJECT COORDINATION

A. Coordination of Trades: Coordinate construction operations included in the various sections of the Specifications to provide an efficient and orderly installation of each part of the Work. Coordinate construction operations included under different sections of the Specifications that depend on each other for proper installation, connection or operation.

1. Schedule construction operations in the sequence required to obtain the best results where the installation of one part of the work depends on installation of other components before or after that part.
2. Coordinate installation of different components to provide maximum accessibility for required maintenance, service, removal/installation of component parts, testing and repair.
3. Accommodate items scheduled for later installation.
4. Provide for coordinated incorporation of Contractor's accepted Value Engineering proposals and Change Orders.
5. Locate pipes, conduits, ducts, equipment, and their related supports so that they do not interfere with the intended use of lifting devices for adjacent equipment and components.

B. Notification: Where required by this section and others, prepare and distribute memoranda to each party performing work at the project site, outlining special procedures required for coordination, including required notices, reports, attendance at meetings and meeting minutes as part of the memoranda.

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

1. Preparation of schedules.
2. Installation and removal of temporary facilities and controls.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Preinstallation conferences
6. Project closeout activities.

1.4 COORDINATION DRAWINGS

A. Prepare coordination drawings when specified, where careful coordination is needed for installation of products and materials fabricated by separate entities, or where limited space availability necessitates maximum utilization of the space for efficient installation of different components.

1. Show the relationship of components shown on separate shop drawings.
2. Indicate required installation sequences.
3. Provide vertical and horizontal dimensions necessary to locate each component and avoid conflicts within the space.
4. Comply with shop drawing requirements for sheet size and submittal methods specified in Division 1 Section "Submittal Procedures."
5. Refer to Division 2-16 technical specification sections for specific Coordination Drawing requirements.

B. Refer to Division 15 Section "Basic Mechanical Requirements" and Division 16 Section "Basic Electrical Requirements" and coordinate coordination drawing requirements for specific mechanical and electrical installations.

C. Provide coordination drawings for equipment and system installations in mechanical and electrical rooms and spaces where two or more entities will provide the work and separate shop drawings are insufficient to show coordination.

1.5 CONSERVATION

A. Consider conservation of energy, water and materials in the conduct of construction operation. Salvage materials and equipment involved in the performance of, but not incorporated into, the work.

B. Energy Conservation Plan:

1. Develop a program to minimize use of energy. Program shall minimally include the following written information (Energy Conservation Plan):

a. Designation of an energy conservation officer as a part time position.
b. Identification of energy conservation measures to reduce energy usage.
c. Establishment of energy usage goals for the project.
d. Means for enforcing energy conservation measures.

2. Contractor's energy conservation officer shall provide on-site instruction of workers in the methods to conserve energy, and shall manage the energy conservation program for the duration of the Contract.

a. Contractor shall initiate the plan by issuing notices to the parties of the project, installation of meters or other instruments to record usage where required, and other measures to encourage energy conservation.
b. The energy conservation officer shall report monthly, in writing, the measures taken to effect energy conservation, records or estimates of usage and savings, and other points of interest. Copies of each report shall be distributed to each significant party of the project, including the Contracting Officer.
c. Post copies of the plan in conspicuous locations so that all personnel employed on the Project may be made aware of the need to conserve energy at all times.

C. Recycled Waste Management Plan:

1. Establish and document a program to maximize recycling of waste materials. Program shall minimally include the following written information:

a. Designation of a waste management coordinator. Based on the workload required this may be a part-time function.
b. Identification of recyclable materials.
c. Identification of available local recycling firms and agencies to receive recyclable materials.
d. Establishment of quantity goals for collection of each recyclable material.
e. Designation of one or more locations on the project site for collection, sorting and temporary storage of recyclable materials.

f. Means and schedule for transporting and delivery of recyclable materials to recycling firms and agencies.

2. Contractor's waste management coordinator shall provide on-site instruction of workers in the identification, separation and handling of recyclable materials, and shall manage the process for the duration of the Contract.

a. Contractor shall lay out and define specific areas to facilitate separation of materials for recycling, and shall maintain collection bins clearly marked to avoid contamination of the recyclable materials.
b. The waste management coordinator shall report monthly, in writing, the quantity of each recyclable material collected during the previous month and cumulatively to date, compared to the quantity goal, and other points of interest. Copies of each report shall be distributed to each significant party of the project, including the Contracting Officer.

## 1.6 SUBMITTALS

A. Staff Names: Within 14 calendar days of the start of site operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.
2. Provide updated lists when individuals assigned to positions change or positions are added to the contractor's staff team.

B. Meeting minutes: The contractor shall provide meeting minutes from the following meeting as required by this section. Additional meeting minutes requirements may be located in other sections.

1. Preconstruction Conference.
2. Preinstallation Conferences.
3. Progress meetings.
4. Coordination Meetings

## 1.7 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. In addition to the Project Superintendent, the Contractor shall provide other administrative and supervisory personnel as required for proper performance of the work.

B. Project Coordinator: Provide a full-time project coordinator, experienced in the administration and supervision of building construction, including mechanical and electrical work. The project coordinator shall be authorized to act as the coordinator of construction activities, including but not limited to the following:

1. Scheduling and sequencing of work.
2. Sharing access to work spaces.

3. Installations.
4. Protection of work.
5. Cutting and patching.
6. Selections for compatibility.
7. Preparation of coordination of drawings.
8. Inspection and tests.
9. Temporary services and facilities.
10. Conduct Project Coordination Meetings
11. Commissioning

C. Mechanical and Electrical Coordinator: Provide a full-time mechanical and electrical coordinator, experienced in the coordination of mechanical and electrical construction of the types required for the project, and experienced in coordination of mechanical and electrical construction with other operations. The mechanical and electrical coordinator shall be licensed to practice as a professional engineer in the location of the project, and shall be authorized to act as the coordinator for mechanical and electrical activities, including but not limited to the following:

1. Scheduling and sequencing of mechanical and electrical activities.
2. Sharing access to mechanical and electrical work spaces.
3. Integration of mechanical and electrical work into limited spaces available for mechanical and electrical installations.
4. Protection of mechanical and electrical work.
5. Cutting and patching for mechanical and electrical work.
6. Tolerances for mechanical and electrical work.
7. Preparation of mechanical and electrical coordination drawings.
8. Mechanical and electrical inspections and tests.
9. Utilization of mechanical and electrical temporary services and facilities.

D. Safety and Health Officer: Provide a safety and health officer whose duties shall consist of developing and implementing safety and health programs specified in Division 1 Section "Safety and Health."

E. Energy Conservation Officer: Provide an energy conservation officer whose duties shall consist of developing and implementing a program for minimizing use of energy on the site.

F. Waste Management Coordinator: Provide a waste management coordinator whose duties shall consist of developing and implementing a program for maximizing recycling of waste.

G. Integrated Pest Management Quality Control Supervisor: Provide an Integrated Pest Management Quality Control Supervisor with duties as indicated in Division 1 Section "Temporary Facilities and Controls."

H. Traffic Safety Supervisor: Provide a Traffic Safety Supervisor with duties as indicated in Division 1 Section "Temporary Traffic Controls."

## 1.8 CONFERENCES AND MEETINGS

A. Preconstruction Conference:

1. The Contractor shall attend a preconstruction conference scheduled by the Project Officer at a time and place convenient to both parties. Work shall not commence prior to the conference. Conference shall review responsibilities and personnel assignments.
2. Attendees: Participants at the conference shall be familiar with the project, shall be authorized to conclude matters relating to the Work, and at a minimum include representatives of the following parties or their designated representatives:

    a. Contracting Officer.
    b. Architect.

3. Agenda: Subjects for discussion shall include items of significance that could effect progress, including but not limited to the following:

    a. Tentative construction schedule.
    b. Critical work sequencing.
    c. Designation of responsible personnel.
    d. Procedures for processing field decisions and Change Orders.
    e. Procedures for processing Applications for Payment.
    f. Submittal of Shop Drawings, Product Data, and Samples.
    g. Preparation of Record Documents.
    h. Use of the premises.
    i. Parking availability.

4. Reporting: No later than 3 calendar days after the conference, the Contractor shall distribute minutes of the conference to each party present and to other concerned parties, including the Contracting Officer.
5. This meeting may satisfy the requirement for a Preconstruction Safety Meeting in Division 1 Section "Safety and Health."

B. Progress Meetings: The Project Officer shall conduct bi weekly progress meetings at the Project Site. Dates of meetings shall be coordinated with preparation of the payment request.

1. Attendees: In addition to the Contractor and Project Officer, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work. The Project Officer shall include the Contracting Officer and/or the project designer in these meetings as required. The contractor is responsible for requesting the Contracting Officer and/or designer attend and provide justification to the Project Officer.
2. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
3. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine the required contractor response to construction behind schedule; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

    a. At each progress meeting, the Contractor will provide a list of construction activities completed in the previous 14 (fourteen) calendar days, activities in progress with percent completed, activities scheduled to start in the next seven calendar days, and

activities to start in the next thirty calendar days as derived from the accepted project schedule.

b. Schedule Updating: The Contractor shall revise the Contractor's Construction Schedule to reflect project progress after each progress meeting and include revisions approved by the Contracting Officer.

c. The revised schedule shall be issued monthly to correspond with the submission of the Contractor's application for payment**.**

4. Reporting: No later than 3 calendar days after each meeting, the Contractor shall distribute minutes of the meeting to each party present and to other concerned parties who should have been present, including the Contracting Officer. Include a brief summary, in narrative form, of progress since the previous meeting and report.
5. The Contractor shall present Record Drawings at progress meetings for review by the City of Rockville, if so requested.
6. The Progress meeting may be in conjunction with the Quality Control (QC) Meeting required per Division 1 Section "Construction Quality Control."

C. Coordination Meetings: The Contractor's Project Coordinator shall conductweekly project coordination meetings as required, to verify detailed coordination procedures for the upcoming construction operations in order to avoid potential problems and misunderstandings.

1. Attendees: In addition to the Contractor and Project Officer, each subcontractor, supplier or other entity involved in coordination or planning construction activities shall be represented. All participants shall be authorized to conclude matters relating to the work.
2. Agenda: Review the plans and requirements of each entity present, including but not limited to the subjects listed for Progress Meetings.
3. Reporting: No later than 3 calendar days after each meeting, the Contractor shall distribute minutes of the meeting to each party present and to other concerned parties who should have been present, and including the Contracting Officer. Include a brief summary, in narrative form, of progress since the previous meeting and report.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

A. Inspection of Conditions: Prior to installations, require the installer of each major component to inspect both the substrate and conditions under which work is to be performed.

1. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
2. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

B. Construction in Progress: Keep construction in progress, adjoining materials in place, and adjoining materials clean during handling and installation. Apply protective coverings where required for protection from damage or deterioration.

C. Completed Construction: Clean completed construction, and provide maintenance, as frequently as necessary to prevent damage or soiling or other deterioration through the remainder of the construction period. Adjust and lubricate operable components as necessary to assure operability without damage.

END OF SECTION 013100

# SECTION 013300 - SUBMITTAL PROCEDURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes certain administrative and procedural requirements for shop drawings, coordination drawings, fire protection working plans, schedules, samples and certain other quality assurance submittals.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Project Management and Coordination"
3. Division 1 Section "Quality Requirements"
4. Division 1 Section "References"
5. Division 1 Section "Construction Quality Control"
6. Division 1 Section "Temporary Facilities and Controls"
7. Division 1 Section "Temporary Traffic Controls"
8. Division 1 Section "Safety and Health"
9. Division 1 Section "Product Requirements"
10. Division 1 Section "Execution Requirements"
11. Division 1 Section "Cutting and Patching"
12. Division 1 Section "Selective Demolition"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"
15. Division 1 Section "Operation and Maintenance Documentation"
16. Division 1 Section "Demonstration and Training"

### 1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that is specified in the contract documents as requiring City of Rockville approval or other City of Rockville action.

B. Informational Submittals: Written and graphic information that is not specifically indicated as requiring City of Rockville approval or other City of Rockville action but is indicated as a submittal in the specifications. Informational submittals may be rejected by City of Rockville for not complying with requirements.

C. Shop drawings: Drawings and schedules specifically prepared for the project, except for coordination drawings.

D. Coordination drawings: See Division 1 Section "Project Management and Coordination" For definition and contract requirements.

E. Product data: Manufacturer's standard catalogs, pamphlets and other printed materials, and includes but is not limited to the following:

1. Product specifications
2. Installation instructions
3. Color charts
4. Catalog cuts
5. Rough-in diagrams and templates
6. Wiring diagrams
7. Performance curves
8. Operational range diagrams
9. Mill reports

F. Samples: Product samples of such scale to allow delivery for review, as well as field samples or mock-ups of full-size physical examples erected on-site or elsewhere, or establish a true-scale standard by which the corresponding work will be judged or a standard for compliance testing.

G. Other quality assurance submittals include materials specifically prepared for the project, except drawings and schedules, and include but are not limited to the following:

1. Design data and calculations
2. Certifications of compliance or conformance
3. Manufacturer's instructions and field reports

## 1.4 GENERAL SUBMITTAL REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities and with the Submittal Schedule specified in Division 1 Section "Construction Progress Documentation."

B. All submittals will be certified by the Contractor as conforming to the requirements of the contract documents prior to being forwarded to the Contracting Officer.

1. Submittals identified with a "G" adjacent to the requirement on the submittal register are action submittals and require City of Rockville approval prior to the product or item submitted being incorporated into the project.
2. Submittal requirements without the action designation are informational submittals and should be submitted for information prior to the product or item submitted being incorporated into the work.

C. All submittals shall be transmitted to the Contracting Officer within 30 calendar days after receipt of Notice to Proceed, unless the approved Submittal Schedule specifically provides for an earlier or later submission. Transmit each submittal sufficiently in advance of the scheduled

performance of related construction activities to avoid delaying the work, allowing for the review times specified in this section.

D. Coordinate each submittal with other submittals and related activities that require sequential scheduling, to allow for testing, purchase, fabrication and product delivery in a timely manner.

E. Schedule transmittal of different categories of submittals for the same Definable Feature of Work (DFOW) and for different elements of related parts of the work at the same time so as to minimize delay because of the need to review submittals concurrently for coordination. See Division 1 Section "Construction Quality Control" for definition of DFOW

1. City of Rockville reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

F. Allow sufficient time for submittal review, corrections following the initial review and resubmittal review before activities scheduled after the submittal approval.

1. Preliminary submittal review: Allow 14 calendar days from receipt by City of Rockville the submittal for preliminary review
2. Any resubmission required after City of Rockville review shall be made within 14 calendar days after return of the submittal, unless specifically authorized otherwise by the Project Officer.
3. Resubmittal review: Allow 14 calendar days from receipt by City of Rockville of the submittals for the initial review. If consultants are included in the review process add an additional 14 for review.
4. Special Review Timelines:

    a. Provide not less than 30 calendar days for review of each fire protection submittal and resubmittal.

G. Construction will generally not be allowed to proceed without approved submittals. The Contracting Officer may, as requested in writing on a case-by-case basis, allow construction to proceed with submittal approval pending. Failure by the Contractor to provide the required submittals in a timely manner will not result in an extension to the Contractor's Construction Schedule.

H. Failure by the Contractor to provide the required submittals in a timely manner may result in progress payment requests being returned to the Contractor until submittals are up-to-date.

I. Submittal Preparation: Identify and prepare drawings and samples as specified in the Construction Contract Clauses and other specification sections. Provide a permanent label on each submittal with the following information:

1. Project name, contract number and work request number.
2. Date of submission
3. Name, address and telephone number of firm or entity that prepared the submittal.
4. Name, address and telephone number of the Contractor.
5. Name, address and telephone number of the subcontractor, supplier or manufacturer.
6. Number and title of appropriate specification section.
7. Drawing number and detail references, as appropriate.
8. Space to record Contractor's review and approval markings approximately 5 by 5 inches (250 by 250 mm).

9. A blank page with a listing of all pages in the submittal shall be attached to the front of the submittal package with at least a 4" by 6" space for the City of Rockville.

J. Submittal Transmittal: Package each submittal for transmission and handling. Transmit each submittal from the Contractor to the Contracting Officer by use of a transmittal form. The following minimum information shall be included on the transmittal form.

1. Project name and number.
2. Date
3. Destination (To:)
4. Source (From:)
5. Names of subcontractor, manufacturer and supplier, as applicable.
6. Category of submittal
7. Description of submittal
8. Number and title of appropriate specification section.
9. Submittal number, including means to separately identify initial submittal and each resubmittal.
10. Certification by Contractor stating that submittal complies with the Contract Documents, or statement of deviations from the requirements of the Contract Documents including minor variations and limitations. Deviations may be listed on an attached sheet referenced on the transmittal form.
11. Signature of transmitter.

K. Direct Transmittal to Consultant: When allowed by the Project Officer, submittals may be transmitted directly to design Engineer's consultants, provide duplicate copy of transmittal to A&E's and Project Officer. The consultant will return submittal to the Engineer for return to the Contractor.

L. Certifications: Submit notarized certifications from the party certifying compliance of the submittal with specified requirements. Certifications shall be signed by an officer or other individual authorized to sign documents on behalf of the company certifying compliance. Certifications shall be as described in Division 1 Section "Construction Quality Control."

M. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."

N. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

O. Submittal Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

## PART 2 - PRODUCTS

### 2.1 ACTION SUBMITTALS

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

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

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable to the project.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.
    f. Wiring diagrams showing factory-installed wiring.
    g. Printed performance curves.
    h. Operational range diagrams.
    i. Mill reports.
    j. Standard product operating and maintenance manuals.
    k. Compliance with recognized trade association standards.
    l. Compliance with recognized testing agency standards.
    m. Application of testing agency labels and seals.
    n. Notation of coordination requirements.
    o. Notation of dimensions verified for fit by field measurements.

4. Number of Copies: Submit four copies of each submittal, unless otherwise indicated. City of Rockville will return two copies. Mark up and retain one returned copy as a Project Record Document.
5. Number of Copies: Submit copies of each submittal, as follows, unless otherwise indicated:

    a. Preliminary Submittal: Submit a single copy of each submittal where selection of options, color, pattern, texture, or similar characteristics is required. City of Rockville will return submittal with options selected.
    b. Initial Submittal: Submit five copies, unless copies are required for operation and maintenance manuals. Submit five copies where copies are required for operation and maintenance manuals. City of Rockville will retain two copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Document.

C. Shop Drawings: Prepare and submit originally prepared information, drawn accurately to scale. Do not reproduce Contract Documents or copy standard printed materials as the basis for Shop Drawings and Coordination Drawings.

1. Preparation: Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products and materials.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    f. Shopwork manufacturing instructions.
    g. Templates and patterns.
    h. Schedules.
    i. Design calculations.

j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by any field measurement.
m. Highlighted or encircled deviations from the Contract Documents, if any.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1000 mm).
4. Number of Copies: Submit one correctable, translucent, reproducible print and one blue- or black-line print of each submittal. Architect, through Construction Manager, will return the reproducible print.
5. Number of Copies: Submit three blue- or black-line prints of each submittal, unless prints are required for operation and maintenance manuals. Submit five prints where prints are required for operation and maintenance manuals. Architect and Construction Manager will retain two prints; remainder will be returned. Mark up and retain one returned print as a Project Record Drawing.
6. Number of Copies: Submit copies of each submittal, as follows:

a. Initial Submittal: Submit one correctable, translucent, reproducible print and one blue- or black-line print. The reproducible print will be returned.
b. Initial Submittal: Submit two blue- or black-line prints. One print will be returned.
c. Final Submittal: Submit five (5) blue- or black-line prints, unless prints are required for operation and maintenance manuals. Submit five prints where prints are required for operation and maintenance manuals. CITY OF ROCKVILLE will retain two prints; remainder will be returned. Mark up and retain one returned print as a Project Record Drawing.

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:

a. Generic description of Sample.
b. Product name or name of manufacturer.
c. Sample source.

5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:

    a. Size limitations.
    b. Compliance with recognized standards.
    c. Availability.
    d. Delivery time.

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

    a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least 5 (five) sets of paired units that show approximate limits of the variations.
    b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

7. Number of Samples for Initial Selection: Submit 3 full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. The submittal will be returned with options selected.
8. Number of Samples for Verification: Submit five (5) sets of Samples. City of Rockville will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

    a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

9. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the work, or otherwise designated as Owner's property, are the property of Contractor.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections. General qualitative requirements are as specified for Action Submittals elsewhere in this section unless otherwise indicated in this Article.

1. Number of Copies: Submit five (5) copies of each submittal, unless otherwise indicated. City of Rockville will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Construction Quality Control."

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person as required in the technical specifications and in Division 1 Section " Construction Quality Control." Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed

before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures and Operation and Maintenance Data."

P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.

3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Construction Photographs: Comply with requirements in Division 1 Section "Photographic Documentation."

2.3 Material Safety Data Sheets: Submit information directly to CITY OF ROCKVILLE. MSDS sheets submitted directly to Engineer will be returned.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal prior to transmission to City of Rockville and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with certification stamp before submitting to City of Rockville

B. Certification Stamp: Stamp each submittal with a uniform certification stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's certification, and statement certifying that submittal has been reviewed, checked, and complies with the Contract Documents.

3.2 CITY OF ROCKVILLE ACTION

A. Except for submittals for record or for information or for another purpose where no action and return is required, the Contracting Officer will review submittals and mark returned copies to indicate action taken.

B. Compliance with specified characteristics is the Contractor's responsibility, and is not part of the Contracting Officer's review and indication of action taken. No matter what review action is taken, final acceptance will depend on the contractor's full compliance with the Contract Documents.

C. Submittals that do not contain the required marking of approval by the Contracting Officer, as indicated in the specifications, shall not be used for construction.

D. Action Stamp: Each submittal will be stamped with a uniform action stamp. The stamp shall be marked to indicate one of the following actions taken:

1. "Approved" or "Approved as Submitted": The work covered by the submittal may proceed, provided it complies with the notations or corrections on the submittal and with the requirements of the Contract Documents.
2. "Approved as noted, Resubmission not required": The contractor is authorized to proceed with work as noted provided the contractor takes no exception to the notations.
3. "Approved as noted, Resubmission Required": The contractor is authorized to proceed with portions of the work as noted. The contractor must resubmit those items/components so noted with additional information or requirements, for approval, before work may proceed on that portion of the submittal.
4. "Disapproved": The submittal is incomplete or does not comply with design concept or requirements of the contract documents. No work shall proceed for this item until resubmittal with appropriate changes is approved.
5. "Not Reviewed": A submittal marked "not reviewed" will indicate submittal does not have evidence of being reviewed and certified by the Construction Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals which are returned for lack of review by the contractor or for being incomplete, with appropriate action, coordination, or change.
6. "Receipt Acknowledged" or no action: Submittals which are for the record or for information only or for another purpose not requiring review action.

END OF SECTION 013300

# SECTION 014000 - QUALITY REQUIREMENTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for the contractor's quality control program. Requirements for the Contractor to provide quality control services required by the Contracting Officer are not limited by provisions of this Section. The specific technical quality control program required for the work is defined by the combination of this section and Division 1 Section "Construction Quality Control."

B. Related Sections: This specification section is related to any and all specification sections with explicit or implicit reference to quality requirements. Specific submittal requirements of these related specification sections are not included in this section. Product quality requirements are contained in Divisions 2 through 16. Related sections include but are not limited to the following specification sections:

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "References"
5. Division 1 Section "Construction Quality Control"
6. Division 1 Section "Temporary Facilities and Controls"
7. Division 1 Section "Safety and Health"
8. Division 1 Section "Product Requirements"
9. Division 1 Section "Execution Requirements"
10. Division 1 Section "Cutting and Patching"
11. Division 1 Section "Selective Demolition"
12. Division 1 Section "Closeout Procedures"
13. Division 1 Section "Project Record Documents"
14. Division 1 Section "Operation and Maintenance Documentation"
15. Division 1 Section "Demonstration and Training"

### 1.3 DEFINITIONS

A. Quality Assurance: Activities, actions, and procedures performed by City of Rockville or their designated representatives, before and during execution of the work to verify that the contractor's quality control program is producing the quality of work required by the contract documents and ensure that the construction complies with all requirements.

B. Quality Control: Tests, inspections, procedures, and related actions performed by the contractor during and after execution of the work to evaluate that completed construction complies with contract requirements. Services do not include contract enforcement activities performed by the City of Rockville or their designated representative**.**

C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the remaining work will be judged.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of the Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the Contracting Officer.

1.5 SUBMITTALS

A. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

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

1.6 QUALITY CONTROL QUALIFICATIONS

A. Qualification requirements for the specified contractor's quality control organization are included in Division 1 Section "Construction Quality Control."

B. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this project.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance.

E. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this project and with a record of successful in-service performance.

F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where the project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this project in material, design, and extent.

G. Specialists: Certain sections of the specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other sections of these specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General Explanation: Specification language often includes terms that are defined elsewhere in the Contract Documents, including the Construction Contract Clauses. Certain terms are defined in this section. These definitions or explanations are not necessarily complete or exclusive, but are general for the work and may be explained more explicitly in other Sections.

B. "General Conditions" refer collectively to the Construction Contract Clauses, Labor Standards and the U.S. Department of Labor Wage Decision and Special Contract Requirements bound into the specifications.

C. "Indicated" refers to graphic representations, notes or schedules on the Drawings, or to requirements elsewhere in the Specifications or other Contract Documents. Terms such as "shown", "noted", "scheduled" and "specified" have the same meaning as "indicated" and are used to further help locate the reference, but no limitation on location is intended except as specifically stated.

D. Where "directed", "authorized", "selected", "approved", or a similar term is used in conjunction with the Contractor's submittals, applications, requests and other activities, and the specifications state that an individual other than the Contracting Officer, such as the Project Officer, Architect or Construction Engineer, shall provide this action, it is understood that only the Contracting Officer has this authority unless the individual stated is so authorized in writing by the Contracting Officer.

1. When the individual is so authorized by the Contracting Officer, the Contractor may still appeal the action to the Contracting Officer.
2. The Contracting Officer's decision will be final.
3. In no case shall the Contracting Officer's action be interpreted as releasing the Contractor from responsibility to fulfill the requirements of the Contract Documents.

E. "Regulations" include laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work.

F. "Project site" refers to the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other work.

G. "Furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembling, installation and similar operations.

H. "Government Furnished" means the Government will supply the items so referenced, with the Contractor having the responsibility of pick-up, storage, delivery to the work site and final installation.

I. "Install" describes operations at the Project site, including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.

J. "Provide" means to furnish and install, complete in place and ready for full use.

K. The requirement for packaging, packing, marking, and preparation for shipment or delivery included in the referenced specifications will apply only to those materials and equipment that are furnished directly to the Government and not to materials and equipment that are furnished and installed by the Contractor.

L. "Installer" is the Contractor or another entity engaged by the Contractor, either directly or indirectly through subcontracting, to perform a particular construction operation at the Project site, including installation, erection, application and similar operations. Installers shall be skilled in the operations they perform. Where indicated, installers shall also be Specialists as defined in the Construction Contract Clauses.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

M. "Owner" refers to the City of Rockville.

N. "Government" refers to the City of Rockville.

O. "Project Officer" refers to the City of Rockville Technical Representative.

P. "Building Manager/Facility Manager" is the Government employee responsible for the administration, operation and maintenance of the building.

Q. "Construction Quality Manager" is the individual or entity, under Contract to the Government, responsible for performing the day-to-day coordination and administration of the construction Contract, including performing field inspections, recommending approval or rejection of material and workmanship, monitoring labor and safety provisions, maintaining inspection logs and records of defects, and similar activities.

R. "Notice to Proceed" is the Contracting Officer's notification in writing to the Contractor to proceed with the individual task orders, activating the time period for construction and establishing the completion date.

## 1.3 DRAWING SYMBOLS

A. Except as otherwise indicated, symbols used on the Drawings are those symbols recognized in the construction industry for the purposes.

1. These include graphic symbols defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., latest edition, as well as graphic symbols recommended by ASHRAE, ASME, ASPE, CSI, IEEE and similar technical organizations for the mechanical and electrical Drawings.
2. Refer uncertainties as to meaning of symbols to the Contracting Officer for clarification before proceeding.

## 1.4 INDUSTRY STANDARDS

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

B. Conflicting Requirements. Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantity or quality, comply with the most stringent requirement. Immediately refer uncertainties, and requirements that are different but apparently equal, to the Contracting Officer in writing for a decision before proceeding.

C. Minimum Quantity and Quality: The quantity or quality indicated shall be the minimum provided. The actual installation may comply exactly with the minimum quantity or quality indicated, or it may exceed the minimum levels within reasonable limits.

1. Indicated numeric values are minimum or maximum as appropriate for the context of the requirements.
2. Refer uncertainties to the Contracting Officer for a decision before proceeding.

## 1.5 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

| | | |
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| CBHF | State of California, Department of Consumer Affairs<br>Bureau of Home Furnishings and Thermal Insulation<br>www.dca.ca.gov/bhfti | (800) 952-5210<br>(916) 445-1254 |
| | www.cpsc.gov | (301) 504-0990 |
| DOC | Department of Commerce<br>www.doc.gov | (202) 482-2000 |
| EPA | Environmental Protection Agency<br>www.epa.gov | (202) 260-2090 |
| FAA | Federal Aviation Administration<br>www.faa.gov | (202) 366-4000 |
| FCC | Federal Communications Commission<br>www.fcc.gov | (202) 418-0190 |

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| FDA | Food and Drug Administration<br>www.fda.gov | (888) 463-6332 |
| GSA | General Services Administration<br>www.gsa.gov | (202) 708-5082 |
| HUD | Department of Housing and Urban Development<br>www.hud.gov | (202) 708-1112 |
| LBL | Lawrence Berkeley Laboratory<br>(See LBNL) | |
| LBNL | Lawrence Berkeley National Laboratory<br>www.lbl.gov | (510) 486-5605 |
| NCHRP | National Cooperative Highway Research Program<br>(See TRB) | |
| NIST | National Institute of Standards and Technology<br>www.nist.gov | (301) 975-6478 |
| OSHA | Occupational Safety & Health Administration<br>www.osha.gov | (202) 693-1999 |
| RUS | Rural Utilities Service<br>(See USDA) | (202) 720-9540 |
| TRB | Transportation Research Board<br>www.nas.edu/trb | (202) 334-2934 |
| USDA | Department of Agriculture<br>www.usda.gov | (202) 720-2791 |
| USPS | Postal Service<br>www.usps.com<br>www.aham.org | (202) 268-2000 |
| AI | Asphalt Institute<br>www.asphaltinstitute.org | (859) 288-4960 |
| AIA | American Institute of Architects (The)<br>www.e-architect.com | (202) 626-7300 |
| AISC | American Institute of Steel Construction<br>www.aisc.org | (800) 644-2400<br>(312) 670-2400 |
| AISI | American Iron and Steel Institute<br>www.steel.org | (202) 452-7100 |
| AITC | American Institute of Timber Construction<br>www.aitc-glulam.org | (303) 792-9559 |

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| ALA | American Laminators Association<br>(See LMA) | |
| ALCA | Associated Landscape Contractors of America<br>www.alca.org | (800) 395-2522<br>(703) 736-9666 |
| ALSC | American Lumber Standard Committee | (301) 972-1700 |
| AMCA | Air Movement and Control Association International, Inc.<br>www.amca.org | (847) 394-0150 |
| ANLA | American Nursery & Landscape Association<br>(Formerly: AAN - American Association of Nurserymen)<br>www.anla.org | (202) 789-2900 |
| ANSI | American National Standards Institute<br>www.ansi.org | (202) 293-8020 |
| AOSA | Association of Official Seed Analysts<br>www.aosaseed.com | (402) 476-3852 |
| APA | APA - The Engineered Wood Association<br>www.apawood.org | (253) 565-6600 |
| APA | Architectural Precast Association<br>www.archprecast.org | (941) 454-6989 |
| API | American Petroleum Institute<br>www.api.org | (202) 682-8000 |
| ARI | Air-Conditioning & Refrigeration Institute<br>www.ari.org | (703) 524-8800 |
| ASCA | Architectural Spray Coaters Association<br>www.ascassoc.com | (609) 848-6120 |
| ASCE | American Society of Civil Engineers<br>www.asce.org | (800) 548-2723<br>(703) 295-6300 |
| ASHRAE | American Society of Heating, Refrigerating and Air-Conditioning Engineers<br>www.ashrae.org | (800) 527-4723<br>(404) 636-8400 |
| ASME | ASME International<br>(The American Society of Mechanical Engineers International)<br>www.asme.org | (800) 843-2763<br>(212) 591-7722 |
| ASSE | American Society of Sanitary Engineering<br>www.asse-plumbing.org | (440) 835-3040 |
| ASTM | American Society for Testing and Materials<br>www.astm.org | (610) 832-9585 |

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| AWCI | AWCI International<br>(Association of the Wall and Ceiling Industries International)<br>www.awci.org | (703) 534-8300 |
| AWCMA | American Window Covering Manufacturers Association<br>(See WCMA) | |
| AWI | Architectural Woodwork Institute<br>www.awinet.org | (800) 449-8811<br>(703) 733-0600 |
| AWPA | American Wood-Preservers' Association<br>www.awpa.com | (817) 326-6300 |
| AWS | American Welding Society<br>www.aws.org | (800) 443-9353<br>(305) 443-9353 |
| AWWA | American Water Works Association<br>www.awwa.org | (800) 926-7337<br>(303) 794-7711 |
| BHMA | Builders Hardware Manufacturers Association<br>www.buildershardware.com | (212) 297-2122 |
| BIA | Brick Industry Association (The)<br>www.bia.org | (703) 620-0010 |
| BIFMA | BIFMA International<br>(Business and Institutional Furniture Manufacturer's Association International)<br>www.bifma.com | (616) 285-3963 |
| CCC | Carpet Cushion Council<br>www.carpetcushion.org | (203) 637-1312 |
| CCFSS | Center for Cold-Formed Steel Structures<br>www.umr.edu/~ccfss | (573) 341-4471 |
| CDA | Copper Development Association Inc.<br>www.copper.org | (800) 232-3282<br>(212) 251-7200 |
| CEA | Canadian Electricity Association<br>www.canelect.ca | (613) 230-9263 |
| CFFA | Chemical Fabrics & Film Association, Inc.<br>www.chemicalfabricsandfilm.com | (216) 241-7333 |
| CGA | Compressed Gas Association<br>www.cganet.com | (703) 412-0900 |
| CGSB | Canadian General Standards Board<br>www.pwgsc.gc.ca/cgsb | (819) 956-0425 |
| CIMA | Cellulose Insulation Manufacturers Association | (888) 881-2462 |

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| | www.cellulose.org | (937) 222-2462 |
| CISCA | Ceilings & Interior Systems Construction Association<br>www.cisca.org | (630) 584-1919 |
| CISPI | Cast Iron Soil Pipe Institute<br>www.cispi.org | (423) 892-0137 |
| CLFMI | Chain Link Fence Manufacturers Institute<br>www.chainlinkinfo.org | (301) 596-2583 |
| CPA | Composite Panel Association<br>(Formerly: National Particleboard Association)<br>www.pbmdf.com | (301) 670-0604 |
| CPPA | Corrugated Polyethylene Pipe Association<br>www.cppa-info.org | (800) 510-2772<br>(202) 462-9607 |
| CRI | Carpet & Rug Institute (The)<br>www.carpet-rug.com | (800) 882-8846<br>(706) 278-3176 |
| CRSI | Concrete Reinforcing Steel Institute<br>www.crsi.org | (847) 517-1200 |
| CSA | CSA International<br>(Formerly: IAS - International Approval Services)<br>www.csa-international.org | (800) 463-6727<br>(416) 747-4000 |
| CSI | Construction Specifications Institute (The)<br>www.csinet.org | (800) 689-2900<br>(703) 684-0300 |
| CSSB | Cedar Shake & Shingle Bureau<br>www.cedarbureau.org | (604) 820-7700 |
| CTI | Cooling Technology Institute<br>(Formerly: Cooling Tower Institute)<br>www.cti.org | (281) 583-4087 |
| DHI | Door and Hardware Institute<br>www.dhi.org | (703) 222-2010 |
| EIA/TIA | Electronic Industries Alliance/Telecommunications Industry Association<br>www.eia.org | (703) 907-7500 |
| EIMA | EIFS Industry Members Association<br>www.eifsfacts.com | (800) 294-3462<br>(770) 968-7945 |
| EJMA | Expansion Joint Manufacturers Association, Inc.<br>www.ejma.org | (914) 332-0040 |
| FCI | Fluid Controls Institute<br>www.fluidcontrolsinstitute.org | (216) 241-7333 |

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| FGMA | Flat Glass Marketing Association<br>(See GANA) | |
| FM | Factory Mutual System<br>(See FMG) | |
| FMG | FM Global<br>(Formerly: FM - Factory Mutual System)<br>www.fmglobal.com | (401) 275-3000 |
| GA | Gypsum Association<br>www.gypsum.org | (202) 289-5440 |
| GANA | Glass Association of North America<br>(Formerly: FGMA - Flat Glass Marketing Association)<br>www.glasswebsite.com/gana | (785) 271-0208 |
| GRI | Geosynthetic Research Institute<br>www.drexel.edu/gri | (215) 895-2343 |
| GTA | Glass Tempering Division of Glass Association of North America<br>(See GANA) | |
| HI | Hydraulic Institute<br>www.pumps.org | (888) 786-7744<br>(973) 267-9700 |
| HI | Hydronics Institute<br>www.gamanet.org | (908) 464-8200 |
| HMMA | Hollow Metal Manufacturers Association<br>(See NAAMM) | |
| HPVA | Hardwood Plywood & Veneer Association<br>www.hpva.org | (703) 435-2900 |
| HPW | H. P. White Laboratory, Inc.<br>www.hpwhite.com | (410) 838-6550 |
| IAS | International Approval Services<br>(See CSA International) | |
| ICEA | Insulated Cable Engineers Association, Inc.<br>www.icea.net | (508) 394-4424 |
| ICRI | International Concrete Repair Institute (The)<br>www.icri.org | (703) 450-0116 |
| IEC | International Electrotechnical Commission<br>www.iec.ch | 41 22 919 02 11 |
| IEEE | Institute of Electrical and Electronics Engineers, Inc. (The) | (212) 419-7900 |

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| | www.ieee.org | |
| IESNA | Illuminating Engineering Society of North America<br>www.iesna.org | (212) 248-5000 |
| IGCC | Insulating Glass Certification Council<br>www.igcc.org | (315) 646-2234 |
| ILI | Indiana Limestone Institute of America, Inc.<br>www.iliai.com | (812) 275-4426 |
| IRI | Industrial Risk Insurers<br>www.industrialrisk.com | (800) 243?8308<br>(860) 520?7300 |
| ITS | Intertek Testing Services<br>www.itsglobal.com | (800) 345-3851<br>(607) 753-6711 |
| IWS | Insect Screening Weavers Association<br>(Now defunct) | |
| KCMA | Kitchen Cabinet Manufacturers Association<br>www.kcma.org | (703) 264-1690 |
| LGSI | Light Gage Structural Institute<br>www.loseke.com | (972) 370-0967 |
| LMA | Laminating Materials Association<br>(Formerly: ALA - American Laminators Association)<br>www.lma.org | (201) 664-2700 |
| LPI | Lightning Protection Institute<br>www.lightning.org | (800) 488-6864<br>(847) 577-7200 |
| LSGA | Laminated Safety Glass Association<br>(See GANA) | |
| MBMA | Metal Building Manufacturers Association<br>www.mbma.com | (216) 241-7333 |
| MCA | Metal Construction Association<br>www.metalconstruction.org | (312) 201-0193 |
| MFMA | Maple Flooring Manufacturers Association<br>www.maplefloor.org | (847) 480-9138 |
| MFMA | Metal Framing Manufacturers Association | (312) 644-6610 |
| MGPHO | Medical Gas Professional Healthcare Organization, Inc.<br>www.mgpho.org | (877) 238-5157<br>(913) 681-6548 |
| MHIA | Material Handling Industry of America<br>www.mhia.org | (800) 345-1815<br>(704) 676-1190 |

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|---|---|---|
| MIA | Marble Institute of America<br>www.marble-institute.com | (614) 228-6194 |
| ML/SFA | Metal Lath/Steel Framing Association<br>(See SSMA) | |
| MSS | Manufacturers Standardization Society of The Valve and Fittings Industry Inc.<br>www.mss-hq.com | (703) 281-6613 |
| NAAMM | National Association of Architectural Metal Manufacturers<br>www.naamm.org | (312) 332-0405 |
| NAAMM | North American Association of Mirror Manufacturers<br>(See GANA) | |
| NACE | NACE International<br>(National Association of Corrosion Engineers International)<br>www.nace.org | (281) 228-6200 |
| NAIMA | North American Insulation Manufacturers Association (The)<br>www.naima.org | (703) 684-0084 |
| NAMI | National Accreditation and Management Institute, Inc. | (304) 258-5100 |
| NAPM | National Association of Photographic Manufacturers<br>(See PIMA) | |
| NBGQA | National Building Granite Quarries Association, Inc.<br>www.nbgqa.com | (800) 557-2848 |
| NCMA | National Concrete Masonry Association<br>www.ncma.org | (703) 713-1900 |
| NCPI | National Clay Pipe Institute<br>www.ncpi.org | (414) 248-9094 |
| NCTA | National Cable Television Association<br>www.ncta.com | (202) 775-3669 |
| NEBB | National Environmental Balancing Bureau<br>www.nebb.org | (301) 977-3698 |
| NECA | National Electrical Contractors Association<br>www.necanet.org | (301) 657-3110 |
| NeLMA | Northeastern Lumber Manufacturers' Association<br>www.nelma.org | (207) 829-6901 |
| NEMA | National Electrical Manufacturers Association<br>www.nema.org | (703) 841-3200 |

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|---|---|---|
| NETA | InterNational Electrical Testing Association<br>www.netaworld.org | (303) 697-8441 |
| NFPA | National Fire Protection Association<br>www.nfpa.org | (800) 344-3555<br>(617) 770-3000 |
| NFRC | National Fenestration Rating Council<br>www.nfrc.org | (301) 589-6372 |
| NGA | National Glass Association<br>www.glass.org | (703) 442-4890 |
| NHLA | National Hardwood Lumber Association<br>www.natlhardwood.org | (800) 933-0318<br>(901) 377-1818 |
| NLGA | National Lumber Grades Authority<br>www.nlga.org | (604) 524-2393 |
| NOFMA | National Oak Flooring Manufacturers Association<br>www.nofma.org | (901) 526-5016 |
| NPA | National Particleboard Association<br>(See CPA) | |
| NRCA | National Roofing Contractors Association<br>www.nrca.net | (800) 323-9545<br>(847) 299-9070 |
| NRMCA | National Ready Mixed Concrete Association<br>www.nrmca.org | (888) 846-7622<br>(301) 587-1400 |
| NSA | National Stone Association<br>www.aggregates.org | (800) 342-1415<br>(703) 525-8788 |
| NSF | NSF International<br>(National Sanitation Foundation International)<br>www.nsf.org | (800) 673-6275<br>(734) 769-8010 |
| NTMA | National Terrazzo and Mosaic Association, Inc.<br>www.ntma.com | (800) 323-9736<br>(703) 779-1022 |
| NWWDA | National Wood Window and Door Association<br>(See WDMA) | |
| PCI | Precast/Prestressed Concrete Institute<br>www.pci.org | (312) 786-0300 |
| PDCA | Painting and Decorating Contractors of America<br>www.pdca.com | (800) 332-7322<br>(703) 359-0826 |
| PDI | Plumbing & Drainage Institute<br>www.pdionline.org | (800) 589-8956<br>(508) 230-3516 |
| PGI | PVC Geomembrane Institute | (217) 333-3929 |

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| | //pgi-tp.ce.uiuc.edu | |
| PIMA | Photographic & Imaging Manufacturers Association<br>(Formerly: NAPM - National Association of Photographic Manufacturers)<br>www.pima.net | (914) 698-7603 |
| RCSC | Research Council on Structural Connections<br>www.boltcouncil.org | (800) 644-2400<br>(312) 670-2400 |
| RFCI | Resilient Floor Covering Institute<br>(Contact by mail only) | |
| RIS | Redwood Inspection Service<br>www.calredwood.org | (888) 225-7339<br>(415) 382-0662 |
| RMA | Rubber Manufacturers Association<br>www.rma.org | (800) 220-7620<br>(202) 682-4800 |
| SAE | SAE International<br>www.sae.org | (724) 776-4841 |
| SDI | Steel Deck Institute<br>www.sdi.org | (847) 462-1930 |
| SDI | Steel Door Institute<br>www.steeldoor.org | (440) 899-0010 |
| SEFA | Scientific Equipment and Furniture Association<br>www.sefalabfurn.com | (843) 689-6878 |
| SGCC | Safety Glazing Certification Council<br>www.sgcc.org | (315) 646-2234 |
| SIGMA | Sealed Insulating Glass Manufacturers Association<br>www.sigmaonline.org/sigma | (312) 644-6610 |
| SJI | Steel Joist Institute<br>www.steeljoist.org | (843) 626-1995 |
| SMA | Screen Manufacturers Association | (561) 533-0991 |
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Association<br>www.smacna.org | (703) 803-2980 |
| SPFA | Spray Polyurethane Foam Alliance<br>(Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.;<br>Spray Polyurethane Foam Division)<br>www.sprayfoam.org | (800) 523-6154 |
| SPI | The Society of the Plastics Industry | (202) 974-5200 |

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| | www.plasticsindustry.org | |
| SPIB | Southern Pine Inspection Bureau (The)<br>www.spib.org | (850) 434-2611 |
| SPI/SPFD | The Society of the Plastics Industry<br>Spray Polyurethane Foam Division<br>(See SPFA) | |
| SPRI | SPRI (Single Ply Roofing Institute)<br>www.spri.org | (781) 444-0242 |
| SSINA | Specialty Steel Industry of North America<br>www.ssina.com | (800) 982-0355<br>(202) 342-8630 |
| SSMA | Steel Stud Manufacturers Association<br>(Formerly: ML/SFA - Metal Lath/Steel Framing Association)<br>www.ssma.com | (312) 456-5590 |
| SSPC | SSPC: The Society for Protective Coatings<br>www.sspc.org | (800) 837-8303<br>(412) 281-2331 |
| STI | Steel Tank Institute<br>www.steeltank.com | (847) 438-8265 |
| SWI | Steel Window Institute<br>www.steelwindows.com | (216) 241-7333 |
| SWRI | Sealant, Waterproofing, and Restoration Institute<br>www.swrionline.org | (816) 472-7974 |
| TCA | Tile Council of America, Inc.<br>www.tileusa.com | (864) 646-8453 |
| TIA/EIA | Telecommunications Industry Association/Electronic Industries Alliance<br>www.tiaonline.org | (703) 907-7700 |
| TPI | Truss Plate Institute | (608) 833-5900 |
| TPI | Turfgrass Producers International<br>www.turfgrasssod.org | (800) 405-8873<br>(847) 705-9898 |
| UFAC | Upholstered Furniture Action Council<br>www.ufac.org | (336) 885-5065 |
| UL | Underwriters Laboratories Inc.<br>www.ul.com | (800) 704-4050<br>(847) 272-8800 |
| UNI | Uni-Bell PVC Pipe Association<br>www.uni-bell.org | (972) 243-3902 |
| USITT | United States Institute for Theatre Technology, Inc. | (800) 938-7488 |

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| | www.culturenet.ca/usitt | (315) 463-6463 |
| USP | U.S. Pharmacopeia<br>www.usp.org | (800) 822-8772<br>(301) 881-0666 |
| WASTEC | Waste Equipment Technology Association<br>www.wastec.org | (800) 424-2869<br>(202) 244-4700 |
| WCLIB | West Coast Lumber Inspection Bureau<br>www.wclib.org | (800) 283-1486<br>(503) 639-0651 |
| WCMA | Window Covering Manufacturers Association<br>(Formerly: AWCMA - American Window Covering Manufacturers Association)<br>www.windowcoverings.org | (800) 506-4653<br>(212) 661-4261 |
| WDMA | Window & Door Manufacturers Association<br>(Formerly: NWWDA - National Wood Window and Door Association)<br>www.wdma.com | (800) 223-2301<br>(847) 299-5200 |
| WIC | Woodwork Institute of California<br>www.wicnet.org | (916) 372-9943 |
| WMMPA | Wood Moulding & Millwork Producers Association<br>www.wmmpa.com | (800) 550-7889<br>(530) 661-9591 |
| WWPA | Western Wood Products Association<br>www.wwpa.org | (503) 224-3930 |

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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| CBHF | State of California, Department of Consumer Affairs<br>Bureau of Home Furnishings and Thermal Insulation<br>www.dca.ca.gov/bhfti<br>www.cpsc.gov | (800) 952-5210<br>(916) 445-1254<br><br>(301) 504-0990 |
| DOC | Department of Commerce<br>www.doc.gov | (202) 482-2000 |
| EPA | Environmental Protection Agency<br>www.epa.gov | (202) 260-2090 |
| FAA | Federal Aviation Administration<br>www.faa.gov | (202) 366-4000 |
| FCC | Federal Communications Commission<br>www.fcc.gov | (202) 418-0190 |
| FDA | Food and Drug Administration | (888) 463-6332 |

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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| CBHF | State of California, Department of Consumer Affairs<br>Bureau of Home Furnishings and Thermal Insulation<br>www.dca.ca.gov/bhfti<br>www.cpsc.gov | (800) 952-5210<br>(916) 445-1254<br><br>(301) 504-0990 |
| DOC | Department of Commerce<br>www.doc.gov | (202) 482-2000 |
| EPA | Environmental Protection Agency<br>www.epa.gov | (202) 260-2090 |
| FAA | Federal Aviation Administration<br>www.faa.gov | (202) 366-4000 |
| FCC | Federal Communications Commission<br>www.fcc.gov | (202) 418-0190 |
| FDA | Food and Drug Administration<br>www.fda.gov | (888) 463-6332 |
| GSA | General Services Administration<br>www.gsa.gov | (202) 708-5082 |
| HUD | Department of Housing and Urban Development<br>www.hud.gov | (202) 708-1112 |
| LBL | Lawrence Berkeley Laboratory<br>(See LBNL) | |
| LBNL | Lawrence Berkeley National Laboratory<br>www.lbl.gov | (510) 486-5605 |
| NCHRP | National Cooperative Highway Research Program<br>(See TRB) | |
| NIST | National Institute of Standards and Technology<br>www.nist.gov | (301) 975-6478 |
| OSHA | Occupational Safety & Health Administration<br>www.osha.gov | (202) 693-1999 |
| RUS | Rural Utilities Service<br>(See USDA) | (202) 720-9540 |
| TRB | Transportation Research Board<br>www.nas.edu/trb | (202) 334-2934 |
| USDA | Department of Agriculture | (202) 720-2791 |

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| | www.usda.gov | |
| USPS | Postal Service<br>www.usps.com | (202) 268-2000 |

D. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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| CBHF | State of California, Department of Consumer Affairs<br>Bureau of Home Furnishings and Thermal Insulation<br>www.dca.ca.gov/bhfti | (800) 952-5210<br>(916) 445-1254 |

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 014200

# SECTION 014500 - CONSTRUCTION QUALITY CONTROL

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the contractor's Quality Control (QC) Program. The QC Program required for the work is defined by the combination of this section and Division 1 Section "Quality Requirements."

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "References"
7. Division 1 Section "Temporary Facilities and Controls"
8. Division 1 Section "Safety and Health"
9. Division 1 Section "Product Requirements"
10. Division 1 Section "Execution Requirements"
11. Division 1 Section "Cutting and Patching"
12. Division 1 Section "Selective Demolition"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"
15. Division 1 Section "Operation and Maintenance Documentation"
16. Division 1 Section "Demonstration and Training"

C. The contractor's QC Program includes tests, inspections, procedures, and related actions performed by the contractor or other contractually designated party during and after execution of the work to verify that completed construction complies with contract requirements. Services do not include contract enforcement activities performed by the NIH or their designated representative**.**

D. Specific QC requirements for individual construction activities are included in the technical sections that specify those construction activities.

E. The intent of this section is to describe the duties and responsibilities of the contractor's QC Program. The Contractor has the option of assembling a QC Program to match that described in this specification section or proposing an alternate program that meets the same intent. The Contractor

Officer can waive all or portions of this specification if the contractor has an established proven alternative QC Program which can be documented as meeting the intent of the provisions in this specification section. The contractor is required to submit any alternate QC Program to meet the same milestones described herein and have the alternate QC Program accepted by the Contracting Officer prior to the start of work. No additional time will be allowed for the review process of an alternate program. Any costs savings resulting from an alternate QC Program will require a change order to be incorporated into the contract. No additional costs will be authorized for an alternate QC Program.

F. This specification section does not relieve the Contractor of responsibility for compliance with Contract Document requirements, and does not limit the Contractor's QC procedures that facilitate compliance with Contract Document requirements.

G. The term Contracting Officer and Project Officer shall also mean his/her representative who has been so designated in writing.

## 1.3 GOVERNING REGULATIONS AND AUTHORITIES

A. The latest edition of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) ASTM A880 Criteria for Use in Evaluation of Testing Laboratories and Organization for Examination and Inspection of Steel, Stainless Steel, and Related Alloys
2. ASTM C1077 Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
3. ASTM D3666 Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
4. ASTM D3740 Minimum Requirements for Agencies Engaged in the Testing and/ or Inspection of Soil and Rock as Used in Engineering Design and Construction
5. ASTM E329 Agencies Engaged in the Testing and/ or Inspection of Materials Used in Construction
6. ASTM E543 Agencies Performing Nondestructive Testing

B. Obtain copies of applicable regulations and make these available at the project site for reference.

## 1.4 QUALITY CONTROL RESPONSIBILITIES

A. Work is to be performed under the general direction of the Contracting Officer and shall be subject to inspection by the Contracting Officer's Technical Representative. No representative of the Contracting Officer is permitted to change specifications or drawings without the written authorization of the Contracting Officer.

B. The contractor shall be familiar with the latest provisions of the inspection requirements of local jurisdictions and the NIH and shall include compliance with those requirements in the work of this contract. These local provisions shall be enforced when they exceed the provisions as outlined in the specifications. The provisions of the specifications shall be considered a minimum.

C. Unless specifically indicated otherwise, the Contractor shall provide a contractor QC (QC) Program specified or required by this contract. Costs for these services are included in the Contract price.

D. The contractor's QC Program shall include but not be limited to a QC Plan, a QC Staff, specified QC meetings, a three phased QC system described in this section, submittal review and certification, specified testing, completion inspections, QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract.

1. The QC Program shall cover on-site and off-site work and shall be keyed to the work sequence identified in the contractor's construction schedule.
2. No work or testing may be performed unless the contractor's QC Manager is on the work site.
3. The contractor's QC Manager shall report to an officer of the firm and shall not be subordinate to the Project Superintendent or the Project Manager.
4. The contractor's QC Manager, Project Superintendent, and the contractor's management team must work together effectively. Although the QC Manager is the primary individual responsible for QC, the Contractor will ultimately be held responsible for the quality of work on the job. The project superintendent will be held responsible for the quality of production.

E. Testing and inspecting services may be required to verify compliance with requirements specified or indicated in the contract documents. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

F. Where individual technical specification sections specifically indicate that certain tests, inspections or other QC services are to be provided by a testing agency, the Contractor shall employ and pay for a qualified independent testing agency to perform the QC services.

G. Specified tests, inspections, and related actions do not limit Contractor's quality control procedures that facilitate compliance with the Contract Document requirements.

H. Where specific quality control tests or services are indicated as a NIH responsibility, the NIH will engage a qualified agency to perform these services.

1. NIH will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.

I. The Contractor shall cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. The contractor will provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.

5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

J. Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.5 SUBMITTALS

A. Submit a preliminary Definable Features of Work listing within 14 calendar days of receipt of the notice to Proceed.

B. Submit a draft Quality Control Plan within 30 calendar days following receipt the Notice to Proceed.

C. The only work that is authorized to proceed prior to the approval of the QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.

D. Contractors should plan on a NIH review period of 14 calendar days prior to receiving comments on the draft QC Plan submission. The planned duration of the NIH review is provided as a planning figure and will vary dependent on the complexity and accuracy of the submission. No additional time will be allowed the Contractor for a NIH review longer than the above duration.

E. Submit revised Quality Control Plan within 14 calendar days following receipt of NIH comments.

1.6 CONTRACTOR'S QUALITY CONTROL ORGANIZATION

A. Quality Control Manager Duties and Qualifications

1. Provide a QC Manager at the work site to implement and manage the QC Program.

a. In addition to implementing and managing the QC Program, the QC Manager may perform the duties of project superintendent.
b. The only duties and responsibilities of the QC Manager are to manage and implement the QC Program on this contract. The QC Manager shall not be designated as the Project Superintendent or the safety competent person as defined OSHA Regulations (Standards) 29 CFR 1926.
c. The QC Manager is required to attend the QC Plan Meeting, attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of QC, perform submittal review and certification, ensure testing is performed and provide QC certifications and documentation required in this contract. The QC Manager is responsible for managing and coordinating the three phases of QC and documentation of work performed by Testing Laboratory personnel and any other inspection and testing personnel required by this Contract.

1) Specific duties of the QC Manager include but are not limited to:

a) Maintains access to quality references called for in the specifications
b) Ensures all submittals are prepared, certified, and submitted as required in a timely manner to avoid project delays.
c) Coordinates changes or substitution requests made by the contractor to the Project Officer, however, he does not have the authority to approve them.
d) Inspects all work for compliance and maintains a Rework Items list on all non-conforming work.
e) Coordinates all testing requirements to maintain the production schedule.
f) Ensures that As-Built Drawings and Specifications and As-Built Record of Material documents are current and on site.
g) Coordinates submission of all miscellaneous plans required by various Division 1 specification sections to the Contracting Officer.

2) The QC Manager reports to an officer of the firm and not to the site superintendent.
3) The QC Manager has the authority to stop the work and the responsibility to stop the work if the work does not conform to the contract requirements. Failure to exercise this responsibility is cause for NIH directing replacement of the QC Manager.
4) Regardless who is designated as the Safety Competent Person as defined in OSHA Regulations (Standards) 29 CFR 1926.32(f) and assigned other safety responsibilities as described in Division 1 Section "Safety and Health." The QC Manager is always responsible for observing the work and monitoring safe work practices during the normal course of his jobsite duties.

2. QC Manager Qualifications.

a. An individual with a minimum of 10 years experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must be familiar with the requirements of OSHA Regulations (Standards) 29 CFR 1926, and have experience in the areas of hazard identification and safety compliance.
b. A graduate of a four year accredited college program in one of the following disciplines: Engineering, Architecture, Construction Management, Engineering Technology, Building Construction, or Building Science **with a minimum of** 10 years experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must be familiar with the requirements of OSHA Regulations (Standards) 29 CFR 1926, and have experience in the areas of hazard identification and safety compliance.

B. Additional QC Management Staff Requirements. The QC requirements of this project require the QC staff to also include the following individuals:

1. Alternate QC Manager. The contractor will provide an Alternate QC Manager with similar qualifications as those of the QC Manager to serve in the event of the QC Manager's absence. The period of absence of the QC Manager shall not exceed two weeks at any one time, and not more than 30 workdays in the aggregate during a calendar year. The alternate QC Manager shall be designated in the QC Plan and should be familiar with the workings and status of the QC Program. The Alternate QC Manager may be a member of the contractor's production staff while not performing QC Manager duties.

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2. Submittal Reviewer. Provide Submittal Reviewer, other than the QC Manager, qualified in the disciplines being reviewed, to review and certify that the submittals meet the requirements of this Contract prior to certification by the QC Manager.

3. The technical specification sections may also require the presence of manufacturer or factory technical or quality representatives or engineers to be on-site prior to observe or conduct all or portions of the installation. See Division 1 Section "Quality Requirements" for individual qualifications. These representatives shall be considered an extension of the QC staff.
4. The QC Supervisor for the Pest Management Contractor (PMC) required by Division 1 Section "Temporary Facilities and Controls" shall be considered a member of the QC staff. Copies of all PMC reports will be maintained by the QC Organization and PMC activities will be included in QC Reports

## 1.7 QUALITY CONTROL PLAN

A. QC Plan Meeting: Conduct a QC Plan meeting with the Project Officer within 10 calendar days of receipt of the Notice To Proceed with the purpose of developing a mutual understanding of the QC Plan requirements prior to plan development and submission.

B. Submit a QC Plan to the Contracting Officer for approval conforming to the requirements specified elsewhere in this section within 30 calendar days after receipt of the Notice to Proceed. Coordinate submission of the QC Plan with the preparation and submission of the contractor's preliminary and final construction schedules as described in Division 1 Section "Construction Progress Documentation." The QC Plan submission should be concurrent or follow the submission of the schedule.

C. The initial submission of the QC Plan shall include a preliminary submittal of the list of definable features of work (DFOW) described in the following paragraphs that shall cover the first 90 days of construction. Submit the completed list of DFOWs in conjunction with the Preliminary Contractor's Construction Schedule described in Division 1 Section "Construction Progress Documentation." Any approval by the NIH of the QC Plan with this preliminary list shall be considered to be "approved as noted, re-submittal required" and will be in effect only until the completed list of DFOW is received and approved.

D. The final submission of the QC Plan should be coordinated with the submission of the contractor's construction schedule as described in Division 1 Section "Construction Progress Documentation." If the completed list of DFOWs and accepted contractor's schedule is not received within the time indicated in Division 1 Section "Construction Progress Documentation,"

work beyond that authorized under the "approved as noted" will not commence. The contractor will not be entitled to a contract time extension for lost time due to failure to submit a conforming QC Plan or Construction Schedule.

E. The contractor's QC Program is subject to continuous evaluation, review, and verification by the Project Officer and the Contracting Officer. Acceptance of the Contractor's QC Plan is conditional and will be predicated on satisfactory performance during the construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel shall be subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the contract.

F. The Contractor will notify the Contracting Officer, in writing, of any proposed change to the submitted QC Plan, including pending changes in the QC organization personnel, a minimum of seven calendar days prior to the effective date of the proposed change. Proposed changes shall be subject to acceptance by the Contracting Officer prior to implementation.

G. QC Plan Requirements. Provide, for approval by the Contracting Officer, a QC Plan with pages numbered sequentially that covers both on-site and off-site work and includes the following:

1. A table of contents listing the major sections identified with tabs in the following order:

    a. QC Organization
    b. Names And Qualifications
    c. Duties, Responsibility And Authority Of QC Personnel
    d. Outside Organizations
    e. Appointment Letters
    f. Submittal Procedures And Initial Submittal Register
    g. Testing Laboratory Information
    h. Testing Plan And Log
    i. Procedures To Complete Rework Items
    j. Documentation Procedures
    k. List Of Definable Features Of Work (DFOW)
    l. Procedures For Performing The Three Phases Of Control
    m. QC Personnel Matrix
    n. Procedures For Completion Inspection
    o. Appendix

2. A chart showing the contractor's QC organizational structure.
3. Names and qualifications, in resume format, for each person in the QC organization.
4. Duties, responsibilities and authorities of each person in the QC organization.
5. A listing of outside organizations such as, architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
6. Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for implementing and managing the QC Program as described in this contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of quality control, and their authority to stop work which is not in compliance with the contract.

7. Copies of letters of direction signed by the QC Manager to all other QC staff outlining their duties, authorities, and responsibilities.
8. Procedures for reviewing, approving and managing submittals. Provide the names of the persons in the QC organization authorized to review and certify submittals prior to submission to the Contracting Officer.
9. Include a copy of the initial submittal of the Submittal Register per the requirements of Division 1 Section "Submittal Procedures."
10. Testing laboratory information required by the paragraphs entitled "Testing Agencies and Reports" of this section
11. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
12. Procedures to identify, record, track and complete rework items.
13. Documentation procedures, including proposed report formats.
14. List of definable features of work.

    a. A definable feature of work (DFOW) is a task which is separate and distinct from other tasks, has the same control requirements and work crews.
    b. The list shall be cross-referenced to the contractor's Construction Schedule and the specification sections.
    c. For projects requiring a Progress Chart, the list of definable features of work shall include but not be limited to all items of work on the schedule.
    d. For projects requiring a CPM Schedule, the list of definable features of work shall include but not be limited to all critical path activities.
    e. All activities for which this specification requires QC Specialists or special inspection personnel should also be included as separate DFOWs.
    f. Cutting and Patching activities as described in Division 1 Section "Cutting and Patching" shall be treated as separate DFOWs.
    g. All activities that can be expected to impact NIH operations will be treated as separate DFOWs including but not limited to utility outages and temporary traffic provisions.

15. Procedures for performing the three phases of quality control. For each DFOW, provide copies of the DFOWs Preparatory and Initial Phase Checklists. Each list shall include a breakdown of quality checks that will be used when performing the QC functions, inspections, and tests required by the contract documents. The preparatory and initial phases and meetings shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential problems for each definable feature of work. The three phases of quality control are further defined in a following section of this specification.
16. Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.
17. Appendix to include the anticipated miscellaneous project management and coordination plans being submitted for the project including but not limited to:

    a. Utility Service Interruption Plan
    b. Hazardous Waste/Waste Management Plan
    c. Heating and Cooling Plan
    d. Integrated Pest Management Plan
    e. Demolition Plan
    f. Photographic Documentation Plan

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING

A. After submission of the QC Plan, and prior to the start of construction, meet with the Contracting Officer to present the QC Program proposed by the contractor. The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production and QC personnel.

B. At the meeting, the Contractor will be required to explain in detail how the three phases of quality control will be implemented for each definable feature of work.

C. As a minimum, the Contractor's personnel required to attend shall include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager and/or A/E as appropriate and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities shall have a principal of the firm at the meeting.

D. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor, Engineer, and the Contracting Officer (or their designated representative). A copy of the signed minutes shall be provided by the Contractor to all attendees. Repeat the coordination and mutual understanding meeting when a new QC Manager is appointed.

1.9 QC MEETINGS.

A. After the start of construction, the QC Manager shall conduct **bi-weekly** QC meetings at the work site with the project superintendent The QC Manager shall prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer or their designated representative may attend these meetings. The QC Manager shall notify the Contracting Officer or their designated representative at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

B. Review the minutes of the previous meeting;

C. Review the schedule and the status of work:

1. Work or testing accomplished since last meeting
2. Rework items identified since last meeting
3. Rework items completed since last meeting;

D. Review the status of submittals:

1. Submittals reviewed and approved since last meeting
2. Submittals required in the near future;

E. Review the work to be accomplished in the next 2 (two) weeks and documentation required:

1. Establish completion dates for outstanding rework items
2. Update the schedule showing planned and actual dates of the preparatory, initial and follow-up phases, including testing and any other inspection required by this contract

3. Discuss construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work
4. Discuss status of off-site work or testing
5. Discuss documentation required for the scheduled tasks;
6. Discuss safety requirements for upcoming activities:

F. Resolve QC and production problems:

1. Assist in resolving Request for Information issues; and

G. Address items that may require revising the QC Plan:

1. Changes in QC organization personnel
2. Changes in QC procedures.
3. Review health and safety plan
4. Other issues or topics as requested by the Project Officer.

## 1.10 THREE PHASES OF QUALITY CONTROL

A. The three phases of quality control, describes the process that forms the backbone of the required QC system. The three phases, Preparatory, Initial, and Follow up shall adequately cover both on-site and off-site work and shall include the following for each definable feature of work.

1. Preparatory Phase

a. Notify the Contracting Officer at least 2 workdays in advance of the beginning of each Preparatory Phase. This phase shall include a meeting conducted by the QC Manager and attended by the Superintendent, and the Foreman responsible for the DFOW. Document the results of the Preparatory Phase actions in the daily Contractor Quality Control Report and in the Preparatory Phase Checklist. The Preparatory Phase Meeting can be combined with the Preinstallation Conference if held.
b. Perform the following prior to beginning work on each DFOW:

1) Review each paragraph of the applicable specification sections
2) Review the Contract drawings
3) Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required
4) Review the testing plan and cutting and patching plan and other miscellaneous project management and coordination plans as appropriate and ensure that provisions have been made to provide the required QC testing
5) Examine the work area to ensure that the required preliminary work has been completed. If manufacturer's field services are specified, verify that inspections have been accomplished and results noted. See Division 1 Section "Execution" for additional requirements.
6) Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data

7) Discuss construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW
8) Review the Safety Plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.
9) Review any hazardous material processes required for materials involved in the DFOW.

2. Initial Phase

a. Notify the Contracting Officer at least 2 workdays in advance of the beginning of each Initial Phase. When construction crews are ready to start work on a DFOW, conduct an Initial Phase meeting with the superintendent, and the foreman responsible for that DFOW. Observe the initial segment of the definable feature of work to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily Contractor Quality Control Report and in the Initial Phase Checklist. Repeat the Initial Phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met.
b. Perform the following for each DFOW:

1) Establish the quality of workmanship required
2) Resolve conflicts
3) Ensure that testing is performed as specified and as incorporated into the testing plan.
4) Check work procedures for compliance with the Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met.
5) Verify that all the requirements agreed to as a result of the Preparatory Phase have been or are being accomplished.

3. Follow-Up Phase

a. Perform the following for on-going work daily, or more frequently as necessary until the completion of each DFOW and document in the daily Contractor Quality Control Report:

1) Ensure the work is in compliance with Contract requirements;
2) Maintain the quality of workmanship required
3) Ensure that testing is performed by the specified or approved source;
4) Ensure that rework items are being corrected
5) Perform safety inspections.
6) Ensure Preparatory and Initial Phase requirements are being met.

4. Additional Preparatory and Initial Phases. Additional Preparatory and Initial Phases shall be conducted on the same DFOWs for the following conditions:

a. If the quality of on-going work is unacceptable, if there are changes in the applicable QC organization,
b. If there are changes in the on-site production supervision or work crew,
c. If cutting or patching id required following completion of the DFOW,
d. If work on a definable feature is resumed after substantial period of inactivity, or
e. If other problems develop.

B. Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases if off site QC will be required.

1.11 SUBMITTAL REVIEW AND APPROVAL

A. The QC organization shall be responsible for reviewing and certifying that all submittals are in compliance with the contract requirements. Those submittals requiring additional NIH approval shall be certified prior to being forwarded to NIH for approval.

B. Those submittals requiring specific NIH approval are specifically identified in the technical specifications and will be forwarded for approval as described in Division 1 Section "Submittal Procedures."

C. Submittal documentation requirements for contractor QC certified submittals are identical to those of NIH approved submittals and are described in Division 1 Section "Submittal Procedures."

D. Procedures for submission, review and approval of technical submittals are described in Division 1 Section "Submittal Procedures."

1.12 TESTING AGENCIES AND REPORTS

A. Qualification Data: Contractor shall submit for Contracting Officer Approval each testing agency's firm name, and credentials to perform the specified services, to the NIH for the Contracting Officer's approval at least 15 calendar days before scheduled inspections or tests.

1. A qualified independent testing agency shall be an accredited entity engaged to perform tests or inspections, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those tests or inspections.
2. Testing agencies shall be acceptable to the Contracting Officer.
3. Contractor shall not employ the same testing agency engaged by NIH, unless agreed to in writing by NIH.
4. Unless other accreditation is specified in the applicable individual technical specification section, each testing agency shall be an agency pre-qualified with the experience and capability to conduct testing and inspections indicated, as documented by ASTM E 548 that specializes in types of tests and inspections to be performed or shall be recognized by the Occupational Safety and Health Administration (OSHA) in accordance with 29 CFR Part 1910.7 to test and approve equipment or materials for their safe intended use.
5. Testing agencies shall be authorized by authorities having jurisdiction to operate in the geographic location of the project.
6. The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.
7. Testing and inspecting requested by the Contractor not required by the Contract Documents are Contractor's responsibility.
8. Submit additional copies of each written test report directly to authorities having jurisdiction, when they so direct.
9. Testing agencies may not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the work.

B. Schedule of Tests and Inspections: The Contractor shall prepare and submit a comprehensive Schedule of Tests and Inspections required by the contract documents.

1. Coordinate the Schedule of Tests and Inspections with the Contractor's Construction Schedule and other related documents. Prepare in tabular form to include the following:

a. Specification Section number and title.
b. Description of test and inspection.
c. Identification of applicable standards.
d. Identification of test and inspection methods.
e. Number of tests and inspections required.
f. Time schedule or time span for tests and inspections.
g. Entity responsible for performing tests and inspections.
h. Requirements for obtaining samples.
i. Unique characteristics of each quality-control service.

C. Test Results and Reports

1. Provide actual results in a written format in the number of copies required by the QC Manager and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify Contracting Officer directly through the Project Officer immediately. Written test reports will include the following information:

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

2. Provide 2 (two) copies to the Project Officer of each test and inspection report.
3. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports.
4. Furnish the signed reports, certifications, and other documentation to the Contracting Officer or his designated representative via the QC Manager. Furnish a summary report of field tests at the end of each month. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

## 1.13 QUALITY CONTROL CERTIFICATIONS AND COMPLETION INSPECTIONS

A. QC Certifications

1. Contractor Quality Control Report Certification. Each Contractor QC Report shall contain the following statement:
2. "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report." (signed by the QC Manager)
3. Invoice Certification. Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that Project Record Documents are current and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.
4. Completion Certification. Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract."

B. Completion Inspections

1. Punch-Out Inspection.

   a. Near the completion of all work or any increment thereof established by a contract clause or stated elsewhere in the specifications, the QC Manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications.
   b. Include in the punch list any remaining items on the "Rework Items List" which were not corrected prior to the Punch-Out Inspection.
   c. The punch list shall include the estimated date by which the deficiencies will be corrected. A copy of the punch list shall be provided to the Contracting Officer.
   d. The QC Manager or staff shall make follow-on inspections to ascertain that all deficiencies have been corrected.
   e. The Contractor shall notify the Contracting Officer or his designated representative that the facility is ready for the NIH Pre-Final Inspection.

2. Pre-Final Inspection

   a. The NIH will perform this inspection to verify that the facility is complete and ready to be occupied. A NIH Pre-Final Punch List may be developed as a result of this inspection.
   b. Any items noted on the Pre-Final inspection shall be corrected in a timely manner and shall be accomplished before the contract completion date or phase completion date if the project is divided into phases with separate completion dates.
   c. The QC Manager shall ensure that all items on the Pre-Final Punch List are corrected prior to notifying the NIH that a Final inspection with the customer can be scheduled.

3. Final Acceptance Inspection

   a. The QC Manager, the superintendent or other primary contractor management personnel, and the Contracting Officer's representative will be in attendance at this inspection. Additional NIH personnel may be in attendance.
   b. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final Inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the Final Inspection stating that all specific items previously identified to the Contractor as being unacceptable, along

with all the remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.

c. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the additional NIH inspection costs in accordance with the Contract Clause entitled "Inspection of Construction."

d. When the Contracting Officer takes possession of partially completed work, it will be in accordance with Contract Clause "Use and Possession Prior to Completion".

1.14 QUALITY CONTROL DOCUMENTATION.

A. Maintain current and complete records of on-site and off-site QC Program operations and activities. QC Documentation is to be coordinated with Division 1 Sections "Construction Progress Documentation," "Photographic Documentation," "Closeout Procedures," and "Project Record Documents" if included in the project specifications.

B. The Contractor shall have an identification and data retrieval system. Records, reports, drawings, submittals, and equipment shall be identified to reference the following:

1. Contract Number
2. Contract Specification Number
3. Contract Drawing Number
4. Submittal Document Number
5. Contract Change Number

C. Quality Control Site Records. Establish and maintain on the jobsite the following documentation readily available to the NIH Project Officer during all business hours.

1. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
2. All milestone inspections, arranged by Activity/ Event Number.
3. Photographic Documentation
4. A current up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
5. Copies of all contract modifications, arranged in numerical order. Also include documentation that the modified work was accomplished.
6. A current up-to-date copy of the Rework Items List.
7. Current up-to-date copies of all punch lists issued by the QC Staff of the Contractor and Sub-Contractors and all punch lists issued by the NIH.

D. Contractor Production Report. Reports are required for each day that work is performed and shall be attached to the Contractor Quality Control Report prepared for the same day. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule as described in Division 1 Section "Construction Progress Documentation."

E. Contractor Quality Control Report. Reports are required for each day that work is performed and for every seven consecutive calendar days of no work and on the last day of a no-work period. Account for each calendar day throughout the life of the Contract. The reporting of work shall be identified by terminology consistent with the construction schedule.

1. Contractor Quality Control Reports are to be prepared, signed and dated by the QC Manager and shall contain the following information:

a. Date of report, report number, Contract Number, and Contract Title.
b. Indicate if Preparatory Phase work was performed (Yes/No checkboxes).
c. If Preparatory Phase work was performed (including on-site and off-site work), identify its Schedule Activity Number and DFOW. The Index # is a cross reference to the Preparatory Phase Checklist. An example of the Index # is: 0025-P01, where "0025" is the Contractor Quality Control Report Number, "P" indicates Preparatory Phase, and "01" is the Preparatory Phase Checklist number(s) for this date. Each entry in this section must be accompanied with a corresponding copy of the Preparatory Phase Checklist.
d. Indicate if Initial Phase work was performed (Yes/No checkboxes).
e. If Initial Phase work was performed today (including on-site and off-site work), identify its Schedule Activity No. and DFOW. The Index # is a cross reference to the Initial Phase Checklist. An example of the Index # is: 0025-I01, where "0025" is the Contractor Quality Control Report Number, "I" indicates Initial Phase, and "01" is the Initial Phase Checklist number(s) for this date. Each entry in this section must be accompanied with a copy of the corresponding Initial Phase Checklist.
f. Results of the Follow-up Phase inspections held that day (including on-site and off-site work), including Schedule Activity No., the location of the DFOW, Specification Sections, etc. Indicate in the report for this definable feature of work that the work complies with the Contract as approved in the Initial Phase, work complies with safety requirements, and that required testing has been performed and include a list of who performed the tests.
g. List the rework items identified, but not corrected by close of business; along with its associated Schedule Activity Number.
h. List the rework items corrected from the rework items list along with the corrective action taken and its associated Schedule Activity Number.
i. Include a "remarks" section in this report which will contain pertinent information including directions received, QC problem areas, deviations from the QC Plan, construction deficiencies encountered, photographic documentation accomplished, QC meetings held, acknowledgement that as-built drawings have been updated, corrective direction given by the QC Organization and corrective action taken by the Contractor. For each remark given, identify the Schedule Activity Number that is associated with the remark.
j. Contractor Quality Control Report certification, signature and date.

2. Attach a summary report to the last daily Contractor Quality Control Report of each month.

a. Include reference to submission of Monthly Integrated Pest Management Report.
b. Include reference to monthly Energy Conservation Report.

F. Preparatory Phase Checklist. Each DFOW that is in the Preparatory Phase shall have this checklist filled out for it. The checklist shall be identified by terminology consistent with the construction schedule. Attach a copy of the completed checklist to the Contractor Quality Control Report of the same date.

1. The checklist shall contain the following information:

a. Specification Section, date of report, and Contract number shall be filled out. Duplicate this information in the header of the second page of the report.
b. DFOW, Schedule Activity Number and Index # entry and format will match entry in the Preparatory Phase section of the Contractor Quality Control Report. Duplicate this information in the header of the second page of the report.

c. Personnel Present: Indicate the number of hours of advance notice that was given to the NIH Representative and indicate (Yes/No checkboxes) whether or not the NIH Rep was notified. Indicate the Names of Preparatory Phase Meeting attendees, their position and company/NIH Activity they are with.
d. Submittals: Indicate if submittals have been approved (Yes/No checkboxes), if no indicate what has not been submitted. Are materials on hand (Yes/No checkboxes) and if not, what items are missing. Check delivered material/equipment against approved submittals and comment as required.
e. Material Storage: Indicate if materials/equipment is stored properly (Yes/No checkboxes) and if not, what action is/was taken.
f. Specifications: Review and comment on specification paragraphs that describe the material/equipment, procedure for accomplishing the work and clarify any differences.
g. Preliminary Work & Permits: Ensure preliminary work is in accordance with the contract documents and any necessary permits are on file, if not, describe the action taken.
h. Testing: Identify who performs tests, the frequency, and where tests are to occur. Review the testing plan, report abnormalities, and if the test facilities have been approved.
i. Safety: Indicate if an activity hazard analysis has been reviewed (Yes/No checkboxes) and comment on the review of the applicable portions of OSHA Regulations (Standards) 29 CFR 1926.
j. Meeting Comments: Note comments and remarks during the Preparatory Phase Meeting that were not addressed in previous sections of this checklist.
k. Other Items or Remarks: Note any other remarks or items that were a result of the Preparatory Phase.

2. QC Manager will sign and date the checklist.

G. Initial Phase Checklist. Each DFOW that is in the Initial Phase shall have this checklist filled out for it. The checklist shall be identified by terminology consistent with the construction schedule. Attach this checklist to the Contractor Quality Control Report of the same date.

1. The checklist shall contain the following information:

a. Specification Section, date of report, and Contract number shall be entered.
b. DFOW, Schedule Activity Number and Index Number entry and format will match entry in the Initial Phase section of the Contractor Quality Control Report.
c. Personnel Present: Indicate the number of hours of advance notice that was given to the NIH Representative and indicate (Yes/No checkboxes) whether or not the NIH Rep was notified. Indicate the Names of Initial Phase Meeting attendees, their position and company/NIH Activity they are with.
d. Procedure Compliance: Comment on compliance with procedures identified at Preparatory Phase of Control and assurance that work is in accordance with plans, specifications and submittals.
e. Preliminary Work: Ensure preliminary work being placed is in compliance and if not, what action is/was taken.
f. Workmanship: Identify where initial work is located; if a sample panel is required (Yes/No checkboxes); is the initial work the sample (Yes/No checkboxes); and if Yes, describe the panel location and precautions taken to preserve the sample.
g. Resolution: Comment on any differences and the resolutions reached.
h. Check Safety: Comment on the safety review of the job conditions.
i. Other: Note any other remarks or items that were a result of the Initial Phase.

2. The QC Manager will sign and date the checklist.

H. Reports from the QC Specialist(s).

1. Reports are required for each day that work is performed in their area of responsibility. QC specialist reports shall include the same documentation requirements as the Contractor Quality Control Report for their area of responsibility.
2. QC specialist reports are to be prepared, signed and dated by the QC specialists and shall be attached to the Contractor Quality Control Report prepared for the same day.

I. Testing Plan and Log.

1. As tests are performed, the QC Manager shall record on the "Testing Plan and Log" the date the test was conducted, the date the test results were forwarded to the Contracting Officer, remarks and acknowledgement that an accredited or Contracting Officer approved testing laboratory was used.
2. Attach a copy of the updated "Testing Plan and Log" to the last daily Contractor Quality Control Report of each month.
3. Testing Plan and Log may be an expanded version of the Testing and Inspection Schedule.

J. Rework Items List.

1. The QC Manager shall maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected.
2. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the last daily Contractor Quality Control Report of each month.
3. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

K. Record Documents.

1. The QC Manager is required to ensure the record documents including Record Drawings and Record Specifications required by Division 1 Section "Closeout Procedures" and Division 1 Section "Project Record Documentation" are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings.
2. Ensure each deviation has been identified with the appropriate modifying documentation (e. g. PC No., Modification No., Request for Information No., etc.).
3. The QC Manager , shall initial each deviation and each revision.
4. Upon completion of work, the QC Manager shall furnish a certificate attesting to the accuracy of the Record Documents prior to submission to the Contracting Officer.

L. Report Forms. The Project Officer will make available sample formats for the various reports required by this contract which will meet the requirements of this specification. While use of these specific formats are not required, any other format used shall contain the same information.

M. Notification of Non-Compliance. The Contracting Officer will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or

refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time for excess costs or damages by the Contractor.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 014500

# SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities and security and protection. All costs associated with such work and subsequent removal shall be the sole burden of the Contractor. The Contractor is responsible for any repairs required to restore City of Rockville property to original or better condition if so damaged by temporary construction.

B. Temporary utilities include but are not limited to the following:

1. Temporary water service and distribution.
2. Temporary electric power and lighting.
3. Temporary heat and ventilation.

C. Support facilities include but are not limited to the following:

1. Construction Signage.
2. Waste disposal services.
3. Other construction aids and miscellaneous services and facilities.

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

1. Security enclosure and lockup.
2. Barricades, warning signs, and lights.

E. Provide temporary facilities and controls required for construction activities except, if any, for facilities and controls indicated as existing or provided by City of Rockville or others.

F. City of Rockville will not be responsible for any cost or use charges for temporary facilities or utilities as a basis of claims for Change Orders.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Quality Requirements"

5. Division 1 Section "References"
6. Division 1 Section "Construction Quality Control"
7. Division 1 Section "Safety and Health"
8. Division 1 Section "Execution Requirements"
9. Division 1 Section "Cutting and Patching"
10. Division 1 Section "Selective Demolition"
11. Division 1 Section "Closeout Procedures"
12. Division 1 Section "Project Record Documents"
13. Division 1 Section "Operation and Maintenance Documentation"
14. Division 1 Section "Demonstration and Training"

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by the Project Officer, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 UTILITY USE CHARGES

A. The Contractor shall provide all temporary utilities which are used and required by all entities engaged in construction activities at the Project site.

B. The point at which the City of Rockville will deliver such utilities and the quantity available are as directed by the Project Officer. The Contractor shall pay all costs incurred in connecting, converting and transferring City of Rockville utilities to the work. The Contractor shall make connections, including providing backflow preventing devices on connections to domestic water lines, shall provide transformers, and shall make all disconnections.

C. Water Service: The Contractor may use reasonable amounts of water from the existing City of Rockville water system, without metering and without payment of use charges.

D. Sewer Service: The Contractor may use the existing City of Rockville sewer system, without payment of use charges.

E. Electric Power Service: The Contractor may use reasonable amounts of electric power from the existing City of Rockville electric power distribution system, without metering and without payment of use charges.

1.5 SUBMITTALS

A. Reports: Submit reports of tests, inspections, meter readings and similar procedures for temporary utilities.

B. Implementation and Termination Schedule: Within 15 calendar days after the date established for the submittal of the Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility. If implementation or termination will interrupt utility service outside the limit of construction include milestones for submission of outage requests in the schedule. Coordinate schedule with requirements for the Utility Service Interruption Plan contained in Division 1 Section "Project Management and Coordination."

C. Shop Drawings: Submit layout indicating location of all fencing, gate locations, and size and type of fencing and gates

D. State of Maryland Stormwater Management requirements: Submit 2 signed copies of the proposed Sequence of Construction plan sent by the Contractor to the State of Maryland to the Project Officer. Submit 1 copy of the State of Maryland approval to the Contracting Officer.

E. Integrated Pest Management (IPM) Program. Within 14 calendar days after the date of Notice to Proceed, submit the following for approval:

1. IPM Service Plan. The plan shall include a description of the implemented pest management program during all phases of construction. Include at a minimum, the following:

    a. Grounds and ground cover for task orders which involve any exterior work.
    b. Solid waste management.
    c. Site (interior and exterior) sanitation.
    d. Other factors that contribute to pest infestation.
    e. Regularly scheduled monitoring and survey program for the identification and control of insect and rodent pests.

2. Identification of the IPM Quality Control supervisor. Include a copy of the qualification certificate and resume.
3. Copy of the Commercial Pesticide Applicators Business License.
4. Copy of Pesticide Applicators Certificates and resume for all personnel assigned to each task order.

## 1.6 QUALITY REQUIREMENTS

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

1. Building code requirements.
2. Health and Safety regulations.
3. Utility company regulations.
4. Police, fire department and rescue squad rules.
5. Environmental protection regulations.
6. NFPA 241 "Standards for Safeguarding Construction, Alterations and Demolition Operations".
7. ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition".
8. NECA Electrical Design Library "Temporary Electrical Facilities", and NEMA, NECA and UL standards and regulations for temporary electric service. Install service in accordance with NFPA 70, "National Electric Code."
9. Maryland Pesticide Applicators Laws and Regulations.

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

1.7 PROJECT CONDITIONS

A. Install, operate, maintain and protect temporary facilities and controls.

1. Keep temporary services and facilities clean and neat in appearance.
2. Operate temporary services in a safe and efficient manner.
3. Relocate temporary services and facilities as needed as work progresses.
4. Do not overload temporary services and facilities or permit them to interfere with progress.
5. Provide necessary fire prevention measures.
6. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on-site.

B. Prepare a schedule indicating dates for implementation and termination of each temporary utility and incorporate into the project schedule. At the earliest feasible time, when acceptable to the Project Officer, change over from temporary services to use of permanent services and remove temporary facilities when no longer needed.

C. Temporary Use of Permanent Facilities: Contractor shall assume responsibility for the operation, maintenance and protection of each permanent service during its use as a construction facility prior to acceptance by NIH.

D. Existing Equipment and Items: Cover or otherwise protect and provide security for existing equipment and other items that are to remain in place, to prevent soiling, damage and loss.

1. Temporarily move equipment and other items that interfere with the performance of required work. Upon completion of the work, return the equipment and items to their original location and installation condition.
2. Store equipment and other items that have been temporarily removed. Upon reinstallation, clean and, if damaged, repair or replace equipment and items to match their condition prior to removal.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new or undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

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

C. Water: Potable and approved by local health authorities.

D. Wood: Lumber complying with DOC PS 20 and applicable grading rules of an inspection agency certified by ALSC's Board of Review for specific use. Provide preservative treated lumber where partially or fully in contact with the earth, concrete or masonry.

E. Sign, Directory and Other Graphic Panel Materials: Unless otherwise indicated, products shall comply as follows:

1. Panels: Exterior type Grade B-B high density concrete-form-overlay plywood.
2. Paint: Exterior primer and exterior grade alkyd gloss enamel top coat.

F. Safety Barrier and Covered Walkway Materials: Unless otherwise indicated, products shall comply as follows.

1. Panels: Minimum 5/8 inch (16 mm) thick exterior plywood.
2. Paint: Exterior primer and exterior grade acrylic-latex emulsion top coat.

G. Open-Mesh Fencing: Minimum 0.12 inch (3 mm) thick galvanized 2 inch (50 mm) chainlink fabric fencing with galvanized steel pipe posts, 1-1/2 inches (38 mm) inside diameter for line posts and 2-1/2 inches (64 mm) inside diameter for corner posts. At the discretion of the Project Officer, steel posts and vinyl "snow fencing", or removable chain link fencing, may be provided on a temporary basis for work areas adjacent to the project site.

1. Fence height: Minimum 8 feet (2.5 m).
2. Top Protection: Galvanized barbed-wire top strand.

H. Open-Mesh fencing with Vinyl Slats: Minimum 0.12 inch (3 mm) thick galvanized 2 inch (50 mm) chainlink fabric fencing with galvanized steel pipe posts, 1-1/2 inches (38 mm) inside diameter for line posts and 2-1/2 inches (64 mm) inside diameter for corner posts.

1. Fence height: Minimum 8 feet (2.5 m).
2. Top Protection: Galvanized barbed-wire top strand.
3. Vinyl Slats: Dark Brown, installed vertically.

I. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."

J. Gypsum Board: Minimum 1/2 inch (12.7 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

K. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

L. Job-Built Temporary Office, Shop and Shed Materials: Unless otherwise indicated, products shall comply with the following:

1. Framing, Sheathing and Siding: UL labeled fire-treated lumber and plywood.
2. Roofing: UL Class A standard weight asphalt shingles, or UL Class C mineral surfaced roll roofing.
3. Exterior Paint: Exterior primer and exterior grade acrylic-latex emulsion top coat as specified in Division 9 Section "Painting".
4. Interior Wall Panels for Offices: Gypsum board as specified above.
5. Interior Paint for Offices: 2 coats interior latex-flat wall paint as specified in Division 9 Section "Painting."

2.2 EQUIPMENT

A. General: Provide new or undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended. All equipment must meet applicable local codes governing its use.

B. Water Hoses: 3/4 inch (19 mm) heavy duty abrasion-resistant flexible rubber hoses, 100 feet (30 m) long with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

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

D. Electric Power Cords: Grounded extension cords.

1. Provide hard-service cords where exposed to abrasion or traffic.
2. Provide waterproof connectors to connect separate lengths of electric cords where single lengths will not reach areas of construction activity.
3. Do not exceed safe length-voltage ratio.

E. Lamps and Light Fixtures: General service incandescent lamps of wattage required for adequate illumination.

1. Provide guard cages or tempered glass enclosures where exposed to breakage.
2. Provide exterior fixtures where exposed to moisture.

F. Unless the Project Officer authorizes the use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel consumed as appropriate for the space being heated.

G. Temporary Offices: Prefabricated or mobile units or similar job-built enclosures, inclusive of but not limited to lockable entrances, operable windows, serviceable finishes, heating and air conditioning, electric power and lighting, and foundations adequate for the loads.

H. Self-Contained Toilet Units: Temporary single-occupant toilet units of the chemical, aerated recirculation, or combustion type for use by all construction personnel. Units shall be properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

I. Fire Extinguishers: Hand-carried portable UL-rated fire extinguishers.

1. Class A extinguishers for temporary offices and similar spaces.
2. Class ABC dry chemical extinguishers or a combination of extinguishers of NFPA recommended classes for the exposures in other locations.
3. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities.

B. Locate facilities where they will serve the project adequately and result in minimum interference with performance of construction activities. Maintain, relocate and modify facilities as required during the construction period. Contractor is responsible for scheduling in order to provide each facility ready for use when needed to avoid delay. Temporary facilities shall remain in place until no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: The Contractor shall connect to existing services.

1. Notification to interrupt any building service and/or utility service shall be requested in writing to the Project Officer a minimum of 15 working days prior to the desired date of interruption. CITY OF ROCKVILLEreserves the right to refuse any request and to schedule such interruption on a later or earlier date and time which is mutually agreeable to CITY OF ROCKVILLEand the Contractor.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring in temporary utilities to the site where CITY OF ROCKVILLEeasements are not available for that purpose.

B. Water Service: Install temporary water service and distribution piping of sizes and pressures adequate for construction needs until permanent water service is in use. Sterilize water piping prior to use.

1. Provide rubber hoses as necessary to serve Project site.
2. As soon as water is required at each level, extend service to form a temporary water- and fire-protection standpipe. Provide distribution piping. Space outlets so water can be reached with a 100-foot (30-m) hose. Provide one hose at each outlet.
3. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
4. Provide backflow preventors at connections to existing water service.
5. Provide pumps to supply a minimum of 30-psi (200-kPa) static pressure at highest point. Equip pumps with surge and storage tanks and automatic controls to supply water uniformly at reasonable pressures.

C. Electric Power Service: Provide weatherproof, grounded, electric power service and distribution system of sufficient size, capacity and power characteristics for construction needs. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters and main distribution switch gear.

1. Make connections at location(s) designated by the Project Officer.
2. Feeder and branch wiring with area distribution boxes shall be located so that power is available throughout the project site by use of power cords.

3. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
4. Install all electrical devices, both temporary and permanent, in accordance with the National Electric Code.
5. Provide 4-gang outlets, spaced so 100-foot (30-m) extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

D. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions at all times.

1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system.
2. Install temporary lighting in accordance with the National Electric Code.

E. Heating and Cooling: Provide temporary heat and cooling required for the construction activities in new and existing spaces, including but not limited to curing or drying completed installations and protecting construction from adverse effects of low temperatures and/or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.

1. Maintain a minimum temperature of 50 degrees F (10 degrees C) in permanently enclosed portions of building for normal construction activities, and 65 degrees F (18.3 degrees C) for finishing activities and areas where finished Work has been installed.
2. Provide temporary heating and cooling for occupied CITY OF ROCKVILLEspaces where construction activities preclude the existing heating and cooling systems from maintaining normal operating temperatures.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Heating Facilities: Except where CITY OF ROCKVILLEauthorizes use of the permanent system, provide vented self-contained, LP-gas or fuel oil heaters with individual space thermostatic control. Do not use gasoline-burning space heaters, open flame or salamander-type heating units. All temporary heating and cooling systems shall be operated in accordance with the manufacturer's instructions.

H. Telephone Service: The Contractor shall provide temporary telephone service within the contract area only if requested in writing by the Project Officer. If required, telephone service shall be removed prior to contract completion. The Contractor shall pay all costs of service. Installation and removal of service shall be subject to the approval of the Project Officer.

I. Sanitary and Drinking Water Facilities: Provide temporary toilets, wash facilities and drinking water fixtures in compliance with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.

2. Toilets: Use of existing CITY OF ROCKVILLEtoilet facilities will be permitted. Clean and maintain facilities in a condition acceptable to the Contracting Officer and, at completion of construction, restore facilities to condition prevalent at the time of initial use.
3. Toilets: Install separate self-contained toilet units for male and female personnel. Shield toilets to ensure privacy.
4. Toilets: Install temporary toilet facilities connected to local water and sanitary lines. Provide lavatories, mirrors, urinals, and water closets. Provide only potable-water connections. Provide individual compartments for water closets. Provide suitable enclosure with nonabsorbent sanitary finish materials and adequate heat, ventilation, and lighting.
5. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Supply cleaning compounds appropriate for each type of material handled.

    a. Dispose of drainage through proper connections to local sanitary lines.
    b. Supply cleaning compounds appropriate for each condition.
    c. Include safety showers, eyewash fountains and similar facilities for the convenience, safety and sanitation of personnel.

6. Drinking-Water Fixtures: Install drinking-water fountains connected to the existing water service where indicated.
7. Drinking -Water Facilities: Provide bottled-water, drinking-water units.

    a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 degrees F (7.2 to 12.7 degrees C).

J. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers can not be used, provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

K. Sewers and Drainage: Where sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways.
2. Connect temporary sewers as directed by the Project Officer and sewer utility officials.
3. Maintain temporary sewers and facilities in a clean, sanitary condition. Following use, promptly restore sewers and facilities to normal conditions.

L. Erosion and Sediment Control: The Contractor shall comply with all provisions of the Maryland Department of the Environment requirements for Storm Water Management, including all required submittals to the state.

## 3.3 SUPPORT FACILITIES INSTALLATION

A. Construction Signage and Other Temporary Signs: Locate signs where indicated or directed by the Project Officer to inform the public and instruct persons seeking entrance to the project. Support exterior signs on posts or framing of steel or preservative-treated wood. All signage shall conform to the standards set forth in the DCAB Guide for Construction Site Signage.

1. Exterior Construction Site Sign: All exterior construction sites shall have at least one and not more than three site signs. Signs will be provided by the Project Officer for installation by the Contractor. The Contractor shall provide a written request to the Project Officer 21 calendar days before work starts of his need for exterior construction site signs. The signs for smaller projects and those with a construction duration of less than six months will be 3' x 4'.
2. Interior Construction Sign:

    a. All interior construction areas shall have a minimum of 2 interior construction information signs. The signs will be provided by the Project Officer for installation by the Contractor. The Contractor shall provide a written request to the Project Officer 21 calendar days before work starts of his need for the Interior Construction Signs. The signs shall be placed on site not less than 14 calendar days prior to the start of construction. The signs will be either 8 1/2" x 11" or 11" x 17".
    b. Construction in Progress Door Hanger Signs: Door hanger signs shall be hung on the door knobs on the outside of the entrance door(s) of the room(s) in which construction is being performed. The signs will be provided by the Project Officer for installation by the Contractor. The Contractor shall provide a written request to the Project Officer 21 calendar days before work starts of his need for the Construction in Progress signs. Include the number of signs needed. Door hanger signs shall be in place not less than 7 calendar days prior to construction. The signs are 100 x 225 mm paper.
    c. Construction in Your Neighborhood Door Hanger Signs: Door hanger signs shall be hung on the door knobs on the outside of the adjacent corridors entrance door(s) on floors above and below the room(s) that may be affected by construction. The signs will be provided by the Project Officer for installation by the Contractor. The Contractor shall provide a written request to the Project Officer 21 calendar days before work starts of his need for the Construction in Progress signs. Include the number of signs needed. Door hanger signs shall be in place not less than 7 calendar days prior to construction. The signs are 100 x 225mm paper.

3. Hard Hat Area Sign: The entire work area under this contract is designated as a Hard Hat Area. The Contractor shall assure that all contractor personnel, vendors, and visitors utilize hard hats within the project area. The Contractor shall provide hard hat area signs at each entrance to the Project site for all construction work performed under this contract. Sign shall be approximately 450 x 600 mm, with minimum 50 mm tall lettering as follows:

**HARD HAT AREA**
**AUTHORIZED PERSONNEL ONLY**
**ALL PERSONNEL ENTERING THIS**
**CONSTRUCTION SITE SHALL BE EQUIPPED**
**WITH PROPER SAFETY ATTIRE**

4. Asbestos Abatement Sign: The Contractor shall provide asbestos demolition signs during any asbestos demolition and removal activities in accordance with the requirements in Division 2 Section "Removal of Asbestos Material."
5. Other Temporary Signs: The Contractor shall provide all signage for temporary construction, closing of roads, parking lots, sidewalks or other areas. Signage shall conform to the standards set forth in the DCAB Guide for Construction Site Signage. A copy of the guide may be obtained fro the Project Officer.
6. Do not permit installation of unauthorized signs.

B. Waste Disposal Facilities:

1. See Division 1 Section "Use, Handling, Storage, Transporting, Accumulation and Disposal of CITY OF ROCKVILLEControlled Material" for specific requirements related to waste disposal.
2. Provide waste-collection containers in sizes adequate to handle waste from construction operations.
3. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

C. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.

D. Temporary Elevator Usage: Refer to Division 14 Sections for temporary use of new elevators.

E. Existing Elevator Usage: See Division 1 Section "Work Restrictions" for additional requirements on use of existing elevators.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

F. Existing Stair Usage: Use of existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to NIH. At Substantial Completion, restore stairs to condition existing before initial use.

1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

G. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Enforce requirements strictly and dispose of material lawfully.

1. Comply with NFPA 241 for removal of combustible waste material and debris.
2. Do not hold waste materials more than 7 days during periods when the ambient temperature remains continuously less than 80 degF (27 degC), or more than 3 days when the temperature exceeds or is expected to rise above 80 degF (27 degC).
3. Handle and properly containerize hazardous, dangerous or unsanitary waste materials separately from other waste.

## 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.

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

C. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

1. Storage: Provide a secure lockup for valuable stored materials and equipment.
2. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

D. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controlled fire losses. Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations".

1. Comply with NFPA 10 "Standard for Portable Fire Extinguishers". Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.

    a. Field Offices: Class A stored-pressure water-type extinguishers.
    b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.

2. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each access route exit or entrance.
3. Store combustible materials in containers in fire-safe locations.
4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities and access routes. Prohibit smoking in hazardous fire-exposure areas.
5. Provide supervision of welding operations, combustion-type temporary heating units and other sources of fire ignition.
6. All required standpipe systems and sprinkler systems shall be maintained in conformity with the progress of building activity in such a manner that they are always in working order.
7. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
8. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
9. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

E. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facilities, including connected services, and place into operation and use. Instruct key personnel in the use of the facilities.

F. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress or completed, from exposure, inclement weather, other construction operations and similar conditions.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions or unacceptable effects.
2. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
3. Vertical Openings: Close openings of 25 sq. ft. (2.3 sq. m.) or less with plywood or similar materials.
4. Horizontal Openings: Close openings through floor or roof decks and other horizontal surfaces with load-bearing wood-framed construction.
5. Where enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use UL labeled fire-retardant-treated wood and plywood for framing and sheathing.

G. Safety: The contractor shall protect the integrity of any installed safety systems or personnel safety devices. If entrance into systems serving safety devices is required, the Contractor shall obtain prior approval from the Project Officer. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish contract requirements, the Contractor shall provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and shall obtain prior written approval from the Project Officer.

## 3.5 OPERATION, TERMINATION, AND REMOVAL

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

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

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect underground lines from damage during excavation operations.

C. Temporary Facility Changeover: Except for using permanent fire protection facilities as soon as available, do not change over from temporary protection facilities until authorized by the Project Officer.

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

1. Materials and facilities that constitute temporary facilities are the property of the Contractor, except City of Rockville reserves the right to take possession of project identification signs.

2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for subsoil or fill in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, in accordance with the requirements of the governing authority.

END OF SECTION 015000

# SECTION 015950 - SAFETY AND HEALTH

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

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

1. 29 CFR, Part 1910: Occupational Safety and Health Administration (OSHA) General Industry and Health Standards.
2. 29 CFR, Part 1926: OSHA Construction Industry Standards.
3. 40 CFR, Part 61: National Emission Standards for Hazardous Air Pollutants.
4. 40 CFR, Part 261: Environmental Protection Agency (EPA) Characteristics of Hazardous Waste.
5. 40 CFR, Part 761, EPA Polychlorinated Biphenyls (PCBs), Manufacturing, Processing, Distribution in Commerce and Use Prohibitions.
6. 40 CFR, Part 763: EPA Asbestos.
7. Federal Standard 313A: Material Safety Data Sheets, Preparation and the Submission of.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "References"
7. Division 1 Section "Construction Quality Control"
8. Division 1 Section "Temporary Facilities and Controls"
9. Division 1 Section "Safety and Health"
10. Division 1 Section "Product Requirements"
11. Division 1 Section "Execution Requirements"
12. Division 1 Section "Cutting and Patching"
13. Division 1 Section "Selective Demolition"
14. Division 1 Section "Closeout Procedures"
15. Division 1 Section "Operation and Maintenance Documentation"

16. Division 1 Section "Project Record Documents"
17. Division 1 Section "Demonstration and Training"
18. Division 13 Section "Removal of Asbestos Materials"

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

1. Asbestos may be found in spray-on fireproofing, insulation, boiler lagging, pipe coverings and other materials. See Division 13 Section "Removal of Asbestos Materials" for removal requirements.
2. PCBs may be contained in transformers, capacitors, voltage regulators, oil switches, mechanical insulation and other materials.

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

## 1.3 SUBMITTALS

A. Contractor's Safety and Health Program: The contractor shall submit a Site Specific Safety and Health Program which includes a Site Specific Safety and Health Plan and a copy of the Company Safety and Health Plan to the Contracting Officer within 14 calendar days of the Notice to Proceed or before work commences on the project site, whichever is earlier.

1. City of Rockville will review the submitted Safety and Health Plans for general conformance to the requirements of the Contract Documents.
2. City of Rockville will not make any judgment as to the adequacy of the submitted plans with respect to federal, state, and local safety laws and safety regulations. If the plans are found to meet the requirements of the Contract Documents, City of Rockville will acknowledge that the Contractor has provided copies of the plans and accept them as meeting the contract requirement for the Contractor to provide copies of his safety program.
3. City of Rockville will not approve any contractor Safety and Health Plan. Safety is the Contractor's responsibility under the current laws and governing regulation.
4. Submission of the Safety and Health Plans to City of Rockville does not relieve the contractor of any safety responsibility.
5. Specific content requirements for the Contractor's Safety and Health Program are included in this section.

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

## 1.4 PRECONSTRUCTION SAFETY MEETING

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

1. The Contractor's Safety and Health Program shall be reviewed, and implementation of safety and health provisions pertinent to the Work shall be discussed.
2. The Contractor shall be prepared to discuss, in detail, the Contractor's site specific Safety and Health Plan including measures intended to control any unsafe or unhealthy conditions associated with the work to be performed under the contract.
3. This meeting may be held in conjunction with the preconstruction conference, if so directed by the Contracting Officer. The conduct of this meeting is not contingent upon a general preconstruction meeting.
4. The level of detail for the safety meeting is dependent upon the nature of the work and the potential inherent hazards.
5. The Contractor shall advise the Contracting Officer of any special safety restrictions he has established so that City of Rockville personnel can be notified of these restrictions.
6. No later than 3 calendar days after the Preconstruction Safety Meeting, the Contractor shall distribute minutes of the meeting to each party present and to other concerned parties, including the Contracting Officer.

## 1.5 COMPLIANCE WITH REGULATIONS

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

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

C. Contractor Responsibility: The Contractor shall obtain all required permits for work to be performed. The Contractor shall assume full responsibility and liability for compliance with all applicable codes, standards and regulations pertaining to the health and safety of personnel during execution of the Work, and shall hold the Government harmless for any action on the Contractor's part, or that of the Contractor's employees or subcontractors, that results in illness, injury or death.

## 1.6 ELECTRICAL

A. The Contractor shall appoint an individual responsible for the electrical safety of each work team to restrict entry to dangerous locations to those authorized by him jointly with NIH.

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

## 1.7 GAS PROTECTION

A. The Contractor shall have one or more employees properly trained in operation of gas testing equipment and formally qualified as gas inspectors who shall be on duty during times workmen are in confined spaces. Their primary functions shall be to test for gas and operate testing equipment. Unless equipment of constant supervisory type with automatic alarm is employed,

gas tests shall be made at least every 2 hours or more often when character of ground or experience indicates gas may be encountered. A gas test shall be made before workmen are permitted to enter the excavation after an idle period exceeding one-half hour.

B. Readings shall be permanently recorded daily, indicating the concentration of gas, number and location of drilled piers, point of test, date, and time of test.

C. Special requirements, coordination, and precautions will apply to areas that contain a hazardous atmosphere or, by virtue of their use or physical character, may be oxygen deficient. A check by CITY OF ROCKVILLE is required prior to entering areas that contain hazardous or oxygen-deficient atmospheres. Surveillance and monitoring shall be required in these types of work spaces by both Contractor and Government personnel.

## 1.8 MATERIAL DELIVERIE

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

## 1.9 HAZARDOUS MATERIALS

A. The Contractor shall bring to the attention of the Contracting Officer, or the Contracting Officer's authorized representative, any material encountered during execution of the Work that the Contractor suspects is hazardous. The Contracting Officer shall determine whether the Contractor shall perform tests to determine if the material is hazardous. If the suspected material is leaking or spilling from its location the contractor is to contact the CITY OF ROCKVILLE Fire Department immediately.

B. If the Contracting Officer directs the Contractor to perform tests on suspected hazardous materials and the material is found to be hazardous, or if the material is found to be hazardous without Contractor testing, and/or if additional protective measures are required, a change to the Contract price may be provided, subject to the applicable provisions of the Contract.

## 1.10 ADDITIONAL CITY OF ROCKVILLE SAFETY REQUIREMENTS

A. The Contractor shall comply with all established CITY OF ROCKVILLE Standards, Codes and Regulations and obtain appropriate approvals from the CITY OF ROCKVILLE Divisions of Safety, Health, Security and Fire Protection.

B. No work shall be performed in any area occupied by the public or CITY OF ROCKVILLE employees unless approved by the Project Officer.

C. In the event of an emergency in a construction site that has been secured with a chain, the CITY OF ROCKVILLE Fire Department will cut the chain to gain entry. The Contractor shall be responsible for a new chain.

D. Accident Treatment and Records: The Contractor shall post emergency first aid information and CITY OF ROCKVILLE emergency Telephone Numbers at the work site.

E. Safety Clearance Procedures (Lockout/Tagout Tag System). The following Lockout/Tagout procedures will be followed unless more stringent procedures are required by current laws and regulations. The following procedures do not relieve the contractor from any more stringent requirements of the applicable codes and regulations. The safety of contractor and CITY OF ROCKVILLE personnel in areas impacted by the project remains the contractor's responsibility during construction.

1. Lockout/Tagout procedures shall be in accordance with OSHA 29 CFR 1910 and OSHA 29 CFR 1926. Lockout/Tagout procedures shall be included in the Contractor's Safety and Health Plan.
2. Contractor shall ensure that each employee is familiar with and complies with these procedures.
3. The Project Officer will, at the Contractor's request, apply lockouttagout tags and take other actions that, because of experience and knowledge, are known to be necessary to make the particular CITY OF ROCKVILLE equipment safe to work on.
4. No person, regardless of position or authority, shall operate any switch, valve, or equipment that has an official lockout/tagout tag attached to it, nor shall such tag be removed except as provided in this section.
5. No person shall work on any equipment that requires a lockout/tagout tag unless he, his immediate supervisor, project leader, or a subordinate has in his possession the keys to the required lockout/tagout tags.
6. When work is to be performed on electrical circuits, the work shall be performed only by qualified personnel following the required safety procedures.
7. A Contractor's supervisor who is required to enter an area protected by a lockout/tagout tag will be considered a member of the protected group provided he notifies the holder of the tag stub each time he enters and departs from the protected area.
8. Identification markings on building light and power distribution circuit breakers shall not be relied on for establishing safe work conditions.
9. Before clearance will be given on any equipment other than electrical (generally referred to as mechanical apparatus), the apparatus, valves, or systems shall be secured in a passive condition with the appropriate vents, pins, and locks.
10. Pressurized or vacuum systems shall be vented to relieve differential pressure completely.
11. Vent valves shall be lockout/tagout tagged open during the course of the work.
12. Where dangerous gas or fluid systems are involved, or in areas where the environment may be oxygen deficient, system or areas shall be purged, ventilated, or otherwise made safe prior to entry. See paragraph "Gas Protection."
13. Tag Placement

    a. Lockout/tagout tags shall be completed in accordance with the regulations printed on the back thereof and attached to any device which, if operated, could cause an unsafe condition to exist.
    b. If more than one group is to work on any circuit or equipment, the employee in charge of each group shall have a separate set of lockout/tagout tags completed and properly attached and locked.

c. When it is required that certain CITY OF ROCKVILLE owned and operated equipment be tagged, the CITY OF ROCKVILLE will review the characteristics of the various systems involved that affect the safety of the operations and the work to be done; take the necessary actions, including voltage and pressure checks, grounding, and venting, to make the system and equipment safe to work on; and apply such lockout/tagout tags to those switches, valves, vents, or other mechanical devices needed to preserve the safety provided. This operation is referred to as "Providing Safety Clearance."

14. Tag Removal

a. Lockout/tagout tags shall be removed only by those persons who initiated the lockout/tagout tag and who retain possession of the keys. Otherwise, lockout/tagout tags may be removed only with the authorization of the Project Officer.

1.11 PERSONNEL PROTECTIVE EQUIPMENT

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

PART 2 - PRODUCTS

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

A. Designation of Safety Competent Person

B. Occupational Noise Exposure.

C. Fall Protection.

D. Personnel Protective Equipment.

E. Control of Hazardous Energy.

F. Hazardous Materials Waste Management Plan (draft if final plan has not been accepted)

G. Electrical Safety Related Work Practices.

H. Lead.

I. Asbestos.

J. Respirator Protection.

K. Confined spaces.

L. Emergency evacuation and reporting

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

2.3 Permits: If hazardous materials are disposed of off-site, submit copies of shipping manifests and permits from applicable federal, state or local authorities and disposal facilities, and submit certificates that the material has been disposed of in accordance with regulations as required in Division 1 Section "Use, Handling, Storage, Transporting, Accumulation and Disposal of CITY OF ROCKVILLE Controlled Material".

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

A. Gas Test Reports: Submit copies of daily log of gas tests

PART 3 - EXECUTION

3.1 EMERGENCY SUSPENSION OF WORK

A. When the Contractor is notified by the Contracting Officer, or the Project Officer, of non-compliance with the safety or health provisions of the Contract, the Contractor shall immediately, unless otherwise instructed, correct the unsafe or unhealthy condition.

1. If the Contractor fails to comply promptly, all or part of the work will be stopped by notice from the Contracting Officer.
2. When, in the opinion of and by notice given by the Contracting Officer, satisfactory corrective action has been taken by the Contractor, work shall resume.
3. The Contractor shall not be allowed any extension of time or compensation for damages in connection with a work stoppage for an unsafe or unhealthy condition.

3.2 PROTECTION OF PERSONNEL

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

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

1. Provide traffic barricades and traffic control signage where construction activities occur in vehicular areas.
2. Corridors, aisles, stairways, doors and exit ways shall not be obstructed or used in a manner to encroach upon routes of ingress or egress utilized by the public or occupants, or to present an unsafe or unhealthy condition to the public or occupants.
3. Store, position and use equipment, tools, materials, scraps and trash in a manner that does not present a hazard to the public or occupants by accidental shifting, ignition or other hazardous activity.
4. Store and transport refuse and debris in a manner to prevent unsafe and unhealthy conditions for the public and occupants. Cover refuse containers, and remove refuse on a frequent regular basis acceptable to the Contracting Officer. Use tarpaulins or other means to prevent loose transported materials from dropping from trucks.

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

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

## 3.3 ENVIRONMENTAL PROTECTION

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

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

## 3.4 HAZARDOUS MATERIALS

A. Requirements for hazardous Materials are contained in Division 1 Section "Use, Handling, Storage, Transporting, Accumulation and Disposal of CITY OF ROCKVILLE Controlled Materials."

END OF SECTION 015950

# SECTION 016000 - PRODUCT REQUIREMENTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project, including manufacturers' standard warranties on products and special warranties.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Alternates"
3. Division 1 Section "Options"
4. Division 1 Section "Work Restrictions"
5. Division 1 Section "Project Management and Coordination"
6. Division 1 Section "Submittal Procedures"
7. Division 1 Section "Quality Requirements"
8. Division 1 Section "References"
9. Division 1 Section "Construction Quality Control"
10. Division 1 Section "Temporary Facilities and Controls"
11. Division 1 Section "Safety and Health"
12. Division 1 Section "Execution Requirements"
13. Division 1 Section "Cutting and Patching"
14. Division 1 Section "Selective Demolition"
15. Division 1 Section "Closeout Procedures"
16. Division 1 Section "Project Record Documents"
17. Division 1 Section "Operation and Maintenance Documentation"

### 1.3 DEFINITIONS

A. The following definitions are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms that are self-explanatory and have well-recognized meanings in the construction industry.

B. "Products" are items purchased for incorporation in the work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and other terms of similar intent.

1. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

1.4 QUALITY REQUIREMENTS

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source. Equipment of the same function shall be manufactured by the same entity, unless otherwise indicated.

B. Compatibility of Options: When the contractor is given the option of selecting between 2 or more products for use on the project, the product selected shall be compatible with products previously selected, even if previously selected products were also options. Total compatibility among options is not assured by limitations within the Contract Documents, but must be provided by the contractor. Compatibility is a basic general requirement of product/material selections.

C. Manufacturers: Specific manufacturers and models of equipment and materials sited throughout the contract documents establish the desired performance and minimum quality of equipment and materials. The contractor may propose substitute manufacturers of equipment and materials unless specifically indicated otherwise. The contractor shall bear any cost related to the proposed substitution in all respects including but not limited to cost for establishing equality of the specified product and any coincidental construction costs directly related to the substitution. Rejection by the Project Officer does not allow for additional compensation.

D. Labels and nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate nameplate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information:

    a. Name of product and manufacturer.
    b. Model and serial numbers.
    c. Operating data such as capacity, speed and ratings and similar essential operating data.

3. Protection: Labels and nameplates shall be protected from defacement and other damage during the remainder of the work.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule product delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
2. Deliveries shall be addressed to the contractor and be scheduled to arrive at the worksite during normal working hours, unless otherwise authorized in writing by the Contracting Officer. The contractor shall take receipt of all deliveries. City of Rockville will not accept delivery of materials.
3. Coordinate delivery with installation time to provide minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
4. Deliver products to the site in an undamaged condition, in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
5. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
6. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
7. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.
8. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
9. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
10. Protect stored products from damage.

B. If, in the opinion of the Contracting Officer, delivered or stored items are considered damaged or defective, they shall be replaced at no additional cost to the City of Rockville.

C. Deliveries which require cranes shall be scheduled with the Project Officer a minimum of 15 working days prior to expected delivery.

PART 2 - PRODUCTS

2.1 PRODUCT COMPLIANCE AND REQUIREMENTS

A. General: The compliance requirements, for individual products as indicated in the Contract Documents, are multiple in nature and may include generic, descriptive, performance, prescriptive, compliance with standards, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with.

B. Provide products complete with accessories, trim, finish, safety guards, devices and other items needed for a complete installation and the intended use and effect.

C. Standard Products: Products shall be essentially the standard catalogued products of manufacturers regularly engaged in production of such products and shall be the manufacturer's latest standard design that complies with the specification requirements.

Equipment shall essentially duplicate items that have been in satisfactory commercial and industrial use at least two years, or more if otherwise specified, prior to award of the contract or in lieu thereof shall have been used and operated in a test installation which, in the opinion of the Project Officer, duplicate its field performance for the same period of time. The Project Officer reserves the right to require the Contractor to submit evidence to this effect for his approval. When two or more units of the same class of equipment are required, these units shall be the product of a single manufacturer; however, the component parts of the system need not be the products of the same manufacturer.

D. Continued Availability: Products which, by nature of their application, are likely to be needed at a later date for maintenance and repair or replacement work, shall be current models for which replacement parts are available. Where specified and available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

E. Product Selection Procedures: Contractor's options for selecting products are limited by the Contract Document requirements including the Construction Contract Clauses, and governing regulations, and are not controlled by industry traditions or procedures experienced by the Contractor on previous construction projects. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying:

1. Where the Specifications lists manufacturers' names or product designations, the Contractor may provide any product that complies with the requirements, subject to the following conditions:

    a. Manufacturers: Where a Specification paragraph or subparagraph titled "Manufacturers" lists manufacturers' names, provide a compliant product by one of the manufacturers named, or request a Substitution of another compliant product by another manufacturer.
    b. Available Manufacturers: Where a Specification paragraph or subparagraph titled "Available Manufacturers" lists manufacturers' names, provide a compliant product by one of the manufacturers named or by another manufacturer.
    c. Products: Where a Specification paragraph or subparagraph titled "Products" lists product designations, provide one of the products designated, or request a Substitution of another compliant product.
    d. Available Products: Where a Specification paragraph or subparagraph titled "Available Products" lists product designations, provide one of the products designated or another compliant product.
    e. Basis of Design Product: Where a Specification paragraph or subparagraph titled "Basis of Design Product" includes a product designation, provide the product designated, or request a substitution of another compliant product by one of the other manufacturers named, if any, or by another manufacturer.

2. Descriptive Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
3. Performance Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
4. Prescriptive Requirements: Where Specifications require products that are produced using specified ingredients and components, including specific requirements for mixing, fabricating, curing, finishing, testing and similar operations in the manufacturing process,

provide products produced in accordance with the prescriptive requirements that otherwise comply with Contract requirements.

5. Codes, Standards and Regulations: Where Specifications require compliance with an imposed code, standard or regulation, select a product that complies with the codes, standards or regulations specified.
6. Visual Matching: Where Specifications require matching an established sample, or matching existing conditions, the Project Officer decision will be final on whether a proposed product matches satisfactorily.
7. Visual Selection: Where specified product requirements include the phrase "as selected from manufacturer's standard colors, patterns, textures" or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Project Officer will select the color, pattern and texture from the manufacturer's product line.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 016000

# SECTION 017000 - EXECUTION REQUIREMENTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes certain general procedural requirements governing the Contractor's execution of the work, including, but not limited to the following:

1. Laying out of the work.
2. General installation of products.
3. Correction of Defective Work
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.

B. Substitutions: Changes in methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract shall comply with the procedures and conditions specified for Substitutions in the Construction Contract Clauses.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "References"
7. Division 1 Section "Construction Quality Control"
8. Division 1 Section "Temporary Facilities and Controls"
9. Division 1 Section "Safety and Health"
10. Division 1 Section "Product Requirements"
11. Division 1 Section "Cutting and Patching"
12. Division 1 Section "Selective Demolition"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"
15. Division 1 Section "Demonstration and Training"

D. Additional Requirements: Refer to the individual technical specification sections for additional execution requirements.

1.3 SUBMITTALS

A. Surveyor Qualification Statement: Submit for review a statement attesting to previous experience from the land surveyor or professional engineer engaged to lay out the work. Include list of completed projects, with project names and addresses, and names and addresses of architects and owners.

B. Certificates: Submit a certificate signed by the land surveyor or professional engineer certifying that the location and elevation of improvements comply with requirements indicated.

C. Contractor Requests for Information (RFI): The Contractor shall submit Requests for Information (RFI) to the Project Officer. Upon receipt of an RFI, the Project Officer will review and coordinate a response. The response will be provided within 14 calendar days.

D. Manufacturer's Field Services Submissions: Where product manufacturers are required by the individual sections of the Specifications to provide qualified personnel to observe conditions of surfaces or other project conditions, installation or workmanship, start up or adjustment of equipment, tests or other activities, and to initiate instructions when necessary, the following shall be submitted to the Project Officer:

1. Qualifications: For approval, submit qualifications of observer at least 30 calendar days in advance of scheduled activities.
2. Report: For information, submit report of activities and findings within 15 calendar days after the successful execution of the specified work. Include logs and other documented data where applicable.

1.4 QUALITY REQUIREMENTS

A. Workmanship Standards: Initiate and maintain procedures to ensure personnel performing the work are skilled and knowledgeable in the methods and craftsmanship needed to produce the required levels of workmanship in the completed work. Remove and replace work that does not comply with workmanship specified and standards recognized in the construction industry for the applications indicated. Remove and replace work damaged or deteriorated by faulty workmanship or replacement of other work.

B. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable installation instructions and recommendations to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

C. Specialists: Where the individual sections of the specifications require specialists to perform the work, comply with the requirements specified in the Construction Contract Clauses. The assignment of a specialist shall not relieve the contractor from complying with applicable regulations, union jurisdictional settlements or similar conventions, and the final responsibility for fulfillment of the entire requirements remains with the Contractor.

D. Minimum Quality and Quantity: The quality level or quantity shown or specified shall be the minimum required for the work. Except as otherwise indicated, the actual work shall comply exactly with that minimum or may be superior to that minimum within limits acceptable to the Contracting Officer. Specified numeric values are either minimums or maximums as indicated or as appropriate for the context of the requirements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 LAYING OUT THE WORK

A. Before proceeding to lay out the work, verify layout information shown on the drawings, in relation to existing benchmarks. If discrepancies are discovered notify the Project Officer promptly.

B. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Make the log available for reference by the Project Officer.

D. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.

1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.
2. Furnish location data for work related to the project which must be performed by public utilities serving the Project site.

3.2 EXAMINATION

A. Examine applicable substrates and conditions under which the work will be performed before starting construction operations.

B. If unsafe or otherwise unsatisfactory conditions are encountered take corrective action before proceeding.

C. Require installer of each major unit of work to inspect substrate to receive work, and conditions under which work will be performed, and report in writing to the Contractor any unsuitable conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

D. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

## 3.3 PREPARATION

A. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with the Project Officer.

B. Take field measurements as required to fit the work properly. Recheck measurements before installing each product.

C. Verify space requirements of items shown diagrammatically on drawings.

D. Drawing Verification: Check all drawings furnished immediately upon their receipt and promptly notify the Project Officer of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work or ordering custom furniture, equipment or material and will be responsible for any errors which might have been avoided thereby. Dimensions on drawings shall be checked for accuracy by the Contractor.

## 3.4 INSTALLATION

A. Locate the work and components of the work accurately.

1. Make vertical work plumb and horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and to maximize ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas.

B. Install products at the time and under conditions that will produce satisfactory results.

1. Maintain temperature, humidity and other weather controls for best performance.
2. Isolate units of noncompatible work to prevent deterioration.

C. Conduct construction operations so that no part of the work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

D. Tools and Equipment: Do not use tools or equipment that produce harmful levels of noise.

E. Anchors and Fasteners: Provide anchors and fasteners as required to withstand stresses, vibration and physical distortion. Anchor each component securely in place, accurately located and aligned with other work.

1. Allow for building movement, including thermal expansion and contraction.

F. Mounting Heights: In no case shall exposed items be mounted at a height which violates the provisions of the Americans with Disabilities Act Accessibility Guidelines (ADAAG)/Uniform Federal Accessibility Standards (UFAS) for the application indicated. Refer questionable component mounting heights to the Project Officer for final decision.

G. Joints: Make like joints of uniform width within contiguous surfaces. Where joint locations in exposed work are not indicated, arrange joints for a uniform and balanced visual effect.

H. Adjust operating components for proper operation without binding.

## 3.5 CORRECTION OF DEFECTIVE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

B. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and proper adjustment of operating equipment.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if the surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired to operate properly.

F. Remove and replace chipped, scratched or broken surfaces.

## 3.6 PROGRESS CLEANING

A. Maintain the project work areas free of waste material and debris.

B. Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the work, broom- or vacuum-clean the entire work area.

C. Keep installed work clean. Clean installed surfaces in accordance with the recommendations of the manufacturer or fabricator of the product installed, using only the cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and will not damage exposed surfaces.

D. Remove debris from concealed spaces prior to enclosing the space.

E. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at the time of project completion.

F. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Enforce requirements strictly and dispose of material lawfully.

1. Comply with NFPA 241 for removal of combustible waste material and debris.
2. Do not hold waste materials more than 7 days during periods when the ambient temperature remains continuously less than 80 deg F or for more than 3 days when the temperature exceeds or is expected to rise above 80 deg F.
3. Handle and properly containerize hazardous, dangerous or unsanitary waste materials separately from other waste.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017000

# SECTION 017310 - CUTTING AND PATCHING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes procedural requirements for cutting and patching.

B. Definition: Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and repair required to restore surfaces to their original condition.

C. Refer to other sections for other requirements and limitations applicable to cutting and patching individual parts of the work.

D. Coordinate cutting and patching with demolition requirements specified in Division 1 Section "Selective Demolition."

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "References"
7. Division 1 Section "Construction Quality Control"
8. Division 1 Section "Temporary Facilities and Controls"
9. Division 1 Section "Safety and Health"
10. Division 1 Section "Product Requirements"
11. Division 1 Section "Execution Requirements"
12. Division 1 Section "Selective Demolition"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"

1.3 SUBMITTALS

A. Cutting and Patching Plan: Submit a written plan to the Project Officer through the Quality Control manager describing procedures at least 21 calendar days in advance of the time cutting and patching will initially be performed.

1. Include the following information, as applicable:

a. Description of the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
b. Description of the anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in appearance and other significant visual elements.
c. List of products to be used and entities that will perform work.
d. Dates and hours of operation when cutting and patching will be performed.
e. List of utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
f. Compatibility and cohesion characteristics of patching compounds with adjacent materials.
g. Details and engineering calculations showing integration of reinforcement with the original structure, where cutting and patching involves adding reinforcement to structural elements.

2. Approval by the Project Officer to proceed with cutting and patching does not waive the right to later require complete removal and replacement of unsatisfactory work.
3. Samples: Provide cutting and patching samples for the following items within 14 calendar days after notice to proceed in order that special reviews and coordination can be arranged with approval authorities.

1.4 QUALITY REQUIREMENTS

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

1. The cutting and patching plan shall include but not be necessarily limited to work required at the following structural elements:

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

B. Operational Limitations: Do not cut and patch operating elements, safety related systems, or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements, safety related systems or related components in a manner that would result in increased maintenance or decreased operational life or safety. Operating elements or safety related systems include but are not limited to the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Water, moisture, or vapor barriers.
4. Membranes and flashings.
5. Fire protection systems.
6. Noise and vibration control elements and systems.
7. Control systems.
8. Communication systems.
9. Conveying systems.
10. Electrical wiring systems.
11. Operating systems of other construction.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Project Officer's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction that was previously cut and patched in a visually unsatisfactorily manner. When requested by the Contracting Officer, engage a Specialist who is specifically experienced in the work. Visual elements include but are not limited to the following:

1. Processed concrete finishes.
2. Stonework and stone masonry.
3. Ornamental metal.
4. Matched-veneer woodwork.
5. Preformed metal panels.
6. Firestopping.
7. Window wall system.
8. Stucco and ornamental plaster.
9. Acoustical ceilings.
10. Terrazzo.
11. Finished wood flooring.
12. Fluid-applied flooring.
13. Carpeting.
14. Aggregate wall coating.
15. Wall covering.
16. Mechanical system enclosures, cabinets, or covers.

## 1.5 EXISTING WARRANTIES

A. Remove, replace, patch, and repair material and surfaces cut or damaged during cutting and patching operations by methods and with materials in such a manner as not to void any existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections of these Specifications.

B. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

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

PART 3 - EXECUTION

3.1 INSPECTION

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

B. Before proceeding with cutting and patching involving two or more trades, meet at the project site with the Project Officer and the entities providing or affected by the cutting and patching. Site meeting should be incorporated into the Three Phases of Quality Control process managed by the Contractor's Quality Control Manager. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

C. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3.2 PREPARATION

A. Provide temporary support of work to be cut.

B. Protect existing conditions during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Where existing services are required to be removed, relocated, abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Cutting: Cut existing construction using methods least likely to damage elements retained and adjoining construction. Where possible, review proposed procedures with the original installer and comply with the original installer's recommendations.

1. In general, use hand or small power tools designed for sawing or grinding, not for hammering and chopping.
2. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
3. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
4. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
5. Comply with requirements of applicable Division 2 sections where cutting and patching requires excavating and backfilling.
6. After utility services are bypassed, cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removed walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces to provide an even surface of uniform color, finish, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface that contains the patch after the area has received primer and other undercoats.
5. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
6. Maintain integrity of fire barriers, vapor barriers and insulation.
7. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Perform cutting and patching work listed in Division 1 Section "Work Restrictions" during City of Rockville Unoccupied Hours.

## 3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items.

B. Thoroughly clean piping, conduit, and similar features before applying paint, restored pipe coverings, or other finishing materials.

END OF SECTION 017310

# SECTION 017320 - SELECTIVE DEMOLITION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes the following:

1. Demolition and removal of selected portions of a building.
2. Repair procedures for selective demolition operations.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Work Restrictions"
3. Division 1 Section "Project Management and Coordination"
4. Division 1 Section "Submittal Procedures"
5. Division 1 Section "Quality Requirements"
6. Division 1 Section "References"
7. Division 1 Section "Construction Quality Control"
8. Division 1 Section "Temporary Facilities and Controls"
9. Division 1 Section "Safety and Health"
10. Division 1 Section "Product Requirements"
11. Division 1 Section "Execution Requirements"
12. Division 1 Section "Cutting and Patching"
13. Division 1 Section "Closeout Procedures"
14. Division 1 Section "Project Record Documents"
15. Division 15 sections for demolishing, cutting, patching, or relocating mechanical items.
16. Division 16 sections for demolishing, cutting, patching, or relocating electrical items.

### 1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them.

B. Remove and Salvage: Detach items from existing construction and deliver them to the City of Rockville**.**

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be salvaged, reinstalled or otherwise indicated to remain the City of Rockville property, demolished materials shall be removed from the site by the Contractor, with further disposition at Contractor's option.

1.5 SUBMITTALS

A. Qualification Data: Provide qualifications of persons or firms performing demolition which demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other amplifying information. Qualification data must conform to that required in Division 1 Section "Quality Requirements" for Specialists or Professional Engineers as appropriate to the work.

B. Proposed noise-control or dust-control measures: Submit statement or drawing to the Contracting Officer for approval at least 14 calendar days prior to the start of demolition that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

C. Submit a proposed Demolition Plan to the Contracting Officer indicating the following:

1. Detailed sequence of selective demolition work, with starting and ending dates for each activity.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Locations of temporary partitions and means of egress.
6. Procedures and safety precautions to be used during demolition.
7. Removal, transportation, and reclamation or disposal of removed materials.

D. Inventory: Items to be removed and salvaged.

E. Photographs: Before work begins, submit sufficiently detailed photographs showing predemolition existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Requirements for photographs are located in Division 1 Section "Photographic Documentation."

1.6 QUALITY REQUIREMENTS

A. Demolition Firm Qualifications: Firm shall be a specialist in demolition work of similar materials and extent to that indicated for this Project.

B. Professional Engineer Qualifications: Comply with Division 1 Section "Quality Requirements."

C. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Comply with all regulatory requirements of those agencies and organizations having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Pre-Demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by demolition operations.

F. Demolition Plan: The Contractor shall prepare a detailed plan of the demolition work procedures and safety precautions to be used in the identification, demolition, trees and shrub protection, silt and erosion control handling, removal, transportation, and reclamation or disposal of removed materials. The plan shall be submitted to the Contracting Officer for review within 14 calendar days after receipt of the Notice to Proceed and at least 14 calendar days before the planned commencement of demolition activities.

1. Review and acceptance by the City of Rockville of the Contractor's demolition plan will not relieve the Contractor of any responsibility regarding damage from any demolition activity.

## 1.7 PROJECT CONDITIONS

A. The City of Rockville will occupy portions of the building immediately adjacent to the selective demolition area. Refer to Division 1 Section "Work Restrictions" for additional requirements.

1. Conduct selective demolition so the City of Rockville operations will not be disrupted.
2. Provide the Project Officer with not less than 72 hours' notice prior to activities that will affect the City of Rockville operations. Include in the notification the expected demolition activities and expected level and duration of disturbance to the City of Rockville operations.

B. Safe access to existing walkways, corridors and other adjacent occupied or used facilities must be maintained. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from the Contracting Officer.

C. The Contractor shall remove and salvage the existing items so indicated on the Drawings.

D. The Contractor shall remove and reinstall the existing items so indicated on the Drawings.

E. Hazardous Materials: Except where noted, hazardous materials are not expected to be encountered in the work. If any material suspected of containing hazardous materials is encountered, do not disturb the material, immediately notify the Contracting Officer and the

Project Officer. If suspected hazardous material is spilling out or leaking, notify the fire department immediately.

F. On-site storage or sale of removed items or materials will not be permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

H. Fire Protection: Maintain fire-protection services during selective demolition operations.

I. Use of explosives is prohibited. Explosive actuated tools (ex: nailguns, etc) shall not be used or brought to the project site without prior written approval from the Project Officer. Such approval shall not relieve the Contractor of responsibility for injury to persons or for damage to property due to the use of such explosives.

J. Contractor dumpsters will be permitted only if a location for the dumpster is shown on the contract drawings.

1.8 WARRANTIES

A. Existing Special Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials that do not void existing warranties. Verify existence of warranties with the Project Officer.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Where available and appropriate for use, provide repair materials that are identical to existing materials.

B. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

C. Use materials whose installed performance equals or surpasses that of existing materials.

D. Use fireproof materials for dust barriers and other temporary enclosures. See Division 1 Section "Temporary Facilities and Controls" for additional barrier requirements.

E. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities to be removed have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled, and items to be removed and salvaged.

D. When encountering unanticipated mechanical, electrical or structural elements that conflict with the intended function or design, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Project Officer.

E. Perform surveys as the selective demolition progresses to detect hazards resulting from the activities.

## 3.2 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.

B. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by the Project Officer. See Division 1 Section "Project Management and Coordination" for additional requirements associated with utility shutdowns.

1. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities. See Division 1 Section "Temporary Facilities and Controls" for additional temporary utility information.
2. Provide not less than 15 calendar days notice to the Project Officer if shutdown of service is required during changeover.

C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving areas to be selectively demolished.

1. The City of Rockville will arrange to shut off indicated utilities when requested by Contractor.
2. Where utility services are required to be removed, relocated or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit after bypassing.
4. Do not start selective demolition work until utility disconnection and sealing have been completed and verified.

D. Smoke Detectors: Request a utility outage for all smoke detectors where demolition work is planned. Do not start work until smoke detectors are shut off.

## 3.3 PREPARATION

A. Dangerous Materials: If chemicals, gases, explosives, acids, flammable or other dangerous materials of unknown content or origin are found which are not shown on the drawings, contact the Project Officer immediately before proceeding with demolition.

B. Temporary Site Control: Remove debris and conduct demolition operations in a manner to ensure minimum interference with roads, streets, walks, walkways, corridors, and other adjacent occupied or used facilities.

1. Do not close or obstruct streets, walks, walkways, corridors, or other adjacent occupied or used facilities without permission from the Project Officer.
2. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

C. Temporary Facilities: Conduct demolition operations in a manner to prevent injury to people and damage to adjacent building and facilities to remain. Provide for safe passage of people around selective demolition area. Provide temporary facilities in accordance with Division 1 Sections "Temporary Facilities and Controls" and "Temporary Traffic Controls" as applicable.

1. Erect temporary protection, such as walks, fences, railings, canopies and covered passageways, where required by authorities having jurisdiction.
2. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces and new construction to prevent water leakage or damage to structure or interior areas.
3. Protect walls, ceilings, floors and other existing finish work that are to remain and are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings and equipment that have not been removed.

D. Temporary Enclosures: Erect and maintain smoke tight and dustproof partitions and temporary enclosures to limit dust and dirt migration into remaining spaces and to separate areas from fumes and noise. Use fire retardant materials for all temporary enclosures.

## 3.4 POLLUTION CONTROLS

A. Dust Control: Use temporary enclosures and other suitable methods complying with governing environmental protection regulations to limit the spread of dust and dirt.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, pollution, or slippery conditions.
2. Wet mop floors to eliminate trackable dirt, and wipe down walls and doors of demolition enclosure.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in accordance with applicable safety regulations.

C. Cleaning: Clean adjacent structures and site improvements of dust, dirt and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.5 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete selective demolition within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically. Conduct work in an order that avoids transporting removed items and debris through areas with completed selective demolition work, and that allows for removal of items before supports for those items are removed in another area.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage adjoining construction to remain. Where possible, use hand or small power tools designed for sawing or grinding, not for hammering and chopping, to minimize disturbance of adjacent surfaces. Contractor is to use the correct tool for the work and operate it in accordance with the manufacturers instructions. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations, and maintain adequate ventilation when using cutting torches. See Division 1 Section "Fire Prevention Precautions for Hot Work."
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested and other dangerous or unsuitable materials, and promptly dispose of these materials off-site.
7. Lower removed structural framing members to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors or framing.
9. Dispose of demolished items and materials promptly.
10. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

B. Existing Facilities: Comply with all regulations for using and protecting elevators, stairs, walkways, loading docks, building entries and other building facilities during selective demolition operations. Coordinate with the Project Officer for building-specific requirements.

C. Removed and Reinstalled Items. Comply with the following:

1. Clean and repair items to functional condition adequate for intended reuse. Paint damaged or deteriorated painted surfaces of equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Contracting Officer, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations after selective demolition operations are complete.

E. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch ((19 mm)) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

F. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

G. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

H. Resilient Floor Coverings: Remove floor coverings and adhesive, and prepare substrate for new floor covering, according to recommendations of the Resilient Floor Covering Institute (RFCI).

I. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

## 3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."

C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to the manufacturer's written recommendations.

D. Finishes: Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Floor and Wall Surfaces: Patch and repair floor and wall surfaces in each space where demolished walls or partitions result in extending one finished area into another. Provide a flush and even surface of uniform color, texture and appearance.

1. Closely match texture and finish of existing adjacent surface.
2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
3. Where patching occurs in a painted surface, apply primer and other specified undercoats. Apply specified intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
4. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

5. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

F. Ceilings: Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning of any materials removed during demolition is not permitted on the City of Rockville property.

C. Disposal: Transport demolished materials off the City of Rockville property and legally dispose of them.

3.8 SELECTIVE DEMOLITION SCHEDULE

A. Existing items to remain, be removed and/or be salvaged are indicated on the drawings.

END OF SECTION 017320

# SECTION 017700 - CLOSEOUT PROCEDURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion requirements and inspection procedures
2. Final Completion requirements and inspection procedures
3. Project Record Documents.
4. Operation and Maintenance manuals.
5. Warranties.
6. Instruction of the City of Rockville personnel.
7. Final cleaning.

B. Closeout requirements for specific construction activities are included in the individual sections in Divisions 2 through 16.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Project Management and Coordination"
3. Division 1 Section "Submittal Procedures"
4. Division 1 Section "Quality Requirements"
5. Division 1 Section "Construction Quality Control"
6. Division 1 Section "Temporary Facilities and Controls"
7. Division 1 Section "Safety and Health"
8. Division 1 Section "Product Requirements"
9. Division 1 Section "Project Record Documents"
10. Division 1 Section "Operation and Maintenance Documentation"
11. Division 1 Section "Demonstration and Training"

D. Substantial Completion is defined as that state when the Contractor has complied with the Contract requirements, except for minor deviations, and the project is sufficiently complete and capable of being occupied and used by the City of Rockville for the intended purpose. Achievement of Substantial Completion is determined by the Contracting Officer.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining the date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Provide supporting documentation for completion as indicated elsewhere in the Contract Documents and a statement showing an accounting of changes to the Contract Sum.
2. Submit a list to the Project Officer, of incomplete items, the value of incomplete construction, and reasons the work is not complete.
3. Obtain and submit any necessary releases enabling the City of Rockville unrestricted use of the project and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
4. Make final changeover of permanent locks. Use 8 bit Lockwood cylinders in the locks. Set the cylinders for blank keys and transmit two blank keys for each cylinder to the Project Officer. Advise the City of Rockville user personnel of changeover in security provisions.
5. Complete startup testing of systems and instruction of the City of Rockville operation and maintenance personnel.
6. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
7. Submit Operation and Maintenance Manuals, final project photographs, and final surveys as specified.
8. Submit draft or final warranty documents for Contracting Officer review for approval.
9. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
10. Record Documents (Drawings, specifications, and product data).

    a. Initial submission shall be made to the Project Officer prior to the Pre-final Inspection.
    b. the City of Rockville will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the contractor for correction and re-submission incorporating the comments prior to the Final Inspection.
    c. See Division 1 Section "Project Record Documentation" for additional requirements.

11. Provide all required submittals to the Contracting Officer.
12. Submit test/adjust/balance records.
13. Submit changeover information related to the City of Rockville occupancy, use, operation, and maintenance.
14. Outline of Instruction Program for the City of Rockville Employees shall be submitted to the Project Officer 14 calendar days prior to the Pre-final Inspection.

B. Inspection Procedures:

1. Substantial Completion Inspection corresponds to the Pre-Final Completion Inspection described in Division 1 Section "Construction Quality Control."
2. On receipt of a request for inspection, the Project Officer will either schedule the inspection or advise the Contractor of unfilled requirements. The Contracting Officer will prepare the Certificate of Substantial Completion following the inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

3. The Project Officer will repeat the inspection when requested and when assured that the work is substantially complete.
4. Results of the completed inspection will form the basis of the requirements for final completion.

1.4 SUBMITTALS

A. The following shall be submitted prior to final payment and closeout.

1. Manufacturer's cleaning instructions
2. Posted instructions
3. All required submittals
4. Record Documents (Drawings, specifications, and product data).

    a. Initial submission shall be made to the Project Officer prior to the Pre-final Inspection.
    b. the City of Rockville will review the submission and provide appropriate comments. If comments are significant the initial submission will be returned to the contractor for correction and re-submission incorporating the comments prior to the Final Inspection.

5. Outline of Instruction Program for the City of Rockville Employees shall be submitted to the Project Officer 14 calendar days prior to the Pre-final Inspection.
6. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.
7. Construction progress photographs
8. Final project warranty documents reflecting changes directed by any comments from the Contracting Officer's review of draft documents.

B. Project Closeout Work Plan. Contractor shall submit a Project Closeout Work Plan for each phase of occupancy to the Project Officer for approval at least 30 calendar days prior to the Substantial Completion Inspection of the phase to be occupied. The plan should include all scheduled inspections, instruction classes, items to be submitted, closeout dates for all functions and the required the City of Rockville and Contractor personnel for these functions that will be taking part.

1.5 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for Certification of Final Completion and Final Payment, complete the following. Note that the following are to be completed, submitted as appropriate, and approved by the City of Rockville as applicable prior to the final inspection and are not to be submitted for approval or otherwise at the final inspection unless specifically indicated. List exceptions in the request.

1. Submit final payment request with releases and supporting documentation not previously submitted and accepted.
2. Submit an updated final statement, accounting for final additional changes to the Contract price.
3. Verify that all required submittals have been provided to the Contracting Officer including but not limited to the following:

a. Manufacturer's cleaning instructions
b. Posted instructions
c. Record Documents (Drawings, specifications, and product data) incorporating any changes required by the Contracting Officer as a result of the review of the submission prior to the pre-final inspection. See Division 1 Section "Project Record Documentation" for additional requirements.
d. Operation and Maintenance Manuals, including Preventive Maintenance, Special Tools, Repair Requirements, Parts List, Spare Parts List, and Operating Instructions.
e. Construction progress photographs
f. Final project warranty documents reflecting changes directed by any comments from the Contracting Officer's review of draft documents.

4. Submit a certified copy of the previous Substantial Completion inspection list of items to be completed or corrected. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance, and shall be endorsed and dated by the Contractor.
5. Submit Pest management Post Construction Survey and Certification.
6. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
7. Submit record documents and similar final record information.
8. Deliver tools, spare parts, extra stock and similar items.
9. Complete final clean-up requirements including touch-up painting of marred surfaces.
10. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date when the City of Rockville took possession of and assumed responsibility for corresponding elements of the work.

B. Reinspection Procedure: The Project Officer will reinspect the work upon receipt of notice from the Contractor that the project work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Contracting Officer.

1. Upon completion of reinspection, the Project Officer will advise the Contracting Officer, who will prepare a Certificate of Final Completion, or the Contracting Officer will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled and are required for Final Completion.
2. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for any additional the City of Rockville inspection costs in accordance with the Contract Clause entitled "Inspection of Construction."

## 1.6 RECORD DOCUMENT SUBMITTALS

A. As work progresses, prepare and maintain record documents as specified herein. Each record document shall be certified by the Contractor. Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Project Officer during normal working hours. Upon completion of the project, turn all record documents over to the Contracting Officer.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings, Shop Drawings and Fire Protection System Installation Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as

originally shown. Mark the drawing that is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the work.
2. Mark new information not shown on Contract Drawings, Shop Drawings or Fire Protection Installation Drawings.
3. Note related Change Order numbers, alternate numbers, and similar identification numbers where applicable.
4. Organize record drawing sheets into manageable sets. Bind sets with durable paper cover sheets. Include project title and other identification as required on the cover of each set. Include a transmittal letter which contains the date, project title, Contractor's name, address and telephone number, submittal schedule reference number and Contractor's signature.
5. Failure by the Contractor to accurately reflect current information on the Record Drawings may result in a determination by the Contracting Officer that the Contractor has failed to meet his progress schedule. Payment, or a portion of the payment, including final payment, may be withheld until the Record Drawings are current, and accepted by the Contracting Officer.
6. Provide 3 complete sets of Record Drawings to the Contracting Officer.
7. If project drawings were available in electronic media, then Record Drawings shall also be provided in electronic media in AUTOCAD Release 14 or greater**.**

C. Record Specifications: Maintain one complete copy of the Project Specifications with addenda.

1. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to selection of options, and information about concealed construction that cannot otherwise be readily determined later by direct observation.
3. Note related record drawing information and Product Data.
4. Provide 3 complete sets of Record Specifications to the Contracting Officer.

D. Miscellaneous Record Submittals: Assemble miscellaneous records including construction photographs required by other specification sections for miscellaneous record keeping and submittals in connection with actual performance of the work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

## 1.7 OPERATION AND MAINTENANCE MANUALS

A. Provide operation and maintenance manuals for each piece of equipment and other systems and components specified in the technical sections of the specifications. Organize operation and maintenance data in suitable sets of manageable size.

B. Manuals shall have tables of contents, and be assembled to conform to tables of contents, with tab sheets covering each subject. Manuals shall be organized around the Construction Specification Institute 16-Division Master Format. Instructions shall be legible and easy to read. Bind properly indexed data in individual, heavy-duty, 3-ring, vinyl-covered loose-leaf binders, with pocket folders for folded sheet information (except drawings). Where oversize drawings are required, they shall be folded in. Include the words "Operation and Maintenance Manual,"

the name of the building and building number, and the project title on the cover and spine of each binder. Manuals shall include, but not be limited to, the following types of information.

1. Detailed description of each system and each of its components, including layout showing piping, valves, controls and other components, and including diagrams and illustrations where applicable.
2. Wiring and control diagrams with data to explain detailed operation and control of each piece of equipment.
3. Control sequence describing start-up, operation, and shutdown.
4. Procedure for starting
5. Procedure for operating
6. Shut-down instructions
7. Installation instructions
8. Maintenance and overhaul instructions
9. Lubricating schedule, including type, grade, temperature range and frequency.
10. Emergency instructions and safety precautions.
11. Corrected shop drawings.
12. Approved product data
13. Copies of approved certifications and laboratory test reports (where applicable).
14. Copies of warranties
15. Test procedures
16. Performance curves and rating data
17. Parts list, including source of supply, recommended spare parts, and service organization convenient to the building site. Listing shall indicate manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair. List those items that may be standard to the normal maintenance of the system.
18. Name, address, and telephone number of each Subcontractor who installed equipment and systems, and local representative for each type of equipment and each system.
19. Troubleshooting data.
20. Other pertinent data applicable to the operation and maintenance of particular systems or equipment and/or other specified in technical sections of the Specification.

    a. Manuals for the system as a whole will not be required for outside water distribution systems or storm and sanitary sewer systems.

21. Preventative Maintenance: Include a recommended schedule showing when each system should be retested. Schedule shall define the anticipated length of each test, test apparatus, number of personnel identified by responsibility, and a testing validation procedure permitting the record operation capability requirements. Each test feature; e.g., gpm, rpm, psi, shall have a sign-off blank for the Contractor and Project Officer. A remarks column of the testing validation procedure shall include references to operating limits of time, pressure, temperature, volume, voltage, current, acceleration, velocity, alignment, calibration, adjustments, cleaning, or special system notes. Procedures for preventative maintenance, inspection, adjustment, lubrication and cleaning necessary to minimize corrective maintenance and repair shall be delineated.

    a. Include load limits, speed of operation, environmental criteria and personnel hazard and safety precautions.
    b. Repair requirements shall inform operators how to check out, troubleshoot, repair, and replace components of the system. Instructions shall include electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and trouble shooting after acceptance of the system.

22. Special Tools: Include a list of special tools required for maintaining and testing each system.

C. Provide the Contracting Officer with two draft copies of the manuals 14 calendar days prior to testing any system involved and six final copies incorporating the City of Rockville review comments. Data shall be updated and resubmitted for final approval not later than 10 days prior to the established date for the Pre-Final Inspection.

1.8 WARRANTIES

A. Standard and special warranties required by the individual sections of the Specifications and coincidental warranties shall provide guarantees in terms of time limits or rights of the City of Rockville in addition to those contained in the Construction Contract clauses.

1. Manufacturer's disclaimers and limitations on product warranties do not relieve the contractor of the warranty on the work that incorporates the products.
2. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
3. Standard product warranties shall be preprinted written warranties published by individual manufacturers for particular products, and shall be specifically endorsed to the City of Rockville by the manufacturer.
4. Special project warranties shall be specifically written to incorporate particular requirements of the Contract Documents, and shall be endorsed to the City of Rockville by the entities responsible for the work, as stated in the individual section.
5. Coincidental product warranties shall be provided where available on a product incorporated into the work by virtue of the fact that the manufacturer of the product has published a warranty in connection with purchases and uses of the product without regard for specific applications except as otherwise limited by terms of the warranty.

B. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of the Contract Documents. The contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the City of Rockville has benefited from the use of the work through a portion of its anticipated useful service life.

D. Rejection of Warranties: The Contracting Officer reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment for the work or part of the work, the Contracting Officer reserves the right to refuse to accept the work on behalf of the City of Rockville until the contractor presents evidence that entities required to countersign such commitments are willing to do so.

F. Where a warranty is not specifically required by the Contract Documents but is available on a product incorporated into the work, by virtue of the fact that the manufacturer of the product has published a warranty in connection with purchases and uses of the product without regard for

specific applications except as otherwise limited by terms of the warranty, that warranty shall be provided to the City of Rockville.

G. Submit written warranties to the Contracting Officer as required by the contract documents.

1. Draft copies of required warranty documents shall be submitted to the Contracting Officer for review in the specified format prior to warranty execution and prior to the date certified for Substantial Completion, unless an earlier time of submission is specified elsewhere in the contract documents or requested by the Contracting Officer.

    a. Submit three copies of draft warranty documents. All but one copy of the draft submission shall be returned to the Contractor for corrections and resubmission.

2. Warranties will comply with the requirements included in the technical specification sections.
3. Unless indicated otherwise warranties are to take effect on the date of Substantial Completion.
4. When the contract documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, provide a written document that contains the appropriate terms and identification, executed by the required parties.

    a. Refer to Division 2 through 16 sections for specific content requirements and particular requirements for submitting special warranties.

5. Following Contracting Officer review, correct draft warranty documents as required and submit three copies of each final warranty document properly executed by the contractor, subcontractor, supplier, or manufacturer at Final Completion.
6. Organize the warranty documents into an orderly sequence based on the Specification Divisions and Section Numbers.

    a. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
    b. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
    c. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation.
    d. Provide a typed description of each product or installation being warranted, including the name of the product, and the name, address, and telephone number of the Installer.

7. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty in each required manual. Refer to Division 1 Section "Operation and Maintenance Documentation" for requirements of Operation and Maintenance manuals.

H. When a designated portion of the work is completed and occupied or used by the City of Rockville, by a separate agreement with the contractor during the construction period, submit properly executed warranties within 14 calendar days after completion of that designated portion of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 INSTRUCTIONS TO the City of Rockville PERSONNEL

A. Operation and Maintenance Instructions: Provide instructions to designated the City of Rockville Employees without additional expense to the City of Rockville, where required by the technical provisions of Divisions 2 - 16. the City of Rockville shall be given 7 calendar days written notice of scheduled instructional services and shall approve such before they are held. Instructional materials belonging to the manufacturer or vendor; e.g., lists, static exhibits, visual aids, shall be made available to the Project Officer. Instructors shall give full instruction is the care, adjustment, and operation of the systems and equipment specified in other sections of these specifications. Arrange for each installer of equipment that requires regular maintenance to meet with the the City of Rockville personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures.

B. Submit a written outline with the written notice which describes the instruction program to include:

1. Equipment being demonstrated or the focus of instructions
2. Relevant specification section
3. Duration of the instruction or demonstration
4. Number of individuals that can be trained or demonstrated to at one time
5. Level of expertise and background requirements of the City of Rockvilleemployees top be trained
6. Name of proposed instructor.
7. Any special conditions required for the demonstration (Power outage, HVAC outage, work stoppage in the Laboratory, etc.)

C. As part of instruction for operating equipment, demonstrate the following procedures:

1. Startup
2. Shutdown
3. Emergency Operations
4. Noise and Vibration adjustments
5. Safety procedures
6. Economy and efficiency adjustments
7. Effective energy utilization

3.2 POSTED OPERATING INSTRUCTIONS

A. Operating instructions approved by the Project Officer shall be provided for each system and each principal piece of equipment as indicated in Divisions 2-16 of the specifications for the use of operation and maintenance personnel. Include wiring and control diagrams showing the complete layout of the entire system including equipment, piping, and valves, and control sequence, framed under glass or approved laminated plastic and posted where directed by the Project Officer. Printed or engraved operating instructions for each principal piece of equipment

including start-up, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and any other necessary items of instruction as recommended by the manufacturer of the unit shall be attached to or posted adjacent to the piece of equipment. Operating instructions exposed to the weather shall be made of weather-resisting materials or shall be suitably enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

## 3.3 FINAL CLEANING

A. General cleaning during construction is required by the General Conditions and included in Section H of the Contract.

B. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial cleaning and maintenance program. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces. Use only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer. Comply with manufacturer's instructions.

C. Complete the following cleaning operations before requesting inspection for Final Completion.

1. Remove labels and stickers that are not permanent from fixtures and equipment. Do not remove permanent nameplates, equipment model numbers and ratings.
2. Polish glossy surfaces to a clear shine.
3. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
4. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
5. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
6. Remove tools, construction equipment, machinery, and surplus material from Project site.
7. Remove snow and ice to provide safe access to building.
8. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials and substances from sight-exposed interior and exterior surfaces. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
9. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
10. Sweep concrete floors broom clean in occupied and unoccupied spaces.
11. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
12. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
13. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

    a. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

14. Internally clean the entire system of piping and equipment. Open dirt pockets and strainers, completely blowing down as required and clean strainer screens of accumulated debris.
15. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
16. Replace parts subject to unusual operating conditions.
17. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
18. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
19. Clean ducts, blowers, and coils if units were operated without filters during construction.
20. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
21. Leave Project clean and ready for occupancy.

D. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the project of rodents, insects, and other pests.

E. Dust Control: Handle materials in a controlled manner with as little dust and over spray as possible.

F. Removal of Protection: Remove temporary protection and facilities installed for the protection of the Work during construction.

G. Compliance: Comply with the regulations of authorities having jurisdiction and with safety standards for cleaning and disposal operations. Do not burn or bury rubbish, waste, and/or excess materials on the City of Rockville property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of it lawfully.

H. Remaining Materials: Where extra materials of value are remaining after completion of associated work, they become the City of Rockville property. Arrange for disposition of these materials as directed by the Project Officer.

END OF SECTION 017700

# SECTION 017810 - PROJECT RECORD DOCUMENTS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes administrative and procedural requirements for Project Record Documents. Required Project Record Documents include the following:

1. Marked-up copies of Contract Drawings.
2. Marked-up copies of Shop Drawings.
3. Newly prepared drawings.
4. Marked-up copies of Specifications, addenda, and Change Orders.
5. Marked-up Product Data submittals.
6. Construction Photographs
7. Record Samples.
8. Miscellaneous Record Submittals.

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

1. Division 1 Section "Summary"
2. Division 1 Section "Project Management and Coordination"
3. Division 1 Section "Submittal Procedures"
4. Division 1 Section "Quality Requirements"
5. Division 1 Section "Construction Quality Control"
6. Division 1 Section "Temporary Facilities and Controls"
7. Division 1 Section "Safety and Health"
8. Division 1 Section "Product Requirements"
9. Division 1 Section "Execution Requirements"
10. Division 1 Section "Closeout Procedures"
11. Division 1 Section "Demonstration and Training"
12. Divisions 2 through 16 sections for project record document requirements for products included in those sections.

C. Project Record Documents and samples are to be stored by the Contractor in the field office apart from the Contract Documents used for construction. Project Record Documents are not to be used for construction purposes. Record Documents shall be maintained in good order and in a clean, dry, legible condition and available at all times for the Contracting Officer's inspection.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set of marked-up Record Prints to the Contracting Officer for review and approval prior to final payment.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal: Prior to the Pre-final Acceptance Inspection, submit one set of plots from corrected Record CAD Drawings and one set of marked-up Record Prints to the Contracting Officer. Contracting Officer will initial and date each plot and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. The Contracting Officer will return plots and prints for correction and organizing into sets, printing, binding, and final submittal.
b. Final Submittal: Prior to final payment, submit one set of marked-up Record Prints, set of record transparencies, and three copies printed from Record Transparencies, one set of Record CAD Drawing files, one set of Record CAD Drawing plots, and three copies printed from record plots. Incorporate all comments provided with return of the initial submission. Plot and print each Drawing, whether or not changes and additional information were recorded.

1) Electronic Media: CD-ROM.

B. Record Specifications: Submit one copy of Record Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: During construction, maintain a set of blue or black-line white prints of Contract Drawings and Shop Drawings for Project Record Document purposes.

1. Mark Project Record Drawings to show the actual installation where the installation varies from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to, the following:

a. Dimensional changes to the Drawings.
b. Revisions to details shown on the Drawings.
c. Depths of foundations below the first floor.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.

g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Construction Change Directives.
k. Changes made following the Contracting Officer's written orders.
l. Details not on original Contract Drawings.

2. Mark record prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference to and mark Contract Drawings location.
3. Where Contract Drawings or Shop Drawings cannot be modified to clearly indicate the actual conditions, prepare new drawings as specified in the section.
4. Mark record sets with red erasable colored pencil. Use other colors to distinguish between changes for different categories of the work at the same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note alternate numbers, Change Order numbers, and similar identifications.
7. Responsibility for Markup: The individual, installer, subcontractor or other entity who obtained the record data shall prepare the markup on record drawings.

a. Accurately record information in an understandable drawing technique.
b. Record data as soon as possible after obtaining it. Record and check the markup prior to enclosing concealed installations.

B. Record Transparencies: Prior to Final Acceptance, review completed marked-up record prints with the Project Officer. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. The Contractor is responsible for printing original Contract Drawings and other drawings as required to produce transparencies. The Project Officer will make original Contract Drawings available to the Contractor's print shop.
2. Review of transparencies: Before copying and distributing copies of the corrected drawings, submit corrected transparencies with the original marked-up prints to the Contracting Officer for review and acceptance of the general scope of changes, additional information recorded and quality of drafting. If acceptable, the Contracting Officer will return transparencies and the original marked-up prints to the Contractor for organizing into sets, printing, binding, and final submittal.
3. Copies and Distribution: After completing the preparation of transparency record drawings, print three blue- or black-line prints of each drawing, whether or not changes and additional information were recorded. Organize the copies into manageable sets. Bind each set with durable-paper cover sheets. Include appropriate identification, including titles, dates, and other information on the cover sheets.

a. Organize and bind original marked-up set of prints that were maintained during the construction period in the same manner.
b. Organize record transparencies into sets matching the print sets. Place these sets in durable tube-type drawing containers with end caps marked with suitable identification.
c. Submit the marked-up record set, transparencies, and the copy sets to the Contracting Officer for the City of Rockville records.
d. If project drawings were available in electronic media, then record drawings shall also be provided in electronic media as specified in this section.

C. Newly Prepared Record Drawings: Prepare new drawings instead of following procedures specified for preparing record drawings where new drawings are required when neither the original Contract Drawings nor Shop Drawings are suitable to show the actual installation. New drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.

1. Provide Drawings in a scale that allows for the scope of detailing and notations required to record the actual physical installation and its relationship to other construction.
2. When completed and accepted, integrate newly prepared Drawings with the previous procedures specified for organizing, copying, binding and submitting record drawings.

D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.
    f. Name of Project Officer.

## 2.2 RECORD SPECIFICATIONS

A. During the construction period, maintain three copies of the Project Specifications, including addenda and other modifications issued, for Project Record Document purposes.

1. Mark the Specifications to indicate the actual installation where the installation varies from that indicated in Specifications. Note related project record drawing information, where applicable. Give particular attention to substitutions, selection of product options, and information on concealed installations that would be difficult to identify or measure and record later.

    a. In each Specification section where products, materials or units of equipment are specified or scheduled, mark the copy with the proprietary name and model number of the product furnished.
    b. Record the name of the manufacturer, supplier, installer, and other information necessary to provide a record of selections made and to document coordination with record Product Data submittals and maintenance manuals.

2. Upon completion of markup, submit Record Specifications to the Project Officer for the City of Rockville records.

## 2.3 RECORD PRODUCT DATA

A. During the construction period, maintain one copy of each Product Data submittal for Project Record Document purposes.

1. Mark Product Data to indicate the actual product installation where the installation varies substantially from that indicated in Product Data submitted. Include significant changes in the product delivered to the site and changes in manufacturer's instructions and recommendations for installation.
2. Give particular attention to information about concealed products and installations that cannot be readily identified and recorded later.
3. Note related Change Orders and markup of Record Drawings, where applicable.
4. Upon completion of markup, submit a complete set of record Product Data to the Project Officer.
5. Where record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as record Product Data.

## 2.4 RECORD SAMPLE SUBMITTAL

A. Immediately prior to the date of Substantial Completion, the Contractor shall meet with the Project Officer at the site to determine which of the Samples maintained during the construction period shall be transmitted to the City of Rockville for record purposes.

B. Comply with the Project Officer's instructions for packaging, identification marking and delivery to the City of Rockville sample storage space. Dispose of other samples in a manner specified for disposing of surplus and waste materials.

## 2.5 MISCELLANEOUS RECORD SUBMITTALS

A. Refer to other specification sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to Final Acceptance, assemble completed miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.

B. Submit to the Project Officer for the City of Rockville records.

C. Miscellaneous records include, but are not limited to, the following:

1. Field records on excavations and foundations.
2. Field records on underground construction and similar work.
3. Survey showing locations and elevations of underground lines.
4. Invert elevations of drainage piping.
5. Surveys establishing building lines and levels.
6. Authorized measurements utilizing unit prices or allowances.
7. Records of plant treatment.

8. Ambient and substrate condition tests.
9. Certifications received in lieu of labels on bulk products.
10. Batch mixing and bulk delivery records.
11. Testing and qualification of tradespersons.
12. Documented qualification of installation firms.
13. Load and performance testing.
14. Inspections and certifications by governing authorities.
15. Leakage and water-penetration tests.
16. Fire-resistance and flame-spread test results.
17. Construction photographs and videotapes.
18. Certifications of final disposition/treatment /disposal of wastes.
19. Final inspection and correction procedures.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for the Project Officer's reference during normal working hours.

END OF SECTION 017810

# SECTION 017822 - OPERATION AND MAINTENANCE DOCUMENTATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. This section includes administrative and procedural requirements for operation and maintenance manuals and instruction, including the following.

1. Preparing and submitting instruction manuals covering the care, preservation and maintenance of materials and finishes.
2. Preparing and submitting operation and maintenance manuals for equipment and building operating systems.
3. Instruction of the City of Rockville operating personnel in the operation and maintenance of building systems and equipment.

B. This specification section is related to any and all specification sections with explicit or implicit reference to operation and maintenance documentation including but not limited to the following Division 1 specification sections:

1. Division 1 Section "Summary"
2. Division 1 Section "Project Management and Coordination"
3. Division 1 Section "Construction Progress Documentation"
4. Division 1 Section "Photographic Documentation"
5. Division 1 Section "Submittal Procedures"
6. Division 1 Section "Quality Requirements"
7. Division 1 Section "Construction Quality Control"
8. Division 1 Section "Safety and Health"
9. Division 1 Section "Product Requirements"
10. Division 1 Section "Closeout Procedures"
11. Division 1 Section "Project Record Documents"
12. Division 1 Section "Demonstration and Training"

C. Additional Requirements: Refer to the individual Division 2-16 technical specification sections for specific operations and maintenance manual requirements for products and systems in those sections and additional requirements for the care and maintenance of materials and finishes, and for the operation and maintenance of the various pieces of equipment and operating systems.

1.3 QUALIFICATIONS

A. Operation and Maintenance Manual Preparation: In preparation of manuals, use personnel thoroughly trained and experienced in the maintenance of the material or finish involved, or in the operation and maintenance of the equipment or system involved.

1. Where manuals require written instructions, use the personnel skilled in technical writing where necessary for communication of essential data.
2. Where manuals require drawings or diagrams, use draftspersons capable of preparing drawings clearly in an understandable format.

B. Instructions for the City of Rockville Personnel: Use instructors thoroughly trained and experienced in the operation and maintenance of the equipment or system involved to instruct the City of Rockville operation and maintenance personnel.

1.4 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

1.6 SUBMITTALS

A. Initial Submittal: Submit to the Contracting Officer 2 (two) draft copies of each manual at least 14 calendar days before the Pre-final Inspection. Include a complete operation and maintenance directory. The Contracting Officer will return 1 (one) copy of draft with comments for incorporation into the final submission.

1. Should comments be extensive, the Contracting Officer may require the Initial Submission to be repeated prior to scheduling a Final Inspection.
2. Initial submittal shall occur at the initial occupancy phase

B. Final Submittal: Submit 2 (two) copies of each manual in final form at least two working days before the final inspection. If comments on the Initial Submittal are extensive, the Contracting Officer may require additional time in advance of the Final Inspection for the Final Submittal. Contracting Officer will provide return a copy with comments within 14 calendar days after final inspection.

1. Correct or modify each manual to comply with the Contracting Officer's comments. Submit 2 (two) copies of each corrected manual within 14 calendar days of receipt of Contracting Officer's comments.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Provide a comprehensive Operation and Maintenance Documentation Directory which provides a quick reference document for all the manuals provided for the project.

B. Organization: Include a section in the directory for each of the following:

1. Systems and Subsystems.

a. List systems and subsystems alphabetically. Include references to operation and maintenance manuals that contain information about each system and subsystem.

2. Equipment.

a. List equipment for each system and subsystem, organized alphabetically by system. For pieces of equipment not part of system or subsystem, list alphabetically in separate list.

3. Tables of contents.

a. Include a copy of the table of contents for each emergency, operation, and maintenance manual.

C. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the contract documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization and Content: Organize each manual into separate sections for each related product or piece of equipment. To the extent applicable, each manual shall contain a title page, table of contents, general information, copies of Product Data, written text, drawings and copies of each warranty and service contract issued.

1. Title Page: Provide a title page in a transparent, plastic envelope as the first sheet of each manual. As a minimum, provide the following information:

a. Subject matter covered by the manual.
b. Name and address of the Project.
c. Date of submittal.
d. Name, address, and telephone number of the Contractor.
e. Cross-reference to related products in other operation and maintenance manuals, if applicable.

2. Table of Contents: After title page, include a typewritten table of contents for each volume, arranged systematically by specification section according to the specifications format. Include a list of each product included, identified by product name or other

appropriate identifying symbol and indexed to the content of the volume. Where more than one volume is required to accommodate the data, provide a comprehensive table of contents for all volumes in each volume of the set.

3. General Information: Provide a general information section immediately following table of contents, listing each product included in the manual, identified by product name. Under each product, list the name, address, and telephone number of the subcontractor or installer and the maintenance contractor. Clearly delineate the extent of responsibility for each of these entities. Include a local source for replacement parts for equipment.
4. Product Data: Where the manuals include manufacturer's standard printed data, include only those sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where the project includes more than one item contained in the product data, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation, and delete references to information that is not applicable.
5. Written Text: Prepare written text to provide necessary information where manufacturer's standard printed data is not available, and the information is necessary for proper maintenance of materials or finishes, or for proper operation and maintenance of equipment or systems. Prepare written text where it is necessary to provide additional information or to supplement data included elsewhere in the manual. Organize text in a consistent format under separate headings for different procedures. Where necessary, provide a logical sequence of instruction for each operation or maintenance procedure.
6. Drawings: Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate the relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate these drawings with information contained in Project Record Drawings to assure correct illustration of the completed installation.
7. Warranties, and Service Contracts: Provide a copy of each warranty or service contract in the appropriate manual for the information of the City of Rockville operating personnel. Provide written data outlining procedures to follow in the event of product failure. List circumstances and conditions that would affect the validity of warranty.
8. Where required for full understanding, include a copy of applicable Project Record Drawings. Do not use original Project Record Documents as part of operation and maintenance manuals.

B. Format: Prepare operation and maintenance manuals in the form of an instructional manual for use by operating and maintenance personnel. Organize into suitable sets of manageable size. Where possible, assemble instructions for similar products into a single binder.

1. Binders: For each manual, provide heavy-duty, commercial-quality, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper. Provide a clear plastic sleeve on the spine to hold labels describing contents. Provide pockets in the covers to receive folded sheets.

    a. Where 2 or more binders are necessary to accommodate data, correlate data in each binder into related groupings according to the Specifications table of contents. Cross-reference other binders where necessary to provide essential information for proper operation or maintenance of the product.
    b. Identify each binder on front and spine, with the printed type of manual (OPERATION MANUAL, MAINTENANCE MANUAL, EMERGENCY MANUAL, etc.), Project title or name, and subject matter covered. Indicate volume number for multiple volume sets of manuals.

2. Dividers: Provide heavy paper dividers with celluloid-covered tabs for each separate section. Mark each tab to indicate contents. Provide a typed description of the product or major parts of equipment included in the section on each divider.
3. Protective Plastic Jackets: Provide protective, transparent, plastic jackets designed to enclose diagnostic software for computerized electronic equipment.
4. Text Material: Where maintenance manuals require written material, use the manufacturer's standard printed materials, where available. If manufacturer's standard printed materials are not available, provide specially prepared data, neatly typewritten, on 8-1/2-by-11-inch (115-by-280-mm), 20-lb/sq. ft. (75-g/sq. m) white bond paper.
5. Drawings: Where manuals require drawings or diagrams, provide reinforced, punched binder tabs on drawings and bind in with text.

    a. Where oversize drawings are necessary, fold drawings to the same size as text pages and use as a foldout.
    b. If drawings are too large to be used practically as a foldout, place the drawing, neatly folded, in the front or rear pocket of binder. Insert a typewritten page indicating drawing title, description of contents and reference to the applicable location in the manual.

C. Optional Format of Final Manuals: If specifically approved by the Contracting Officer, written and graphic portions of final manuals may be submitted in a CD ROM electronic format acceptable to the City of Rockville. Manual content and specific information to be included in each type of manual shall comply as specified for bound manuals. Content that is not included in CD ROM electronic format shall be assembled into binders with dividers and other requirements specified for bound manuals. CD ROM disks and binders shall be fully and clearly labeled, with disks and associated binders for each manual boxed or otherwise packaged for accessible storage together.

## 2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each type of emergency with subordinate sections including Emergency Instructions and Emergency Procedures.

1. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

    a. Fire.
    b. Flood.
    c. Gas leak.
    d. Water leak.
    e. Power failure.
    f. Water outage.
    g. System, subsystem, or equipment failure.
    h. Chemical release or spill.

2. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of the City of Rockville operating personnel for notification of installer, supplier, and manufacturer to maintain warranties.
3. Emergency Procedures: Include the following, as applicable:

a. Instructions on stopping.
b. Shutdown instructions for each type of emergency.
c. Operating instructions for conditions outside normal operating limits.
d. Required sequences for electric or electronic systems.
e. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: Provide information needed for daily operations and management of systems and equipment. In addition to requirements in this section, include operation data required in individual Division 2-16 technical specification sections and the following information:

1. System, subsystem, and equipment descriptions.

a. Product name and model number.
b. Manufacturer's name.
c. Equipment identification with serial number of each component.
d. Equipment function.
e. Operating characteristics.
f. Limiting conditions.
g. Performance curves.
h. Engineering data and tests.
i. Complete nomenclature and number of replacement parts.

2. Performance and design criteria if contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.

a. Emergency Shutdown procedures
b. Startup procedures.
c. Equipment or system break-in procedures.
d. Routine and normal operating instructions.
e. Regulation and control procedures.
f. Instructions on stopping.
g. Normal shutdown instructions.
h. Seasonal and weekend operating instructions.
i. Required sequences for electric or electronic systems.
j. Special operating instructions and procedures.

5. Operating logs.
6. Wiring diagrams.
7. Circuit Directories: For electric and electronic systems, provide complete circuit directories of panel boards, including the following, as applicable:

a. Electric service.
b. Controls.
c. Communication.

8. Systems and Equipment Controls. Describe the sequence of operation, and diagram controls as installed

9. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification. Provide charts of valve-tag numbers, with the location and function of each valve.
10. Precautions against improper use.
11. License requirements including inspection and renewal dates.

## 2.5 PRODUCT MAINTENANCE MANUAL

A. Content and Organization: Organize manual into a separate section for each product, material, and finish. Order manual by specification section of the applicable product. Include the following for each product:

1. Source information. List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list :

    a. Name, Address, Telephone number of Installer or supplier and maintenance service agent.
    b. Cross-reference to Specification Section number and title in Project Manual.

2. Product information, Include the following, as applicable:

    a. Product name and model number.
    b. Manufacturer's name.
    c. Color, pattern, and texture.
    d. Material and chemical composition.
    e. Reordering information for specially manufactured products.

3. Maintenance procedures: Include manufacturer's written recommendations and the following:

    a. Inspection procedures.
    b. Types of cleaning agents to be used and methods of cleaning.
    c. List of cleaning agents and methods of cleaning detrimental to product.
    d. Schedule for routine cleaning and maintenance.
    e. Repair instructions.

4. Repair materials and sources: Include lists of materials and local sources of materials and related services.
5. Warranties and bonds, Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

    a. Include procedures to follow and required notifications for warranty claims.

## 2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content and Organization: Organize manual into a separate section for each system, subsystem, and piece of equipment not part of a system ordered by specification section. Include the following information in each section:

1. Source information. List each system, subsystem, and piece of equipment included in the manual identified by product name and arranged to match manual's table of contents. For each item provide:

    a. Name, address, and telephone number of Installer or supplier and maintenance service agent
    b. Cross-reference Specification Section number and title in Project Manual.

2. Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

    a. Standard printed maintenance instructions and bulletins.
    b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
    c. Identification and nomenclature of parts and components.
    d. List of items recommended to be stocked as spare parts.

3. Maintenance procedures: Include the following information and items that detail essential maintenance procedures:

    a. Test and inspection instructions.
    b. Troubleshooting guide.
    c. Precautions against improper maintenance.
    d. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    e. Aligning, adjusting, and checking instructions.
    f. Demonstration and training videotape, if available.

4. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

    a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
    b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

5. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
6. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
7. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds. This requirement is in addition to the requirement for Warranty Manuals included in Division 1 Section "Product Requirements and Warranties."

## 2.7 INSTRUCTIONS FOR the City of Rockville PERSONNEL

A. Prior to the Substantial Completion inspection, instruct the City of Rockville personnel in operation, adjustment, and maintenance of products, equipment, and systems. Provide instruction at mutually agreed times.

B. Use operation and maintenance manuals for each product, piece of equipment or system as the basis of instruction. Review contents in detail to explain all aspects of operation and maintenance.

C. Posted Logs and Instructions: Place operating logs and instructions in see-through vinyl or other weather protective sleeves or framed enclosures, and post for use by the City of Rockville personnel in locations approved by the Project Officer.

1. Post operating log sheets with spares at or near the applicable equipment.
2. Post flow schematics, wiring diagrams, valve lists, control sequences, start-up and shut-down instructions, and similar information and instructions in the appropriate equipment rooms.

## PART 3 - EXECUTION

### 3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals. If Record drawings must be used, copies are to be included in the manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION 017822

# SECTION 260050 - COMMON WORK RESULTS FOR ELECTRICAL

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Common electrical installation requirements.

### 1.2 DESCRIPTION OF WORK

A. Requirements of this Section are applicable to work in Division 26.

B. Contract Documents

1. Contract drawings for electrical work are diagrammatic, intended to convey scope and general arrangement.
2. Refer questions involving document interpretation or discrepancies to Engineer for review and direction.
3. Correct faulty work due to resolving discrepancies without proper approval.
4. Specifications establish quality of materials, equipment, workmanship and methods of construction.
5. Follow drawings and specifications in laying out work. Consult other applicable contract drawings and specifications, become familiar with conditions affecting work.

C. Scope

1. Furnish and install the electrical work complete and ready for satisfactory service.

D. Definitions: The following are definitions of terms and expressions used in Divisions 26.

1. “Accessible” – Capable of being removed or exposed without damaging the building or structure or finish or not permanently closed in by other equipment or by the structure or finish of the building.
2. “Approve” - To permit use of material, equipment or methods conditional upon compliance with contract document requirements.
3. “Concealed” - Hidden from normal sight; includes work in crawl spaces, above ceilings, and in building shafts.
4. “Directed” - directed by Engineer.
5. “Equal, equivalent” - possessing the same performance qualities and characteristics and fulfilling the same utilitarian function.
6. “Exposed” - not concealed.
7. “Furnish” - Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar operations.
8. “Indicated” - indicated in Contract Documents.
9. “Install” - Operations at project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimensions, finishing, curing, protecting, cleaning and similar operations.
10. “Provide” - furnish and install, complete and ready for the intended use.

11. “Removable” - detachable from the structure or system without physical alteration of materials or equipment and without disturbance to other construction.
12. “Review” - limited observation or checking to ascertain general conformance with design concept of the work and with information given in contract documents. Such action does not constitute a waiver or alteration of the contract requirements.

## 1.3 QUALITY ASSURANCE

A. Regulations: Comply with regulations of NFPA, state, county, and municipal building ordinances, and other applicable codes and regulations.

B. Provide UL label on electric powered equipment or certification that equipment has been tested by a testing agency approved by the local authority as equivalent in safety to UL labeled equipment.

C. Material and Equipment Requirements

1. All materials and equipment shall be new and free from defects.
2. Use products of one manufacturer where two or more items of same kind of equipment are required.
3. For certain items of equipment, the specification and the project design are based upon the specified manufacturer's product. Other manufacturers' names are listed. Contractor may purchase, conditional upon meeting project requirements, equipment from the listed manufacturers.
4. Only the manufacturer's equipment upon which the specification and the project design has been based, has been checked for this project. Check allocated space and structure for suitability of equipment of other listed manufacturers, including parts replacement and servicing.

D. Workmanship

1. Remove and replace, at no extra cost, work not in conformance with contract requirements.
2. Coordinate with Other Trades

   a. Coordinate work and cooperate with other trades to facilitate execution of work.
   b. Give full cooperation and coordination with other trades and furnish information necessary to permit the work of all trades to be installed satisfactorily with the least possible interference or delay.
   c. Furnish to other trades, as required, necessary templates, patterns, setting plans and shop details for the proper installation of the work and for the purpose of coordinating adjacent work.

3. Accessible Equipment and Systems: Consider all materials and equipment installations and coordinate with the work of other trades to ensure equipment or systems are accessible for operations, maintenance, repairs, and replacement. Install materials and equipment, including but not limited to, supports and electrical conduit, to permit complete unobstructed access to panelboards, transformers, and other items requiring access for inspection, maintenance, and operations. The installation of new equipment or materials which renders new or existing equipment inaccessible will be disapproved by the Engineer and shall be corrected by the Contractor.

## 1.4 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment as follows:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So that connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed.

## 1.5 SHOP DRAWINGS AND SUBMITTALS

A. Refer to Division 01 for complete requirements.

B. Submit all products for a single specification section as a complete submittal. All products specified within a division shall be included, otherwise submittal will be returned as incomplete.

C. Clearly mark submittals to indicate actual intended products to be utilized. Marks may include highlighting, circling, boxing, checking, etc. Do not provide submittal data which lists multiple product’s options and features without clearly indicating which data applies to the products intended to be used on project.

D. Coordinate drawings and data before submitting and certify that provisions of the contract documents have been met.

E. Call attention, in writing, to deviations from contract requirements.

F. Do not fabricate, deliver to site, or install items requiring shop drawing review, until the review has been completed by the Engineer and the shop drawing has been marked to indicate "No Exception Taken" or "Make Corrections Noted."

G. Use only final or corrected drawings and data for construction. This includes all Addendums, Architectural Supplemental Information (ASIs), and Change Bulletins.

H. The Engineer’s review of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounted items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

F. Conditions of Occupancy

1. This building will be occupied during the life of this contract. Execute work in a manner to impose minimal interference with the normal functioning of the building and its occupants. When interference is unavoidable, schedule work 14 days in advance with the Owner.
2. Make temporary connections where necessary to maintain uninterrupted electrical service.
3. Provide adequate protection for the building, its contents, and occupants.
4. Perform work as quietly as possible to avoid unnecessary disturbance. Unusual precaution may be necessary in the conduct or work in some areas to achieve satisfactory compliance.
5. Coordinate with Owner to Perform work producing high noise levels, dust, or hazards to occupants in occupied during non-business hours of the facility.
6. Comply with regulations of Owner pertaining to circulation, sanitation, and behavior of Contractor's personnel.

3.1 ACCESS PANELS

A. Provide access panels or doors that are indicated or required for access to control devices, and to concealed electrical devices which may require future inspection, repair or adjustment; and elsewhere as required by applicable codes.

B. Use ceiling element as access panel in suspended metal pan, lay-in panel, and accessible tile ceilings.

C. Contractor shall demonstrate that sufficient access has been provided to service or replace the device behind access door/panel, if requested by the Commissioning Authority or the Government.

END OF SECTION 260050

# SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Connectors and splices.

### 1.2 ACTION SUBMITTALS

A. Product Data:

1. Copper building wire.
2. Connectors and splices.

## PART 2 - PRODUCTS

### 2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alpha Wire; brand of Belden, Inc.
2. Belden Inc.
3. Cerro Wire LLC.
4. Encore Wire Corporation.
5. General Cable; Prysmian Group North America.
6. Okonite Company (The).
7. Service Wire Co.
8. Southwire Company, LLC.
9. WESCO.

C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Conductor Insulation:

1. Type XHHW-2. Comply with UL 44.

## 2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.

C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Copper.
2. Type: Two hole with long barrels.
3. Termination: Compression.

# PART 3 - EXECUTION

## 3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders:

1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits:

1. Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

## 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type XHHW-2, single conductors in raceway.

B. Exposed Feeders: Type XHHW-2, single conductors in raceway.

C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

D. Exposed Branch Circuits, Including in Crawlspaces: Type XHHW-2, single conductors in raceway.

E. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

## 3.3 INSTALLATION, GENERAL

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points in accordance with Section 260533.13 "Conduits for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

G. Complete cable tray systems installation according to Section 260536 "Cable Trays for Electrical Systems" prior to installing conductors and cables.

## 3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inch of slack.

## 3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

## 3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

## 3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

# SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding clamps.
3. Grounding and bonding bushings.
4. Grounding and bonding hubs.
5. Grounding and bonding connectors.
6. Grounding and bonding busbars.
7. Grounding (earthing) electrodes.

### 1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product indicated.

## PART 2 - PRODUCTS

### 2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V,, copper wire or cable, green color, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. ASTM - Bare Copper Grounding and Bonding Conductor:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ERICO; brand of nVent Electrical plc.
   b. Harger Lightning & Grounding; business of Harger, Inc.

2. Referenced Standards: Complying with one or more of the following:

   a. Soft or Annealed Copper Wire: ASTM B3
   b. Concentric-Lay Stranded Copper Conductor: ASTM B8.
   c. Tin-Coated Soft or Annealed Copper Wire: ASTM B33.
   d. 19-Wire Combination Unilay-Stranded Copper Conductor: ASTM B787/B787M.

2.2 GROUNDING AND BONDING CLAMPS

A. Description: Clamps suitable for attachment of grounding and bonding conductors to grounding electrodes, pipes, tubing, and rebar.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

2.3 GROUNDING AND BONDING BUSHINGS

A. Description: Bonding bushings connect conduit fittings, tubing fittings, threaded metal conduit, and unthreaded metal conduit to metal boxes and equipment enclosures, and have one or more bonding screws intended to provide electrical continuity between bushing and enclosure. Grounding bushings have provision for connection of bonding or grounding conductor and may or may not also have bonding screws.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

2.4 GROUNDING AND BONDING HUBS

A. Description: Hubs with certified grounding or bonding locknut.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

## 2.5 GROUNDING AND BONDING CONNECTORS

A. Source Limitations: Obtain products from single manufacturer.

B. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

## 2.6 GROUNDING AND BONDING BUSBARS

A. Description: Miscellaneous grounding and bonding device that serves as common connection for multiple grounding and bonding conductors.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. Equipment Room Grounding and Bonding Busbar:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Chatsworth Products, Inc.
b. Continental Industries; brand of Hubbell Utility Solutions; Hubbell Incorporated.
c. Cooper B-line; brand of Eaton, Electrical Sector.
d. ERICO; brand of nVent Electrical plc.
e. Harger Lightning & Grounding; business of Harger, Inc.

f. Hoffman; brand of nVent Electrical plc.
g. ILSCO.
h. Panduit Corp.
i. allG Fabrication (formerly ALT).

2. General Characteristics:

a. Bus: Rectangular bar of annealed copper.
b. Mounting Stand-Off Insulators: Lexan or PVC.

1) Comply with UL 891 for use in 600 V switchboards, impulse tested at 5000 V.

3. Options:

a. Dimensions: 1/4 by 4 inch in cross section; length as indicated on Drawings.
b. Predrilled Hole Pattern: 9/32 inch holes spaced 1-1/8 inch apart Suitable for installing specified grounding and bonding connectors.
c. Mounting Hardware: Stand-off brackets that provide 4 inch clearance to access rear of bus. Brackets and bolts must be stainless steel.

## 2.7 GROUNDING (EARTHING) ELECTRODES

A. Description: Grounding electrodes include rod electrodes, ring electrodes, metal underground water pipes, metal building frames, concrete-encased electrodes, and pipe and plate electrodes.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. Listing Criteria:

a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. Rod Electrode:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB, Electrification Business.
b. Continental Industries; brand of Hubbell Utility Solutions; Hubbell Incorporated.
c. ERICO; brand of nVent Electrical plc.
d. Galvan Industries, Inc.; Electrical Products Division, LLC.
e. Harger Lightning & Grounding; business of Harger, Inc.
f. allG Fabrication (formerly ALT).

2. General Characteristics: Copper-clad steel; 3/4 inch by 10 ft.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine facility's grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of electrical system.

B. Inspect test results of grounding system measured at point of electrical service equipment connection.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with connection of electrical service equipment only after unsatisfactory conditions have been corrected.

3.2 SELECTION OF BUSBARS

A. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus horizontally, on insulated spacers 2 inch minimum from wall, 6 inch above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

3.3 SELECTION OF GROUNDING AND BONDING CONDUCTORS

A. Conductors: Install solid conductor for 8 AWG and smaller, and stranded conductors for 6 AWG and larger unless otherwise indicated.

B. Custom-Length Insulated Equipment Bonding Jumpers: 6 AWG, 19-strand, Type THHN.

C. Bonding Cable: 28 kcmil, 14 strands of 17 AWG conductor, 1/4 inch in diameter.

D. Bonding Conductor: 4 AWG or 6 AWG, stranded conductor.

E. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inch wide and 1/16 inch thick.

F. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inch wide and 1/16 inch thick.

G. Underground Grounding Conductors: Install bare [**tinned-**]copper conductor, 2/0 AWG minimum.

1. Bury at least 30 inch below grade.

3.4 SELECTION OF CONNECTORS

A. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.5 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Special Techniques:

1. Conductors:

a. Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

2. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
b. Make connections with clean, bare metal at points of contact.
c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
f. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1) Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate adjacent parts.
2) Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3) Use exothermic-welded connectors for outdoor locations; if disconnect-type connection is required, use bolted clamp.

3. Electrodes:

a. Ground Rods: Drive rods until tops are 2 inch below finished floor or final grade unless otherwise indicated.

1) Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

2) Use exothermic welds for below-grade connections.

b. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Section 260543 "Underground Ducts and Raceways for Electrical Systems," and must be at least 12 inch deep, with cover.

1) Install at least one test well for each service unless otherwise indicated. Install at ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

4. Grounding at Service:

a. Equipment grounding conductors and grounding electrode conductors must be connected to ground bus. Install main bonding jumper between neutral and ground buses.
b. Grounding Manholes and Handholes: Install driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inch will extend above finished floor. If necessary, install ground rod before manhole is placed and provide 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inch above to 6 inch below concrete. Seal floor opening with waterproof, nonshrink grout.
c. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields in accordance with manufacturer's published instructions with splicing and termination kits.

5. Equipment Grounding:

a. Install insulated equipment grounding conductors with feeders and branch circuits.

## 3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.
3. Test completed grounding system at each location where maximum ground-resistance level is specified, and at service disconnect enclosure grounding terminal. Make tests at ground rods before conductors are connected.

a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by means other than natural

drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.

b. Perform tests by fall-of-potential method in accordance with IEEE Std 81.

c. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to record of tests and observations. Include number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

D. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

E. Collect, assemble, and submit test and inspection reports.

1. Report measured ground resistances that exceed the following values:

a. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 Ω.
b. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 Ω.
c. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 Ω.
d. Manhole Grounds: 10 Ω.

## 3.7 PROTECTION

A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 260526

# SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Support, anchorage, and attachment components.
2. Fabricated metal equipment support assemblies.

### 1.2 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Slotted support systems, hardware, and accessories.
b. Clamps.
c. Hangers.
d. Sockets.
e. Eye nuts.
f. Fasteners.
g. Anchors.
h. Saddles.
i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified structural professional engineer to design hanger and support system.

### 2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ABB, Electrification Business.
b. Allied Tube & Conduit; Atkore International.
c. CADDY; brand of nVent Electrical plc.

d. Cooper B-line; brand of Eaton, Electrical Sector.
e. Flex-Strut Inc.
f. G-Strut.
g. Gripple Inc.
h. Haydon Corporation.
i. MIRO Industries.
j. Metal Ties Innovation.
k. Rocket Rack; Robroy Industries.
l. Unistrut; Atkore International.
m. Wesanco, Inc.

2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Material for Channel, Fittings, and Accessories: Galvanized steel.
4. Channel Width: Selected for applicable load criteria.
5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

B. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
2. Mechanical-Expansion Anchors: Insert-wedge-type, [**zinc-coated**] [**stainless**] steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.
6. Toggle Bolts: Stainless steel springhead type.
7. Hanger Rods: Threaded steel.

## 2.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

# PART 3 - EXECUTION

## 3.1 SELECTION

A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA NEIS 101
2. NECA NEIS 102.

B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."

D. Comply with requirements for boxes specified in Section 260533.16 "Boxes and Covers for Electrical Systems."

E. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERMC as required by NFPA 70. Minimum rod size must be 1/4 inch in diameter.

F. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

## 3.2 INSTALLATION OF SUPPORTS

A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.

B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT and ERMC may be supported by openings through structure members, in accordance with NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inch thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inch thick.
6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69, Spring-tension clamps.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

## 3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M. Submit welding certificates.

## 3.4 PAINTING

A. Touchup:

1. Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION 260529

# SECTION 260533.13 - CONDUITS FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Type EMT-S duct raceways and elbows.
2. Type ERMC-A duct raceways, elbows, couplings, and nipples.
3. Type FMC-S duct raceways.
4. Fittings for conduit, tubing, and cable.
5. Electrically conductive corrosion-resistant compounds for threaded conduit.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" for nonmetallic underground conduit with conductors (Type NUCC).
2. Section 260543 "Underground Ducts and Raceways for Electrical Systems" for exterior duct banks, manholes, and underground utility construction.

### 1.2 DEFINITIONS

A. Conduit: A structure containing one or more duct raceways.

B. Duct Raceway: A single enclosed raceway for conductors or cable.

C. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. Type EMT-S duct raceways and elbows.
2. Type ERMC-A duct raceways, elbows, couplings, and nipples.
3. Type FMC-S duct raceways.
4. Fittings for conduit, tubing, and cable.
5. Electrically conductive corrosion-resistant compounds for threaded conduit.

PART 2 - PRODUCTS

2.1 TYPE EMT-S DUCT RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FJMX; including UL 797.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL FJMX - Steel Electrical Metal Tubing (EMT-S) and Elbows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Allied Tube & Conduit; Atkore International.
b. Calconduit; Atkore International.
c. Emerson Electric Co., Automation Solutions.
d. Picoma; Zekelman Industries.
e. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
f. Topaz Lighting & Electric.
g. Western Tube; Zekelman Industries.
h. Wheatland Tube; Zekelman Industries.

2. Material: Steel.
3. Options:

a. Exterior Coating: Zinc.
b. Interior Coating: Zinc with organic top coating.
c. Minimum Trade Size: Metric designator 21 (trade size 3/4).

2.2 TYPE ERMC-A DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYWV; including UL 6A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL DYWV - Aluminum Electrical Rigid Metal Conduit (ERMC-A), Elbows, Couplings, and Nipples:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ABB, Electrification Business.
b. Allied Tube & Conduit; Atkore International.
c. American Conduit; Norsk Hydro ASA, Hydro Extrusion USA LLC.
d. Appleton; Emerson Electric Co., Automation Solutions.
e. Calconduit; Atkore International.
f. Crouse-Hinds; brand of Eaton, Electrical Sector.
g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
h. Patriot Aluminum Products, LLC.
i. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway.
j. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
k. Topaz Lighting & Electric.
l. Western Tube; Zekelman Industries.
m. Wheatland Tube; Zekelman Industries.

2. Material: Aluminum.
3. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

## 2.3 TYPE FMC-S DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXUZ; including UL 1.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL DXUZ - Steel Flexible Metal Conduit (FMC-S):

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ABB, Electrification Business.
b. Anaconda Sealtite; Anamet Electrical, Inc.
c. Electri-Flex Company.
d. International Metal Hose Co.
e. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway.
f. Topaz Lighting & Electric.

2. Material: Steel.
3. Options:

    a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

## 2.4 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL DWTT - Fittings for Type ERMC Duct Raceways:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Crouse-Hinds; brand of Eaton, Electrical Sector.
    d. Konkore Fittings; Atkore International.
    e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    f. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway.
    g. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    h. Southwire Company, LLC.
    i. Topaz Lighting & Electric.

2. Listing Criteria: UL CCN DWTT; including UL 514B.
3. Options:

    a. Material: Steel or Die cast.
    b. Coupling Method: Compression coupling.
    c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.

D. UL FKAV - Fittings for Type EMT Duct Raceways:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Allied Tube & Conduit; Atkore International.
    c. Appleton; Emerson Electric Co., Automation Solutions.
    d. Calconduit; Atkore International.
    e. Crouse-Hinds; brand of Eaton, Electrical Sector.

f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
g. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
h. Southwire Company, LLC.
i. Topaz Lighting & Electric.

2. Listing Criteria: UL CCN FKAV; including UL 514B.
3. Options:

a. Material: Steel or Die cast.
b. Coupling Method: Compression coupling.
c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.

E. UL ILNR - Fittings for Type FMC Duct Raceways:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. American Fittings Corp. (AMFICO).
b. Liquid Tight Connector Co.
c. Southwire Company, LLC.

2. Listing Criteria: UL CCN ILNR; including UL 514B.

## 2.5 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT COMPOUNDS FOR THREADED CONDUIT

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FOIZ; including UL Subject 2419.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL FOIZ - Electrically Conductive Corrosion-Resistant Compound for Threaded Conduit:

# PART 3 - EXECUTION

## 3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.

B. Outdoors:

1. Exposed: ERMC.

C. Indoors:

1. Exposed: EMT.
2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
3. Damp or Wet Locations: ERMC.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC.

D. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.

1. ERMC: Provide threaded-type fittings unless otherwise indicated.

## 3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
2. Type ERMC-A: Article 344 of NFPA 70 and NECA NEIS 102.
3. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
4. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. General Requirements for Installation of Duct Raceways:

a. Complete duct raceway installation before starting conductor installation.
b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft above finished floor.
c. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
d. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
e. Support conduit within 12 inch of enclosures to which attached.
f. Keep duct raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
g. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
h. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inch of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.

i. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.

1) Termination fittings with shoulders do not require two locknuts.

j. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

2. Types ERMC-A: Do not install aluminum duct raceways or fittings in contact with concrete or earth.
3. Types ERMC:

a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.

4. Types FMC:

a. Provide a maximum of 36 inch of flexible conduit forequipment subject to vibration, noise transmission, or movement; and for transformers and motors.

5. Duct Raceways Embedded in Slabs:

a. Run duct raceways larger than metric designator 27 (trade size 1) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place duct raceway close to slab support. Secure duct raceways to reinforcement at maximum 10 ft intervals.
b. Arrange duct raceways to cross building expansion joints with expansion fittings at right angles to the joint.
c. Arrange duct raceways to ensure that each is surrounded by minimum of 2 inch of concrete without voids.
d. Do not embed threadless fittings in concrete unless locations have been specifically approved by Architect.

6. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.

a. EMT: Provide compression, steel, or cast-metal fittings. Comply with NEMA FB 2.10.
b. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.

7. Identification: Provide labels for conduit assemblies, duct raceways, and associated electrical equipment.

a. Provide warning signs.

D. Interfaces with Other Work:

1. Coordinate with Section 078413 "Penetration Firestopping" for installation of firestopping at penetrations of fire-rated floor and wall assemblies.

2. Coordinate with Section 260529 "Hangers and Supports for Electrical Systems" for installation of conduit hangers and supports.

3.3 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 260533.13

# SECTION 260533.16 - BOXES AND COVERS FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

### 1.2 ACTION SUBMITTALS

A. Product Data:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

## PART 2 - PRODUCTS

### 2.1 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN QCIT; including UL 514A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL QCIT - Metallic Outlet Boxes and Covers:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides of the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Arlington Industries, Inc.
    d. Crouse-Hinds; brand of Eaton, Electrical Sector.
    e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    h. MonoSystems, Inc.
    i. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    j. Pass & Seymour; Legrand North America, LLC.
    k. Patriot Aluminum Products, LLC.
    l. Plasti-Bond; Robroy Industries.
    m. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    n. Spring City Electrical Manufacturing Company.
    o. Topaz Lighting & Electric.
    p. Wiremold; Legrand North America, LLC.

3. Options:

    a. Material: Sheet steel or Cast metal.
    b. Sheet Metal Depth: Minimum 2-1/8 inch.
    c. Cast-Metal Depth: Minimum 2-1/8 inch.

D. UL QCIT - Metallic Conduit Bodies:

1. Description: Means for providing access to interior of conduit or tubing system through one or more removable covers at junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Crouse-Hinds; brand of Eaton, Electrical Sector.
    d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    f. Pass & Seymour; Legrand North America, LLC.
    g. Patriot Aluminum Products, LLC.
    h. Plasti-Bond; Robroy Industries.
    i. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    j. Topaz Lighting & Electric.

E. UL QCIT - Metallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Arlington Industries, Inc.
    d. Crouse-Hinds; brand of Eaton, Electrical Sector.
    e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    h. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    i. Patriot Aluminum Products, LLC.
    j. Plasti-Bond; Robroy Industries.
    k. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    l. Topaz Lighting & Electric.

3. Options:

    a. Material: Sheet steel or Cast metal.
    b. Sheet Metal Depth: minimum 2-1/8 inch.
    c. Cast-Metal Depth: minimum 2-1/8 inch.

F. UL QCIT - Metallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. ABB, Electrification Business.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Cooper B-line; brand of Eaton, Electrical Sector.
    d. Crouse-Hinds; brand of Eaton, Electrical Sector.
    e. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    f. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    g. Pass & Seymour; Legrand North America, LLC.
    h. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    i. Topaz Lighting & Electric.

## 2.2 JUNCTION BOXES AND PULL BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN BGUZ; including UL 50 and UL 50E.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL BGUZ - Indoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Adalet.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Cooper B-line; brand of Eaton, Electrical Sector.
    d. FSR Inc.
    e. Hoffman; brand of nVent Electrical plc.
    f. Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    g. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    h. Milgard Manufacturing, LLC.
    i. N J Sullivan Company.
    j. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
    k. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
    l. Spring City Electrical Manufacturing Company.
    m. Square D; Schneider Electric USA.

3. Options:

    a. Degree of Protection: Type 1.

D. UL BGUZ - Indoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Adalet.
    b. Appleton; Emerson Electric Co., Automation Solutions.
    c. Crouse-Hinds; brand of Eaton, Electrical Sector.
    d. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.

3. Options:

a. Degree of Protection: Type 1.

E. UL BGUZ - Outdoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Adalet.
b. Appleton; Emerson Electric Co., Automation Solutions.
c. Cooper B-line; brand of Eaton, Electrical Sector.
d. FSR Inc.
e. Hoffman; brand of nVent Electrical plc.
f. Hubbell Industrial Controls; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
g. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
h. Milgard Manufacturing, LLC.
i. N J Sullivan Company.
j. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
k. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
l. Spring City Electrical Manufacturing Company.
m. Square D; Schneider Electric USA.

3. Options:

a. Degree of Protection: Type 3R.

F. UL BGUZ - Outdoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Adalet.
b. Appleton; Emerson Electric Co., Automation Solutions.
c. Crouse-Hinds; brand of Eaton, Electrical Sector.
d. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.

3. Options:

a. Degree of Protection: Type 3R.

## 2.3 COVER PLATES FOR DEVICES BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN QCIT or UL CCN QCMZ; including UL 514D.
3. Wallplate-Securing Screws: Metal with head color to match wallplate finish.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL QCIT or QCMZ - Metallic Cover Plates for Device Boxes:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. ABB, Electrification Business.
   b. Appleton; Emerson Electric Co., Automation Solutions.
   c. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
   d. Crouse-Hinds; brand of Eaton, Electrical Sector.
   e. Hubbell Premise Wiring; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
   f. Hubbell Wiring Device-Kellems; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
   g. Intermatic, Inc.
   h. Leviton Manufacturing Co., Inc.
   i. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
   j. Panduit Corp.
   k. Pass & Seymour; Legrand North America, LLC.
   l. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
   m. Topaz Lighting & Electric.
   n. Wiremold; Legrand North America, LLC.

2. Options:

   a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
   b. Wallplate Material: 0.032 inch thick, Type 302/304 non-magnetic stainless steel with brushed finish.

## 2.4 HOODS FOR OUTLET BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria:

   a. UL CCN QCIT or UL CCN QCMZ; including UL 514D.
   b. Receptacle, Hood, Cover Plate, Gaskets, and Seals: UL 498 Supplement SA when mated with box or enclosure complying with UL 514A, UL 514C, or UL 50E.

3. Mounts to box using fasteners different from wiring device.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

C. UL QCIT or QCMZ - Extra-Duty, While-in-Use Hoods for Outlet Boxes:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. ABB, Electrification Business.
b. Allied Tube & Conduit; Atkore International.
c. Appleton; Emerson Electric Co., Automation Solutions.
d. Arlington Industries, Inc.
e. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
f. Intermatic, Inc.
g. Leviton Manufacturing Co., Inc.
h. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.

2. Additional Characteristics: Marked "Extra-Duty" in accordance with UL 514D.
3. Material: Cast Aluminum.

## PART 3 - EXECUTION

### 3.1 SELECTION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Architect for resolution of conflicting requirements.

B. Degree of Protection:

1. Outdoors:

a. Type 3R unless otherwise indicated.

2. Indoors:

a. Type 1 unless otherwise indicated.

### 3.2 INSTALLATION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Outlet, Device, Pull, and Junction Boxes: Article 314 of NFPA 70.
2. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.
2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
3. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box, whether installed indoors or outdoors.
4. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
5. Locate boxes so that cover or plate will not span different building finishes.
6. Support boxes in recessed ceilings independent of ceiling tiles and ceiling grid.
7. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.
8. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.
9. Set metal floor boxes level and flush with finished floor surface.
10. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.
11. Do not install aluminum boxes, enclosures, or fittings in contact with concrete or earth.
12. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.
13. Identification: Provide labels for boxes and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Provide warning signs.
    c. Label each box with engraved metal or laminated-plastic nameplate.

## 3.3 CLEANING

A. Remove construction dust and debris from boxes before installing wallplates, covers, and hoods.

## 3.4 PROTECTION

A. After installation, protect boxes from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 260533.16

# SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Type ERMC-S raceways, elbows, couplings, and nipples.
2. Type PVC raceways and fittings.
3. Fittings for conduit, tubing, and cable.
4. Electrically conductive corrosion-resistant compounds for threaded conduit.
5. Solvent cements.
6. Duct accessories.
7. Handholes and boxes for exterior underground wiring.
8. Manholes for exterior underground wiring.
9. Utility structure accessories.
10. Duct sealing.

### 1.2 DEFINITIONS

A. Duct: A single raceway or multiple raceways, installed singly or as components of a duct bank.

B. Duct Bank: Two or more ducts installed in parallel, direct buried or with additional casing materials such as concrete.

C. Handhole: An underground chamber containing electrical cables, sized such that personnel are not required to enter in order to access the cables.

D. Manhole: An underground chamber containing electrical cables and equipment, sized to provide access with working space clearances.

E. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. Type ERMC-S raceways, elbows, couplings, and nipples.
2. Type PVC raceways and fittings.
3. Fittings for conduit, tubing, and cable.
4. Electrically conductive corrosion-resistant compounds for threaded conduit.
5. Solvent cements.
6. Duct accessories.
7. Handholes and boxes for exterior underground wiring.
8. Manholes for exterior underground wiring.
9. Utility structure accessories.
10. Duct sealing.

B. Shop Drawings:

1. Electric Utility Duct Banks and Structures:

    a. Include plans, elevations, sections, and details, including attachments to other Work.
    b. Indicate locations of private property boundaries and utility easements.
    c. Include information required for approval by electric utility and for obtaining public space utility work permits.

2. Precast or Factory-Fabricated Concrete Structures:

    a. Include plans, elevations, sections, and details, including attachments to other Work.
    b. Include duct entry provisions, including locations and duct sizes, and methods and materials for waterproofing duct entry locations.
    c. Include reinforcement details.
    d. Include frame and cover design and manhole chimneys.
    e. Include ladder and step details.
    f. Include grounding details.
    g. Include dimensioned locations of cable rack inserts, pulling-in and lifting irons, sumps, and other accessories.
    h. Include joint details.

3. Factory-Fabricated Handholes and Boxes Other Than Precast Concrete:

    a. Include dimensioned plans, sections, and elevations, and fabrication and installation details.
    b. Include duct entry provisions, including locations and duct sizes, and methods and materials for waterproofing duct entry locations.
    c. Include cover design.
    d. Include grounding details.
    e. Include dimensioned locations of cable rack inserts, pulling-in and lifting irons, and other accessories.

## PART 2 - PRODUCTS

### 2.1 TYPE ERMC-S RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 6 and UL CCN DYIX.

B. Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Allied Tube & Conduit; Atkore International.
    b. Calconduit; Atkore International.
    c. Crouse-Hinds; brand of Eaton, Electrical Sector.
    d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.

e. Patriot Aluminum Products, LLC.
f. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
g. Topaz Lighting & Electric.
h. Western Tube; Zekelman Industries.
i. Wheatland Tube; Zekelman Industries.

2. Exterior Coating: Zinc.
3. Options:

a. Interior Coating: Zinc with organic top coating.
b. Minimum Trade Size: Metric designator 21 (trade size 3/4).

## 2.2 TYPE PVC RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL 651 and UL CCN DZYR.

B. Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ABB, Electrification Business.
b. Calconduit; Atkore International.
c. JM Eagle.
d. NAPCO; Westlake Chemical Corp.
e. Opti-Com Manufacturing Network, Inc (OMNI).
f. Topaz Lighting & Electric.

2. Dimensional Specifications: Schedule 40.
3. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Markings: For use with maximum 90 deg C wire.

C. Schedule 80 Rigid PVC Conduit (PVC-80) and Fittings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ABB, Electrification Business.
b. Calconduit; Atkore International.
c. JM Eagle.
d. Opti-Com Manufacturing Network, Inc (OMNI).
e. Topaz Lighting & Electric.

2. Dimensional Specifications: Schedule 80.
3. Options:

a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
b. Markings: For use with maximum 90 deg C wire.

## 2.3 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.

B. Metallic Fittings for Type ERMC, Type IMC, Type PVC, Type EPEC, and Type RTRC Raceways:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ABB, Electrification Business.
b. Appleton; Emerson Electric Co., Automation Solutions.
c. Crouse-Hinds; brand of Eaton, Electrical Sector.
d. Konkore Fittings; Atkore International.
e. O-Z/Gedney; brand of Emerson Electric Co., Automation Solutions, Appleton Group.
f. Penn Aluminum Conduit & EMT; Penn Aluminum International LLC; Berkshire Hathaway.
g. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
h. Southwire Company, LLC.
i. Topaz Lighting & Electric.

2. General Characteristics: UL 514B and UL CCN DWTT.
3. Options:

a. Material: Steel or Die cast.
b. Coupling Method: Raintight compression coupling with distinctive color gland nut.
c. Conduit Fittings for Hazardous (Classified) Locations: UL 1203.
d. Expansion and Deflection Fittings: UL 651 with flexible external bonding jumper.

## 2.4 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT COMPOUNDS FOR THREADED CONDUIT

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: UL Subject 2419 and UL CCN FOIZ.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. ABB, Electrification Business.

## 2.5 SOLVENT CEMENTS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics: As recommended by conduit manufacturer in accordance with UL 514B and UL CCN DWTT.

B. Solvent Cements for Type PVC Raceways and Fittings:

## 2.6 DUCT ACCESSORIES

A. Duct Spacers: Factory-fabricated, rigid, PVC interlocking spacers; sized for type and size of duct with which used, and selected to provide minimum duct spacing indicated while supporting duct during concreting or backfilling.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. ABB, Electrification Business.
b. Allied Tube & Conduit; Atkore International.
c. Cantex Inc.
d. IPEX USA LLC.
e. PenCell Plastics; brand of Hubbell Utility Solutions; Hubbell Incorporated.
f. Underground Devices, Inc.

B. Underground-Line Warning Tape: In accordance with Section 260553 "Identification for Electrical Systems."

## 2.7 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. General Characteristics:

a. ASTM C858 for design and manufacturing processes.
b. SCTE 77.

B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover:

1. Description: Molded of sand, concrete, and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or combination.

2. Basis-of-Design Product: Subject to compliance with requirements, provide Quazite; brand of Hubbell Utility Solutions; Hubbell Incorporated; type as indicated on Drawings or a comparable product by one of the following:

a. Armorcast Products Company; brand of Hubbell Utility Solutions; Hubbell Incorporated.
b. MacLean Highline.
c. NewBasis.

d. Oldcastle Infrastructure Inc.; CRH Americas.

3. Configuration: Units must be designed for flush burial and have open bottom unless otherwise indicated.
4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and installed location.

   a. Cover Finish: Nonskid finish must have minimum coefficient of friction of 0.50.
   b. Cover Legend: Molded lettering, as indicated for each service, see Detail on Drawings.

5. Conduit Entrance Provisions: Conduit-terminating fittings must mate with entering ducts for secure, fixed installation in enclosure wall.
6. Handholes 12 inch wide by 24 inch long and larger must have factory-installed inserts for cable racks and pulling-in irons.
7. Options:

   a. Color: See Detail on Drawings.

## 2.8 MANHOLES FOR EXTERIOR UNDERGROUND WIRING

A. Cast-in-Place per PEPCO Details on Drawings.

## 2.9 DUCT SEALING

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   1. ABB, Electrification Business.
   2. American Polywater Corporation.
   3. CommScope, Inc.
   4. Gardner Bender.
   5. Ideal Industries, Inc.
   6. NSi Industries LLC.
   7. TE Connectivity Ltd.

B. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F. Compound must be capable of withstanding temperature of 300 deg F without slump and adhering to clean surfaces of plastic ducts, metallic conduit, conduit and duct coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals. Duct sealing compound must be removable without damaging ducts or cables.

# PART 3 - EXECUTION

## 3.1 PREPARATION

A. Coordinate layout and installation of duct, duct bank, manholes, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in field. Notify Architect if there is conflict between areas of excavation and existing structures or archaeological sites to remain.

B. Coordinate elevations of duct and duct-bank entrances into manholes, handholes, and boxes with final locations and profiles of duct and duct banks, as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations as required to suit field conditions and to ensure that duct and duct bank will drain to manholes and handholes, and as approved by Architect.

C. Clear and grub vegetation to be removed, and protect vegetation to remain. Remove and stockpile topsoil for reapplication.

## 3.2 SELECTION OF UNDERGROUND DUCTS

A. Duct for PEPCO primary and secondary: PVC-40, concrete encased unless otherwise indicated.

B. Duct for Electrical Feeders and Branch Circuits: PVC-40, direct buried unless otherwise indicated.

C. Underground Ducts Crossing Paved Paths, Walks, Driveways, and Roadways: PVC-80 direct buried.

D. Stub-ups: Concrete encased, ERMC-S.

## 3.3 EARTHWORK

A. Restoration: Restore area immediately after backfilling is completed or after construction vehicle traffic in immediate area is complete.

B. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching.

D. Cut and patch existing pavement in path of underground duct, duct bank, and underground structures.

## 3.4 INSTALLATION OF DUCTS AND DUCT BANKS

A. Reference Standards:

1. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NEMA TCB 2 for installation of underground ducts and duct banks.
2. Consult Architect for resolution of conflicting requirements.

B. Special Techniques:

1. Where indicated on Drawings, install duct, spacers, and accessories into duct-bank configuration shown. Duct installation requirements in this Section also apply to duct bank.
2. Steel raceway, bends, and fittings in single duct run or duct bank must be of same type.

3. Slope: Pitch duct minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope duct from high point between two manholes to drain in both directions.
4. Expansion and Deflection Fittings: Install expansion and deflection fitting in each duct in area of disturbed earth adjacent to manhole or handhole.
5. Install expansion fitting near center of straight line duct with calculated expansion of more than 3/4 inch.
6. Curves and Bends:

    a. Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with minimum radius as shown on Drawings.
    b. Field bending must be in accordance with NFPA 70 minimum radii requirements, except bends over 45 degrees must be made with minimum radius as shown on Drawings. Use only equipment specifically designed for material and size involved. Use PVC heating bender for bending PVC conduit.

7. Joints: Use solvent-cemented joints in nonmetallic duct and fittings and make watertight in accordance with manufacturer's published instructions. Stagger couplings so those of adjacent duct do not lie in same plane. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with minimum 3 inch of concrete for minimum of 12 inch on each side of coupling.

    a. Install insulated grounding bushings on steel raceway terminations that are less than 12 inch below grade or floor level and do not terminate in hubs.

8. Sealing: Provide temporary closure at terminations of duct with pulled cables. Seal spare duct at terminations. Use sealing compound and plugs to withstand at least 15 psig hydrostatic pressure.
9. Pulling Cord: Install 200 lbf test nylon cord in empty ducts.
10. Concrete-Encased Ducts and Duct Bank:

    a. Excavate trench bottom to provide firm and uniform support for duct.
    b. Width: Excavate trench 3 inch wider than duct on each side.
    c. Depth: Install as indicated on Drawings. Install so top of duct envelope is below local frost line.
    d. Support duct on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
    e. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than five spacers per 20 ft of duct. Place spacers within 24 inch of duct ends. Stagger spacers approximately 6 inch between tiers. Secure spacers to earth and to duct to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
    f. Elbows:

        1) Use manufactured duct elbows for stub-ups and at changes of direction in duct unless otherwise indicated. Extend encasement throughout length of elbow.

    g. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
    h. Concrete Cover: Install minimum of 3 inch of concrete cover between edge of duct to exterior envelope wall, 2 inch between duct of like services, and 4 inch between power and communications ducts.
    i. Place minimum 6 inch of engineered fill above concrete encasement of duct.

j. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.

1) Start at one end and finish at other, allowing for expansion and contraction of duct as its temperature changes during and after pour. Use expansion fittings installed in accordance with manufacturer's published instructions, or use other specific measures to prevent expansion-contraction damage.
2) If more than one pour is necessary, terminate each pour in vertical plane and install 3/4 inch reinforcing-rod dowels extending minimum of 18 inch into concrete on both sides of joint near corners of envelope.

k. Pouring Concrete: Place concrete carefully during pours to prevent voids under and between duct and at exterior surface of envelope. Do not allow heavy mass of concrete to fall directly onto ducts. Allow concrete to flow around duct and rise up in middle, uniformly filling open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-installation application.

11. Direct-Buried Duct and Duct Bank:

a. Excavate trench bottom to provide firm and uniform support for duct.
b. Width: Excavate trench 3 inch wider than duct on each side.
c. Depth: Install as indicated on Drawings.
d. Set elevation of top of duct bank below frost line.
e. Place minimum 3 inch of sand as bed for duct. Place sand to minimum of 6 inch above top level of duct.
f. Support ducts on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
g. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than five spacers per 20 ft of duct. Place spacers within 24 inch of duct ends. Stagger spacers approximately 6 inch between tiers. Secure spacers to earth and to ducts to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
h. Install manufactured steel elbows for stub-ups, at building entrances, and at changes of direction in duct.

1) Couple RNC duct to steel raceway with adapters designed for this purpose, and encase coupling with minimum 3 inch of concrete.
2) Stub-ups to Indoor Equipment: Extend concrete-encased steel raceway horizontally on exterior of wall minimum of 60 inch from edge of wall. Install insulated grounding bushings on terminations at equipment.
3) Stub-ups through interior floors must be minimum 4 inch above finished floor and no less than 3 inch from conduit side to edge of equipment pad or floor slab.

i. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inch over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction.

12. Underground-Line Warning Tape: Bury conducting underground line specified in Section 260553 "Identification for Electrical Systems" no less than 12 inch above concrete-encased duct and duct banks. Align tape parallel to and within 3 inch of centerline of duct bank. Provide additional warning tape for each 12 inch increment of duct-bank width over nominal 18 inch. Space additional tapes 12 inch apart, horizontally across width of ducts.
13. Ground ducts and duct banks in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

## 3.5 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES

A. Reference Standards:

1. Precast Concrete Handholes: Comply with ASTM C891 unless otherwise indicated.
2. Consult Architect for resolution of conflicting requirements.

B. Special Techniques:

1. Cast-in-Place Manholes:

   a. Finish interior surfaces with smooth-troweled finish.
   b. Knockouts for Future Duct Connections: Form and pour concrete knockout panels 1-1/2 to 2 inch thick, arranged as indicated.

2. Precast Concrete Handholes and Manholes:

   a. Install units level and plumb and with orientation and depth coordinated with connecting duct to minimize bends and deflections required for proper entrances.
   b. Unless otherwise indicated, support units on level bed of crushed stone or gravel graded from 1 inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
   c. Field-cut openings for conduits in accordance with enclosure manufacturer's published instructions. Cut wall of enclosure with tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3. Elevations:

   a. Install handholes with bottom below frost line.
   b. Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.
   c. Where indicated, cast handhole cover frame integrally with handhole structure.

4. Ground manholes, handholes, and boxes in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

## 3.6 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

A. Reference Standards:

1. Consult Architect for resolution of conflicting requirements.

B. Special Techniques:

1. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting duct, to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of duct, and seal joint between box and extension as recommended by manufacturer.
2. Unless otherwise indicated, support units on level bed of crushed stone or gravel, graded from 1/2 inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
3. Elevation: In paved areas and trafficways, set cover flush with finished grade. Set covers of other handholes 1 inch above finished grade.
4. Install handholes and boxes with bottom below frost line.
5. Field cut openings for duct in accordance with enclosure manufacturer's published instructions. Cut wall of enclosure with tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.
6. Ground handholes and boxes in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

## 3.7 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Demonstrate capability and compliance with requirements on completion of installation of underground duct, duct bank, and utility structures.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide minimum 12 inch long mandrel equal to duct size minus 1/4 inch. If obstructions are indicated, remove obstructions and retest.
3. Test manhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Nonconforming Work:

1. Underground ducts, raceways, and structures will be considered defective if they do not pass tests and inspections.
2. Correct deficiencies and retest as specified above to demonstrate compliance.

## 3.8 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump, and building interiors affected by Work.

1. Sweep floor, removing dirt and debris.
2. Remove foreign material.

END OF SECTION 260543

# SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Bands and tubes.
3. Tapes and stencils.
4. Tags.
5. Signs.
6. Cable ties.
7. Miscellaneous identification products.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1.

B. Comply with 29 CFR 1910.144 for color identification of hazards; 29 CFR 1910.145 for danger, caution, warning, and safety instruction signs and tags; and the following:

1. Ceiling-mounted hangers, supports, cable trays, and raceways must be finished, painted, or suitably marked safety yellow where less than 7.7 ft above finished floor.

C. Signs, labels, and tags required for personnel safety must comply with the following standards:

1. Safety Colors: NEMA Z535.1.
2. Facility Safety Signs: NEMA Z535.2.
3. Safety Symbols: NEMA Z535.3.
4. Product Safety Signs and Labels: NEMA Z535.4.
5. Safety Tags and Barricade Tapes for Temporary Hazards: NEMA Z535.5.

D. Comply with NFPA 70E and Section 260573.19 "Arc-Flash Hazard Analysis" requirements for arc-flash warning labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 1000 V or Less:

1. Black letters on orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color must be factory applied or field applied for sizes larger than 8 AWG if authorities having jurisdiction permit.
2. Colors for 208Y/120 V Circuits:

a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.

3. Colors for 480Y/277 V Circuits:

a. Phase A: Brown.
b. Phase B: Orange.
c. Phase C: Yellow.

4. Color for Neutral: White.
5. Color for Equipment Grounds: Green.
6. Colors for Isolated Grounds: Green with two or more yellow stripes.

C. Warning Label Colors:

1. Identify system voltage with black letters on orange background.

D. Warning labels and signs must include, but are not limited to, the following legends:

1. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 3 FEET MINIMUM."

E. Equipment Identification Labels:

1. Black letters on white field.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Brady Corporation.
b. Champion America.

c. Grafoplast Wire Markers.
d. HellermannTyton.
e. LEM Products Inc.
f. Marking Services Inc.
g. Panduit Corp.
h. Seton Identification Products; a Brady Corporation company.
i. emedco.

B. Self-Adhesive Labels: Polyester or Vinyl, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. A'n D Cable Products.
b. Brady Corporation.
c. Brother International Corporation.
d. Grafoplast Wire Markers.
e. HellermannTyton.
f. Ideal Industries, Inc.
g. LEM Products Inc.
h. Marking Services Inc.
i. Panduit Corp.
j. emedco.

2. Minimum Nominal Size:

a. 1-1/2 by 6 inch for raceway and conductors.
b. 3-1/2 by 5 inch for equipment.
c. As required by authorities having jurisdiction.

## 2.4 BANDS AND TUBES

A. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. Full shrink recovery occurs at maximum of 200 deg F. Comply with UL 224.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Brady Corporation.
b. Panduit Corp.

## 2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Brady Corporation.
    b. Carlton Industries, LP.
    c. Champion America.
    d. HellermannTyton.
    e. Ideal Industries, Inc.
    f. Marking Services Inc.
    g. Panduit Corp.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mil thick by 1 to 2 inch wide; compounded for outdoor use.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Brady Corporation.
    b. Carlton Industries, LP.
    c. Marking Services Inc.
    d. emedco.

C. Underground-Line Warning Tape:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Brady Corporation.
    b. Ideal Industries, Inc.
    c. LEM Products Inc.
    d. Marking Services Inc.
    e. Pipemarker.com; Brimar Industries, Inc.
    f. Reef Industries, Inc.
    g. Seton Identification Products; a Brady Corporation company.

2. Tape:

    a. Recommended by manufacturer for method of installation and suitable to identify and locate underground electrical and communications utility lines.
    b. Printing on tape must be permanent and may not be damaged by burial operations.
    c. Tape material and ink must be chemically inert and not be subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

3. Color and Printing:

    a. Comply with APWA Uniform Color Code using NEMA Z535.1 safety colors.
    b. Inscriptions for Red Tapes: "CAUTION BURIED ELECTRIC LINE BELOW".

4. Description:

   a. Detectable three-layer laminate, consisting of printed pigmented polyolefin film, solid aluminum-foil core, and clear protective film that allows inspection of continuity of conductive core; bright colored, continuous-printed on one side with inscription of utility, compounded for direct-burial service.
   b. Width: 3 inch.
   c. Overall Thickness: 5 mil.
   d. Foil Core Thickness: 0.35 mil.
   e. Weight: 28 lb/1000 sq. ft.
   f. Tensile in accordance with ASTM D882: 70 lbf and 4600 psi.

## 2.6 TAGS

A. Nonmetallic Preprinted Tags: Polyethylene tags, 0.023 inch thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Brady Corporation.
   b. Carlton Industries, LP.
   c. Grafoplast Wire Markers.
   d. LEM Products Inc.
   e. Marking Services Inc.
   f. Panduit Corp.
   g. Seton Identification Products; a Brady Corporation company.
   h. emedco.

## 2.7 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Brady Corporation.
   b. Carlton Industries, LP.
   c. Marking Services Inc.
   d. emedco.

2. Engraved legend.
3. Thickness:

   a. For signs up to 20 sq. inch, minimum 1/16 inch thick.
   b. For signs larger than 20 sq. inch, 1/8 inch thick.
   c. Engraved legend with black letters on white face.
   d. Self-adhesive.
   e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. HellermannTyton.
2. Ideal Industries, Inc.
3. Marking Services Inc.
4. Panduit Corp.

B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

D. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F in accordance with ASTM D638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless steel screws or stainless steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. System Identification for Raceways and Cables under 1000 V: Identification must completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.

H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

I. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.

J. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.

K. Snap-Around Labels: Secure tight to surface at location with high visibility and accessibility.

L. Self-Adhesive Wraparound Labels: Secure tight to surface at location with high visibility and accessibility.

M. Self-Adhesive Labels:

1. Install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high label; where two lines of text are required, use labels 2 inch high.

N. Snap-Around Color-Coding Bands: Secure tight to surface at location with high visibility and accessibility.

O. Heat-Shrink, Preprinted Tubes: Secure tight to surface at location with high visibility and accessibility.

P. Marker Tapes: Secure tight to surface at location with high visibility and accessibility.

Q. Self-Adhesive Vinyl Tape: Secure tight to surface at location with high visibility and accessibility.

1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for minimum distance of 6 inch where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

R. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inch below finished grade. Use multiple tapes where width of multiple lines installed in common trench [or concrete envelope ]exceeds 16 inch overall.
2. Install underground-line warning tape for direct-buried cables and cables in raceways.

S. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.

T. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

## 3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Power-Circuit Conductor Identification, 1000 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use self-adhesive vinyl tape to identify phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.

D. Auxiliary Electrical Systems Conductor Identification: Self-adhesive vinyl tape that is uniform and consistent with system used by manufacturer for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

E. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.

F. Instructional Signs: Self-adhesive labels, including color code for grounded and ungrounded conductors.

G. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive labels.

1. Apply to exterior of door, cover, or other access.

H. Arc Flash Warning Labeling: Self-adhesive labels.

I. Operating Instruction Signs: Laminated acrylic or melamine plastic signs.

J. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
2. Outdoor Equipment: Laminated acrylic or melamine sign.
3. Equipment to Be Labeled:

a. Panelboards: Typewritten directory of circuits in location provided by panelboard manufacturer. Panelboard identification must be in form of self-adhesive, engraved, laminated acrylic or melamine label.
b. Enclosures and electrical cabinets.
c. Access doors and panels for concealed electrical items.
d. Transformers: Label that includes tag designation indicated on Drawings for transformer, feeder, and panelboards or equipment supplied by secondary.
e. Enclosed switches.
f. Enclosed circuit breakers.

END OF SECTION 260553

# SECTION 260573.13 - SHORT-CIRCUIT STUDIES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Computer-based, fault-current study to determine minimum interrupting capacity of circuit protective devices.
2. Section 260573.16 "Coordination Studies" for overcurrent protective device coordination studies.
3. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

### 1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled. Existing to remain items must remain functional throughout construction period.

B. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

C. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion of the circuit from the system.

D. SCCR: Short-circuit current rating.

E. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

F. Single-Line Diagram: See "One-Line Diagram."

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Short-Circuit Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals must be in digital form.

a. Short-circuit study input data, including completed computer program input data sheets.
b. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient

study data to ensure that selection of devices and associated characteristics is satisfactory.

c. Revised one-line diagram, reflecting field investigation results and results of short-circuit study.

1.4 QUALITY ASSURANCE

A. Study must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CGI CYME.
2. EDSA Micro Corporation.
3. ESA Inc.
4. ETAP - Digital Twin Platform.
5. EasyPower, LLC (formerly ESA Inc.).
6. Power Analytics, Corporation.
7. SKM Systems Analysis, Inc.

B. Comply with IEEE 399 and IEEE 551.

C. Analytical features of power systems analysis software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer software program must be capable of plotting and diagramming time-current-characteristic curves as part of its output.

E. Computer program must be designed to perform short-circuit studies or have function, component, or add-on module designed to perform short-circuit studies.

F. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 SHORT-CIRCUIT STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations and ratings.
6. Derating factors and environmental conditions.
7. Any revisions to electrical equipment required by study.

D. Comments and recommendations for system improvements or revisions in written document, separate from one-line diagram.

E. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to available short-circuit currents. Verify that equipment withstand ratings exceed available short-circuit current at equipment installation locations.
2. Tabulations of circuit breaker, fuse, and other protective device ratings versus calculated short-circuit duties.
3. For 600 V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
4. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in standards to 1/2-cycle symmetrical fault current.
5. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.

F. Short-Circuit Study Input Data:

1. One-line diagram of system being studied.
2. Power sources available.
3. Manufacturer, model, and interrupting rating of protective devices.
4. Conductors.
5. Transformer data.

G. Short-Circuit Study Output Reports:

1. Low-Voltage Fault Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

    a. Voltage.
    b. Calculated fault-current magnitude and angle.
    c. Fault-point X/R ratio.
    d. Equivalent impedance.

2. Momentary Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

    a. Voltage.
    b. Calculated symmetrical fault-current magnitude and angle.
    c. Fault-point X/R ratio.
    d. Calculated asymmetrical fault currents:

1) Based on fault-point X/R ratio.
2) Based on calculated symmetrical value multiplied by 1.6.
3) Based on calculated symmetrical value multiplied by 2.7.

3. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. No AC Decrement (NACD) ratio.
e. Equivalent impedance.
f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on symmetrical basis.
g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on total basis.

## PART 3 - EXECUTION

### 3.1 POWER SYSTEM DATA

A. Obtain data necessary for conduct of study.

1. Verify completeness of data supplied on one-line diagram. Call discrepancies to Architect's attention.
2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.
3. For equipment that is existing to remain, obtain required electrical distribution system data by field investigation and surveys, conducted by qualified technicians and engineers in accordance with NFPA 70E.

B. Gather and tabulate required input data to support short-circuit study. Comply with requirements in Section 017839 "Project Record Documents" for recording circuit protective device characteristics. Record data on Record Document copy of one-line diagram. Comply with recommendations in IEEE 551 as to amount of detail that is required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for Project's overcurrent protective devices involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance at service.
3. Power sources and ties.
4. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
5. For reactors, provide manufacturer and model designation, voltage rating, and impedance.
6. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip, SCCR, current rating, and breaker settings.
7. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
8. Busway manufacturer and model designation, current rating, impedance, lengths, and conductor material.

9. Motor horsepower and NEMA MG 1 code letter designation.
10. Conductor sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
11. Derating factors.

## 3.2 SHORT-CIRCUIT STUDY

A. Perform study following general study procedures contained in IEEE 399.

B. Calculate short-circuit currents according to IEEE 551.

C. Base study on device characteristics supplied by device manufacturer.

D. Extent of electrical power system to be studied is indicated on Drawings.

E. Begin short-circuit current analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.

F. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

G. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement to address asymmetrical requirements of interrupting equipment.

H. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

I. Include in report identification of protective device applied outside its capacity.

END OF SECTION 260573.13

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Computer-based, overcurrent protective device coordination studies to determine overcurrent protective devices and to determine overcurrent protective device settings for selective tripping.

a. Study results must be used to determine coordination of series-rated devices.

B. Related Requirements:

1. Section 260573.13 "Short-Circuit Studies" for fault-current studies.
2. Section 260573.19 "Arc-Flash Hazard Analysis" for arc-flash studies.

1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled. Existing to remain items must remain functional throughout construction period.

B. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of electric circuit or system of circuits and the component devices or parts used therein.

C. Protective Device: A device that senses when abnormal current flow exists and then removes the affected portion of the circuit from the system.

D. SCCR: Short-circuit current rating.

E. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

F. Single-Line Diagram: See "One-Line Diagram."

1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Coordination Study Report:

1. Submit the following after approval of system protective devices submittals. Submittals must be in digital form.

a. Coordination-study input data, including completed computer program input data sheets.
b. Study and equipment evaluation reports.

c. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
d. Revised one-line diagram, reflecting field investigation results and results of coordination study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For overcurrent protective device coordination study software, certifying compliance with IEEE 399.

1.5 QUALITY ASSURANCE

A. Studies must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 POWER SYSTEM ANALYSIS SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CGI CYME.
2. EDSA Micro Corporation.
3. ESA Inc.
4. ETAP - Digital Twin Platform.
5. EasyPower, LLC (formerly ESA Inc.).
6. Power Analytics, Corporation.
7. SKM Systems Analysis, Inc.

B. Comply with IEEE 242 and IEEE 399.

C. Analytical features of device coordination study computer software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer software program must be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program must report device settings and ratings of overcurrent protective devices and must demonstrate selective coordination by computer-generated, time-current coordination plots.

1. Optional Features:

a. Arcing faults.
b. Simultaneous faults.
c. Explicit negative sequence.
d. Mutual coupling in zero sequence.

E. Computer program must be designed to perform coordination studies or have function, component, or add-on module designed to perform coordination studies.

F. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 COORDINATION STUDY REPORT CONTENTS

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram of modeled power system, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, and panelboard designations.
6. Revisions to electrical equipment required by study.
7. Study Input Data: As described in "Power System Data" Article.

a. Short-Circuit Study Output: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."

D. Protective Device Coordination Study:

1. Report recommended settings of protective devices, ready to be applied in field. Use manufacturer's data sheets for recording recommended setting of overcurrent protective devices when available.

a. Phase and Ground Relays:

1) Device tag.
2) Relay current transformer ratio and tap, time dial, and instantaneous pickup value.
3) Recommendations on improved relaying systems, if applicable.

b. Circuit Breakers:

1) Adjustable pickups and time delays (long time, short time, and ground).
2) Adjustable time-current characteristic.
3) Adjustable instantaneous pickup.
4) Recommendations on improved trip systems, if applicable.

c. Fuses: Show current rating, voltage, and class.

E. Time-Current Coordination Curves: Determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for switching schemes and for emergency periods where power source is local generation. Show the following information:

1. Device tag and title, one-line diagram with legend identifying portion of system covered.
2. Terminate device characteristic curves at point reflecting maximum symmetrical or asymmetrical fault current to which device is exposed.
3. Identify device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
4. Plot the following listed characteristic curves, as applicable:

    a. Power utility's overcurrent protective device.
    b. Medium-voltage equipment overcurrent relays.
    c. Medium- and low-voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
    d. Low-voltage equipment circuit-breaker trip devices, including manufacturer's tolerance bands.
    e. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves.
    f. Cables and conductors damage curves.
    g. Ground-fault protective devices.
    h. Motor-starting characteristics and motor damage points.
    i. Generator short-circuit decrement curve and generator damage point.
    j. Largest feeder circuit breaker in each motor-control center and panelboard.

5. Maintain selectivity for tripping currents caused by overloads.
6. Maintain maximum achievable selectivity for tripping currents caused by overloads on series-rated devices.
7. Provide adequate time margins between device characteristics such that selective operation is achieved.
8. Comments and recommendations for system improvements.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance of the Work. Devices to be coordinated are indicated on Drawings.

1. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

### 3.2 POWER SYSTEM DATA

A. Obtain data necessary for conduct of overcurrent protective device study.

1. Verify completeness of data supplied in one-line diagram on Drawings. Call discrepancies to Architect's attention.

2. For equipment included as Work of this Project, use characteristics submitted under provisions of action submittals and information submittals for this Project.
3. For relocated equipment and that which is existing to remain, obtain required electrical distribution system data by field investigation and surveys, conducted by qualified technicians and engineers. Qualifications of technicians and engineers must be in accordance with NFPA 70E.

B. Gather and tabulate required input data to support coordination study. List below is guide. Comply with recommendations in IEEE 551 for amount of detail required to be acquired in field. Field data gathering must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Electrical power utility impedance at service.
3. Power sources and ties.
4. Short-circuit current at each system bus (three phase and line to ground).
5. Full-load current of loads.
6. Voltage level at each bus.
7. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
8. For reactors, provide manufacturer and model designation, voltage rating, and impedance.
9. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
10. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
11. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
12. Maximum demands from service meters.
13. Busway manufacturer and model designation, current rating, impedance, lengths, size, and conductor material.
14. Motor horsepower and NEMA MG 1 code letter designation.
15. Low-voltage cable sizes, lengths, number, conductor material, and conduit material (magnetic or nonmagnetic).
16. Medium-voltage cable sizes, lengths, conductor material, cable construction, metallic shield performance parameters, and conduit material (magnetic or nonmagnetic).
17. Data sheets to supplement electrical distribution system one-line diagram, cross-referenced with tag numbers on diagram, showing the following:

    a. Special load considerations, including starting inrush currents and frequent starting and stopping.
    b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.
    c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
    d. Generator thermal-damage curve.
    e. Ratings, types, and settings of utility company's overcurrent protective devices.
    f. Special overcurrent protective device settings or types stipulated by utility company.
    g. Time-current-characteristic curves of devices indicated to be coordinated.

h. Manufacturer, frame size, interrupting rating in amperes root mean square (rms) symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
i. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
j. Switchgear, switchboards, motor-control centers, and panelboards ampacity, and SCCR in amperes rms symmetrical.
k. Identify series-rated interrupting devices for condition where available fault current is greater than interrupting rating of downstream equipment. Obtain device data details to allow verification that series application of these devices complies with NFPA 70 and UL 489 requirements.

## 3.3 COORDINATION STUDY

A. Comply with IEEE 242 for calculating short-circuit currents and determining coordination time intervals.

B. Comply with IEEE 399 for general study procedures.

C. Base study on device characteristics supplied by device manufacturer.

D. Extent of electrical power system to be studied is indicated on Drawings.

E. Begin analysis at service, extending down to system overcurrent protective devices as follows:

1. To normal system low-voltage load buses where fault current is 5 kA or less.

F. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Study cases of system-switching configurations and alternate operations that could result in maximum fault conditions.

G. Transformer Primary Overcurrent Protective Devices:

1. Device must not operate in response to the following:

a. Inrush current when first energized.
b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.

2. Device settings must protect transformers according to IEEE C57.12.00, for fault currents.

H. Motor Protection:

1. Select protection for low-voltage motors according to IEEE 242 and NFPA 70.
2. Select protection for motors served at voltages more than 600 V according to IEEE 620.

I. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and protection recommendations in IEEE 242. Demonstrate that equipment withstands maximum short-circuit current for time equivalent to tripping time of primary relay protection or total clearing time of fuse. To determine temperatures that damage

insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

J. Generator Protection: Select protection according to manufacturer's instructions and to IEEE 242.

K. Include ac fault-current decay from induction motors, synchronous motors, and asynchronous generators and apply to low- and medium-voltage, three-phase ac systems. Also account for fault-current dc decrement, to address asymmetrical requirements of interrupting equipment.

L. Calculate short-circuit momentary and interrupting duties for three-phase bolted fault and single line-to-ground fault at each equipment indicated on one-line diagram.

1. For grounded systems, provide bolted line-to-ground fault-current study for areas as defined for three-phase bolted fault short-circuit study.

M. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short-circuit ratings.
2. Adequacy of switchgear, motor-control centers, and panelboard bus bars to withstand short-circuit stresses.
3. Application of series-rated devices must be recertified, complying with requirements in NFPA 70.
4. Include in report identification of protective device applied outside its capacity.

## 3.4 LOAD-FLOW AND VOLTAGE-DROP STUDY

A. Perform load-flow and voltage-drop study to determine steady-state loading profile of system. Analyze power system performance two times as follows:

1. Determine load flow and voltage drop based on full-load currents obtained in "Power System Data" Article.
2. Determine load flow and voltage drop based on 80 percent of design capacity of load buses.
3. Prepare load-flow and voltage-drop analysis and report to show power system components that are overloaded, or might become overloaded; show bus voltages that are less than as prescribed by NFPA 70.

## 3.5 FIELD ADJUSTING

A. Adjust relay and protective device settings according to recommended settings provided by coordination study. Field adjustments must be completed by engineering service division of equipment manufacturer under "Startup and Acceptance Testing" contract portion.

B. Make minor modifications to equipment as required to accomplish compliance with short-circuit and protective device coordination studies.

C. Testing and adjusting must be by qualified low-voltage electrical testing and inspecting agency.

1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS. Certify compliance with test parameters. Perform NETA tests and inspections for adjustable overcurrent protective devices.

END OF SECTION 260573.16

# SECTION 260573.19 - ARC-FLASH HAZARD ANALYSIS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Computer-based, arc-flash study to determine arc-flash hazard distance and incident energy to which personnel could be exposed during work on or near electrical equipment.

B. Related Requirements:

1. Section 260573.13 "Short-Circuit Studies" for fault-current studies.
2. Section 260573.16 "Coordination Studies" for overcurrent protective device coordination studies.

### 1.2 DEFINITIONS

A. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

B. One-Line Diagram: A diagram that shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

C. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion from the system.

D. p.u.: Per unit. The reference unit, established as a calculating convenience, for expressing all power system electrical parameters on a common reference base.

E. SCCR: Short-circuit current rating.

F. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

G. Single-Line Diagram: See "One-Line Diagram."

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. For power system analysis software to be used for studies.

B. Study Submittals:

1. Submit the following after approval of system protective devices submittals. Submittals must be in digital form:

a. Arc-flash study input data, including completed computer program input data sheets.
b. Submit study report for action prior to receiving final approval of distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that selection of devices and associated characteristics is satisfactory.
c. Revised one-line diagram, reflecting field investigation results and results of arc-flash study.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For arc-flash hazard analysis software, certifying compliance with IEEE 1584 and NFPA 70E.

1.5 QUALITY ASSURANCE

A. Study must be performed using commercially developed and distributed software designed specifically for power system analysis.

B. Software algorithms must comply with requirements of standards and guides specified in this Section.

C. Manual calculations are unacceptable.

PART 2 - PRODUCTS

2.1 COMPUTER SOFTWARE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CGI CYME.
2. EDSA Micro Corporation.
3. ESA Inc.
4. ETAP - Digital Twin Platform.
5. EasyPower, LLC (formerly ESA Inc.).
6. Power Analytics, Corporation.
7. SKM Systems Analysis, Inc.

B. Comply with IEEE 1584 and NFPA 70E.

C. Analytical features of device coordination study computer software program must have capability to calculate "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer program must be designed to perform arc-flash analysis or have function, component, or add-on module designed to perform arc-flash analysis.

E. Computer program must be developed under supervision of licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

2.2 ARC-FLASH STUDY REPORT CONTENT

A. Executive summary of study findings.

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of results.

C. One-line diagram, showing the following:

1. Protective device designations and ampere ratings.
2. Conductor types, sizes, and lengths.
3. Transformer kVA and voltage ratings, including derating factors and environmental conditions.
4. Motor and generator designations and kVA ratings.
5. Switchgear, switchboard, motor-control center, panelboard designations, and ratings.

D. Study Input Data: As described in "Power System Data" Article.

E. Short-Circuit Study Output Data: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."

F. Protective Device Coordination Study Report Contents: As specified in "Coordination Study Report Contents" Article in Section 260573.16 "Coordination Studies."

G. Arc-Flash Study Output Reports:

1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each equipment location included in report:

a. Voltage.
b. Calculated symmetrical fault-current magnitude and angle.
c. Fault-point X/R ratio.
d. No AC Decrement (NACD) ratio.
e. Equivalent impedance.
f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on symmetrical basis.
g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on total basis.

H. Incident Energy and Flash Protection Boundary Calculations:

1. Arcing fault magnitude.
2. Protective device clearing time.
3. Duration of arc.
4. Arc-flash boundary.
5. Restricted approach boundary.
6. Limited approach boundary.
7. Working distance.
8. Incident energy.
9. Hazard risk category.
10. Recommendations for arc-flash energy reduction.

I. Fault study input data, case descriptions, and fault-current calculations including definition of terms and guide for interpretation of computer printout.

## 2.3 ARC-FLASH WARNING LABELS

A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for self-adhesive equipment labels. Produce 3.5 by 5 inch self-adhesive equipment label for each work location included in analysis.

B. Label must have orange header with wording, "WARNING, ARC-FLASH HAZARD," and must include the following information taken directly from arc-flash hazard analysis:

1. Location designation.
2. Nominal voltage.
3. Protection boundaries.
    a. Arc-flash boundary.
    b. Restricted approach boundary.
    c. Limited approach boundary.
4. Arc flash PPE category.
5. Required minimum arc rating of PPE in Cal/cm squared.
6. Available incident energy.
7. Working distance.
8. Engineering report number, revision number, and issue date.

C. Labels must be machine printed, with no field-applied markings.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals. Proceed with arc-flash study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to arc-flash study may not be used in study.

## 3.2 ARC-FLASH HAZARD ANALYSIS

A. Comply with NFPA 70E and its Annex D for hazard analysis study.

B. Preparatory Studies: Perform Short-Circuit and Protective Device Coordination studies prior to starting Arc-Flash Hazard Analysis.

1. Short-Circuit Study Output: As specified in "Short-Circuit Study Output Reports" Paragraph in "Short-Circuit Study Report Contents" Article in Section 260573.13 "Short-Circuit Studies."
2. Coordination Study Report Contents: As specified in "Coordination Study Report Contents" Article in Section 260573.16 "Coordination Studies."

C. Calculate maximum and minimum contributions of fault-current size.

1. Maximum calculation must assume maximum contribution from utility and must assume motors to be operating under full-load conditions.
2. Calculate arc-flash energy at 85 percent of maximum short-circuit current in accordance with IEEE 1584 recommendations.
3. Calculate arc-flash energy at 38 percent of maximum short-circuit current in accordance with NFPA 70E recommendations.
4. Calculate arc-flash energy with utility contribution at minimum and assume no motor contribution.

D. Calculate arc-flash protection boundary and incident energy at locations in electrical distribution system where personnel could perform work on energized parts.

E. Calculate limited, restricted, and prohibited approach boundaries for each location.

F. Incident energy calculations must consider accumulation of energy over time when performing arc-flash calculations on buses with multiple sources. Iterative calculations must take into account changing current contributions, as sources are interrupted or decremented with time. Fault contribution from motors and generators must be decremented as follows:

1. Fault contribution from induction motors must not be considered beyond three to five cycles.
2. Fault contribution from synchronous motors and generators must be decayed to match actual decrement of each as closely as possible (for example, contributions from permanent magnet generators will typically decay from 10 p.u. to 3 p.u. after 10 cycles).

G. Arc-flash energy must generally be reported for maximum of line or load side of circuit breaker. However, arc-flash computation must be performed and reported for both line and load side of circuit breaker as follows:

1. When circuit breaker is in separate enclosure.
2. When line terminals of circuit breaker are separate from work location.

H. Base arc-flash calculations on actual overcurrent protective device clearing time. Cap maximum clearing time at two seconds based on IEEE 1584, Section B.1.2.

## 3.3 POWER SYSTEM DATA

A. Obtain data necessary for conduct of arc-flash hazard analysis.

1. Verify completeness of data supplied on one-line diagram on Drawings and under "Preparatory Studies" Paragraph in "Arc-Flash Hazard Analysis" Article. Call discrepancies to Architect's attention.
2. For new equipment, use characteristics from approved submittals under provisions of action submittals and information submittals for this Project.
3. For existing equipment, whether or not relocated, obtain required electrical distribution system data by field investigation and surveys conducted by qualified technicians and engineers.

B. Electrical Survey Data: Gather and tabulate the following input data to support study. Comply with recommendations in IEEE 1584 and NFPA 70E as to amount of detail that is required to be acquired in field. Field data gathering must be under direct supervision and control of engineer in charge of performing study, and must be by, or under supervision of, qualified electrical professional engineer. Data include, but are not limited to, the following:

1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Obtain electrical power utility impedance or available short circuit current at service.
3. Power sources and ties.
4. Short-circuit current at each system bus (three phase and line to ground).
5. Full-load current of loads.
6. Voltage level at each bus.
7. For transformers, include kVA, primary and secondary voltages, connection type, impedance, X/R ratio, taps measured in percent, and phase shift.
8. For reactors, provide manufacturer and model designation, voltage rating and impedance.
9. For circuit breakers and fuses, provide manufacturer and model designation. List type of breaker, type of trip and available range of settings, SCCR, current rating, and breaker settings.
10. Generator short-circuit current contribution data, including short-circuit reactance, rated kVA, rated voltage, and X/R ratio.
11. For relays, provide manufacturer and model designation, current transformer ratios, potential transformer ratios, and relay settings.
12. Busway manufacturer and model designation, current rating, impedance, lengths, size, and conductor material.
13. Motor horsepower and NEMA MG 1 code letter designation.
14. Low-voltage conductor sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
15. Medium-voltage conductor sizes, lengths, conductor material, conductor construction and metallic shield performance parameters, and conduit material (magnetic or nonmagnetic).

## 3.4 LABELING

A. Apply one arc-flash label on front cover of each section of equipment and on side or rear covers with accessible live parts and hinged doors or removable plates for each equipment included in study. Base arc-flash label data on highest values calculated at each location.

B. Each piece of equipment listed below must have arc-flash label applied to it:

1. Medium-voltage switchgear.
2. Medium-voltage switches.
3. Medium voltage transformers.
4. Low-voltage switchgear.
5. Switchboards.
6. Panelboards.
7. Motor-control centers.
8. Low voltage transformers.
9. Safety switches.
10. Control panels.

C. Note on record Drawings location of equipment where personnel could be exposed to arc-flash hazard during their work.

1. Indicate arc-flash energy.
2. Indicate protection level required.

## 3.5 APPLICATION OF WARNING LABELS

A. Install arc-flash warning labels under direct supervision and control of qualified electrical professional engineer.

END OF SECTION 260573.19

# SECTION 260923 - LIGHTING CONTROL DEVICES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Digital timer light switch.

### 1.2 ACTION SUBMITTALS

A. Product Data:
   1. Digital timer light switch.

### 1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's warranties.

## PART 2 - PRODUCTS

### 2.1 DIGITAL TIMER LIGHT SWITCH

A. Basis-of-Design Product: Subject to compliance with requirements, provide Honeywell; RPLS740B1008/U or comparable product by one of the following:

   1. Bryant; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
   2. Douglas Lighting Controls.
   3. Eaton.
   4. Hubbell Control Solutions; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
   5. Intermatic, Inc.
   6. Leviton Manufacturing Co., Inc.
   7. Lithonia Lighting; Acuity Brands Lighting, Inc.
   8. Lutron Electronics Co., Inc.
   9. NSi Industries LLC.
   10. Philips; Signify North America; Signify Holding.
   11. RAB Lighting.
   12. Sensor Switch, Inc.
   13. Square D; Schneider Electric USA.
   14. TE Connectivity Ltd.
   15. WattStopper; Legrand North America, LLC.
   16. nLight; Acuity Brands Lighting, Inc.

B. Description: Combination digital timer and conventional switch lighting control unit. Switchbox-mounted, backlit LCD display.

   1. Rated 1440 W at 120 V(ac) for tungsten lighting, 1800 W at 120 V(ac) for fluorescent or LED lighting, and 3/4 hp at 120 V(ac).

2. Standards: Listed and labeled in accordance with NFPA 70, by a qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
3. Voltage: 120 V.
4. Contact Configuration: SPST.
5. Programs:
   a. Seven “On” programs and seven “Off” programs per week that can be repeated daily or weekly.
6. Astronomic Time.
7. Automatic daylight savings time changeover.
8. Battery Backup: Not less than seven days reserve, to maintain schedules and time clock.
9. Color: White.
10. Faceplate: Color matched to switch.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.

B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF WIRING

A. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 3/4 inch.

### 3.3 IDENTIFICATION

A. Identify components and power and control wiring in accordance with Section 260553 "Identification for Electrical Systems.

B. Label time switches and contactors with a unique designation.

### 3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Nonconforming Work:

1. Lighting control devices will be considered defective if they do not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Prepare test and inspection reports.

3.5 ADJUSTING

A. Configurations: Configure Latitude and Longitude Coordinates settings per manufacturer's published written instructions.

B. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

END OF SECTION 260923

# SECTION 262213 - LOW-VOLTAGE DISTRIBUTION TRANSFORMERS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Distribution, dry-type transformers with nominal primary and secondary rating of 600 V and less, with capacities up to 1500 kVA.

### 1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type and size of transformer.
b. Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer.

B. Shop Drawings:

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of field connections.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment.
3. Include diagrams for power, signal, and control wiring.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

### 1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' Published Instructions: Record copy of official installation[ and testing] instructions issued to Installer by manufacturer for the following:

1. Transformer temporary heating, working clearances, anchoring, torque values, and insulation-resistance testing.

B. Source quality-control reports.

### 1.4 DELIVERY, STORAGE, AND HANDLING

A. Inspection: On receipt, inspect for and note shipping damage to packaging and transformer.

1. If manufacturer packaging is removed for inspection, and transformer will be stored after inspection, re-package transformer using original or new packaging materials that provide protection equivalent to manufacturer's packaging.

B. Storage: Store in warm, dry, and temperature-stable location in original shipping packaging.

C. Temporary Heating: Apply temporary heat in accordance with manufacturer's published instructions within enclosure of ventilated-type units, throughout periods during which equipment is not energized and when transformer is not in space that is continuously under normal control of temperature and humidity.

D. Handling: Follow manufacturer's instructions for lifting and transporting transformers.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB, Electrification Business.
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; Schneider Electric USA.

B. Source Limitations: Obtain each type of transformer from single source from single manufacturer.

### 2.2 GENERAL TRANSFORMER REQUIREMENTS

A. Description: Factory-assembled and -tested, air-cooled units for 60 Hz service.

B. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

C. Transformers Rated 15 kVA and Larger:

1. Comply with 10 CFR 431 (DOE 2016) efficiency levels.
2. Marked as compliant with DOE 2016 efficiency levels by qualified electrical testing laboratory recognized by authorities having jurisdiction.

D. Shipping Restraints: Paint or otherwise color-code bolts, wedges, blocks, and other restraints that are to be removed after installation and before energizing. Use fluorescent colors that are easily identifiable inside transformer enclosure.

### 2.3 DISTRIBUTION TRANSFORMERS

A. Comply with NFPA 70, and list and label as complying with UL 1561.

B. Cores: Electrical grade, non-aging silicon steel with high permeability and low hysteresis losses.

1. One leg per phase.
2. Grounded to enclosure.

C. Coils: Continuous windings except for taps.

1. Coil Material: Aluminum.
2. Internal Coil Connections: Brazed or pressure type.
3. Terminal Connections: Welded.

D. Encapsulation: Transformers smaller than 30 kVA must have core and coils completely resin encapsulated.

E. Enclosure: Ventilated.

1. Core and coil must be encapsulated within resin compound to seal out moisture and air.
2. KVA Ratings: Based on convection cooling only and not relying on auxiliary fans.
3. Wiring Compartment: Sized for conduit entry and wiring installation.
4. Environmental Protection:

a. Indoor: UL 50E, Type 2.

5. Finish Color: Gray weather-resistant enamel.

F. Taps for Transformers 3 kVA and Smaller: None.

G. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.

H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and four 2.5 percent taps below normal full capacity.

I. Insulation Class, Smaller Than 30 kVA: 180 deg C, UL-component-recognized insulation system with maximum of 115 deg C rise above 40 deg C ambient temperature.

J. Insulation Class, 30 kVA and Larger: 220 deg C, UL-component-recognized insulation system with maximum of 150 deg C rise above 40 deg C ambient temperature.

K. Grounding: Provide ground-bar kit or ground bar installed on inside of transformer enclosure.

## 2.4 IDENTIFICATION

A. Nameplates:

1. Engraved, laminated-acrylic or melamine plastic signs for distribution transformers, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 260553 "Identification for Electrical Systems."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for transformers.

B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's published instructions.

C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.

D. Verify that ground connections are in place and requirements in Section 260526 "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance must be 5 Ω at location of transformer.

E. Environment: Enclosures must be rated for environment in which they are located. Covers for UL 50E, Type 4X enclosures may not cause accessibility problems.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wall-mounted transformers level and plumb with wall brackets fabricated by transformer manufacturer.

1. Coordinate installation of wall-mounted and structure-hanging supports with actual transformer provided.

B. Construct concrete bases and anchor floor-mounted transformers in accordance with manufacturer's published instructions and requirements in Section 260529 "Hangers and Supports for Electrical Systems."

1. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

C. Secure transformer to concrete base in accordance with manufacturer's published instructions.

D. Secure covers to enclosure and tighten bolts to manufacturer-recommended torques to reduce noise generation.

E. Remove shipping bolts, blocking, and wedges.

3.3 CONNECTIONS

A. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

C. Tighten electrical connectors and terminals in accordance with manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

D. Provide flexible connections at conduit and conductor terminations and supports to eliminate sound and vibration transmission to building structure.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections:

1. Small (Up to 167 kVA Single-Phase or 500 kVA Three-Phase) Dry-Type Transformer Field Tests:

a. Visual and Mechanical Inspection.

1) Inspect physical and mechanical condition.
2) Inspect anchorage, alignment, and grounding.
3) Verify that resilient mounts are free and that shipping brackets have been removed.
4) Verify that unit is clean.
5) Perform specific inspections and mechanical tests recommended by manufacturer.
6) Verify that as-left tap connections are as specified.
7) Verify presence of surge arresters and that their ratings are as specified.

b. Electrical Tests:

1) Measure resistance at windings, taps, and bolted connections.
2) Perform insulation-resistance tests winding-to-winding and windings-to-ground. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, comply with NETA ATS, Table 100.5. Calculate polarization index: value of index may not be less than 1.0.
3) Perform turns-ratio tests at tap positions. Test results may not deviate by more than one-half percent from either adjacent coils or calculated ratio. If test fails, replace transformer.
4) Verify correct secondary voltage, phase-to-phase and phase-to-neutral, after energization and prior to loading.

2. Large (Larger Than 167 kVA Single Phase or 500 kVA Three Phase) Dry-Type Transformer Field Tests:

a. Visual and Mechanical Inspection:

1) Inspect physical and mechanical condition.
2) Inspect anchorage, alignment, and grounding.
3) Verify that resilient mounts are free and that shipping brackets have been removed.
4) Verify that unit is clean.
5) Perform specific inspections and mechanical tests recommended by manufacturer.

6) Verify that as-left tap connections are as specified.
7) Verify presence of surge arresters and that their ratings are as specified.

b. Electrical Tests:

1) Measure resistance at windings, taps, and bolted connections.
2) Perform insulation-resistance tests winding-to-winding and windings-to-ground. Apply voltage in accordance with manufacturer's published data. In absence of manufacturer's published data, comply with NETA ATS, Table 100.5. Calculate polarization index: value of index may not be less than 1.0.
3) Perform power-factor or dissipation-factor tests on windings.
4) Perform turns-ratio tests at tap positions. Test results may not deviate by more than one-half percent from either adjacent coils or calculated ratio. If test fails, replace transformer.
5) Perform excitation-current test on each phase.
6) Perform applied voltage test on line- and load-side windings to ground. See IEEE C57.12.91, Sections 10.2 and 10.9.
7) Verify correct secondary voltage, phase-to-phase and phase-to-neutral, after energization and prior to loading.

C. Test Labeling: On completion of satisfactory testing of units, attach dated and signed "Satisfactory Test" label to tested components.

D. Nonconforming Work:

1. Transformer will be considered defective if it does not pass tests and inspections.
2. Remove and replace units that do not pass tests or inspections and retest as specified above.

E. Assemble and submit test and inspection reports.

F. Manufacturer Services:

1. Engage factory-authorized service representative to support field tests and inspections.

## 3.5 ADJUSTING

A. Record transformer secondary voltage at unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 5 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Output Settings Report: Prepare written report recording output voltages and tap settings.

## 3.6 CLEANING

A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

## 3.7 MAINTENANCE

A. Infrared Scanning: Two months after Substantial Completion, perform infrared scan of transformer connections.

1. Use infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
2. Perform two follow-up infrared scans of transformers, one at four months and another at 11 months after Substantial Completion.
3. Prepare certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial actions taken, and scanning observations after remedial action.

END OF SECTION 262213

# SECTION 262416 - PANELBOARDS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Power panelboards.
2. Lighting and appliance branch-circuit panelboards.
3. Disconnecting and overcurrent protective devices.

### 1.2 DEFINITIONS

A. GFEP: Ground-fault equipment protection.

B. MCCB: Molded-case circuit breaker.

C. VPR: Voltage protection rating.

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. Power panelboards.
2. Lighting and appliance branch-circuit panelboards.
3. Disconnecting and overcurrent protective devices.
4. Include materials, switching and overcurrent protective devices, SPDs, accessories, and components indicated.
5. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details.
2. Show tabulations of installed devices with nameplates, conductor termination sizes, equipment features, and ratings.
3. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
4. Detail bus configuration, current, and voltage ratings.
5. Short-circuit current rating of panelboards and overcurrent protective devices.
6. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for series rating of installed devices.
7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
8. Include wiring diagrams for power, signal, and control wiring.
9. Key interlock scheme drawing and sequence of operations.
10. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper;

include selectable ranges for each type of overcurrent protective device. Include Internet link for electronic access to downloadable PDF of coordination curves.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish to Owner spare parts, for repairing panelboards, that are packaged with protective covering for storage on-site and identified with labels describing contents.

1. Keys: Two spares for each type of panelboard cabinet lock.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle and prepare panelboards for installation in accordance with NECA 407.

PART 2 - PRODUCTS

2.1 PANELBOARDS AND LOAD CENTERS COMMON REQUIREMENTS

A. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

B. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing agency recognized by authorities having jurisdiction, and marked for intended location and application.

C. Comply with NEMA PB 1.

D. Comply with NFPA 70.

E. Enclosures: Flush and Surface-mounted, dead-front cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: UL 50E, Type 1.
b. Outdoor Locations: UL 50E, NEMA 4X Stainless Steel.
c. Other Wet or Damp Indoor Locations: UL 50E, NEMA 4X Stainless Steel.

2. Height: 7 ft maximum.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims must cover live parts and may have no exposed hardware.
4. Finishes:

a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
b. Back Boxes: Galvanized steel.

F. Phase, Neutral, and Ground Buses:

1. Material: Tin-plated aluminum.

a. Plating must run entire length of bus.
b. Bus must be fully rated for entire length.

2. Interiors must be factory assembled into unit. Replacing switching and protective devices may not disturb adjacent units or require removing main bus connectors.
3. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
4. Full-Sized Neutral: Equipped with full-capacity bonding strap for service entrance applications. Mount electrically isolated from enclosure.

G. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Tin-plated aluminum.
2. Terminations must allow use of 75 deg C rated conductors without derating.
3. Size: Lugs suitable for indicated conductor sizes, with additional gutter space, if required, for larger conductors.
4. Main and Neutral Lugs: Mechanical type, with lug on neutral bar for each pole in panelboard.
5. Ground Lugs and Bus-Configured Terminators: Mechanical type, with lug on bar for each pole in panelboard.
6. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
7. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

H. Quality-Control Label: Panelboards or load centers must be labeled, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for use as service equipment with one or more main service disconnecting and overcurrent protective devices. Panelboards or load centers must have meter enclosures, wiring, connections, and other provisions for utility metering. Coordinate with utility company for exact requirements.

I. Panelboard Short-Circuit Current Rating:

1. Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for 100 percent interrupting capacity.

a. Panelboards and overcurrent protective devices rated 240 V or less must have short-circuit ratings as shown on Drawings, but not less than 10 000 A(rms) symmetrical.
b. Panelboards and overcurrent protective devices rated above 240 V and less than 600 V must have short-circuit ratings as shown on Drawings, but not less than 14 000 A(rms) symmetrical.

## 2.2 POWER PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB, Electrification Business.
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; Schneider Electric USA.

B. Listing Criteria: NEMA PB 1, distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

1. For doors more than 36 inch high, provide two latches, keyed alike.

D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Plug-in circuit breakers.

E. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers.

## 2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB, Electrification Business.
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; Schneider Electric USA.

B. Listing Criteria: NEMA PB 1, lighting and appliance branch-circuit type.

C. Branch Overcurrent Protective Devices: Plug-in circuit breakers, replaceable without disturbing adjacent units.

D. Doors: Door-in-door construction with concealed hinges; secured with multipoint latch with tumbler lock; keyed alike. Outer door must permit full access to panel interior. Inner door must permit access to breaker operating handles and labeling, but current carrying terminals and bus must remain concealed.

## 2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ABB, Electrification Business.
2. Eaton.
3. Siemens Industry, Inc., Energy Management Division.
4. Square D; Schneider Electric USA.

B. MCCB: Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers:

a. Inverse time-current element for low-level overloads.
b. Instantaneous magnetic trip element for short circuits.
c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic Trip Circuit Breakers:

a. RMS sensing.
b. Field-replaceable rating plug or electronic trip.
c. Digital display of settings, trip targets, and indicated metering displays.
d. Multi-button keypad to access programmable functions and monitored data.
e. Ten-event, trip-history log. Each trip event must be recorded with type, phase, and magnitude of fault that caused trip.
f. Integral test jack for connection to portable test set or laptop computer.
g. Field-Adjustable Settings:

1) Instantaneous trip.
2) Long- and short-time pickup levels.
3) Long and short time adjustments.
4) Ground-fault pickup level, time delay, and I squared T response.

4. GFCI Circuit Breakers: Single- and double-pole configurations with Class A ground-fault protection (6 mA trip).
5. GFEP Circuit Breakers: Class B ground-fault protection (30 mA trip).
6. Arc-Fault Circuit Interrupter Circuit Breakers: Comply with UL 1699; 120/240 V, single-pole configuration.
7. Subfeed Circuit Breakers: Vertically mounted.
8. MCCB Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.
b. Breaker handle indicates tripped status.
c. UL listed for reverse connection without restrictive line or load ratings.
d. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
e. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and HID lighting circuits.
f. Rating Plugs: Three-pole breakers with ampere ratings greater than 150 A must have interchangeable rating plugs or electronic adjustable trip units.
g. Multipole units enclosed in single housing with single handle.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Verify actual conditions with field measurements prior to ordering panelboards to verify that equipment fits in allocated space in, and comply with, minimum required clearances specified in NFPA 70.

B. Receive, inspect, handle, and store panelboards in accordance with NECA 407.

C. Examine panelboards before installation. Reject panelboards that are damaged, rusted, or have been subjected to water saturation.

D. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Reference Standards:

1. Panelboards: Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NECA 407.
2. Consult Architect for resolution of conflicting requirements.

C. Special Techniques:

1. Equipment Mounting:

    a. Attach panelboard to vertical finished or structural surface behind panelboard.
    b. Mount surface-mounted panelboards to steel slotted supports. Orient steel slotted supports vertically.
2. Mount top of trim 7.5 ft above finished floor unless otherwise indicated.
3. Mount panelboard cabinet plumb and rigid without distortion of box.
4. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
5. Install overcurrent protective devices and controllers not already factory installed.

    a. Set field-adjustable, circuit-breaker trip ranges.
    b. Tighten bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver in accordance with manufacturer's published instructions.

6. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
7. Install filler plates in unused spaces.
8. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

D. Interfaces with Other Work:

1. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."

B. Panelboard Nameplates: Label each panelboard with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Device Nameplates: Label each branch circuit device in power panelboards with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

D. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.

E. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles must be located on interior of panelboard door.

F. Breaker Labels: Faceplate must list current rating, UL and IEC certification standards, and AIC rating.

G. Circuit Directory:

1. Provide directory card inside panelboard door, mounted in transparent card holder.

    a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

2. Provide computer-generated circuit directory mounted inside panelboard door with transparent plastic protective cover.

    a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

3.4 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as specified in Section 260573.16 "Coordination Studies."

3.5 PROTECTION

A. Temporary Heating: Prior to energizing panelboards, apply temporary heat to maintain temperature in accordance with manufacturer's published instructions.

END OF SECTION 262416

# SECTION 265000 - LIGHTING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Luminaires.

B. Related Requirements:

1. Section 260519 "Low-Voltage Electrical Power Conductors and Cables" specifies wiring connections installed by this Section.
2. Section 260529 "Hangers and Supports for Electrical Systems" specifies channel and angle supports installed by this Section.
3. Section 260553 "Identification for Electrical Systems" specifies electrical equipment labels and warning signs installed by this Section.

### 1.2 DEFINITIONS

A. BUG Rating: Backlight, uplight, and glare rating for light pollution from exterior luminaires.

B. Correlated Color Temperature (CCT): The absolute temperature (in kelvins) of a blackbody whose chromaticity (color quality) most nearly resembles that of the light source.

C. Color Rendering Index (CRI): The measure of the degree of color shift objects undergo when illuminated by the light source as compared with the color of those same objects when illuminated by a reference light source. The lower the CRI of a light source, the more difficult it is to identify colors and stripes on electronic components and wiring.

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. For luminaires.

a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.

b. Product Certificates: Include product certificates stating compliance with standards listed below, signed by manufacturer or fabricator.

1) Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with current accreditation under National Voluntary Laboratory Accreditation Program (NVLAP) for Energy Efficient Lighting Products.
2) Testing Agency Certified Data: For luminaires indicated on Lighting Fixture Schedule on Drawings, photometric data certified by qualified independent testing laboratory. Photometric data for remaining luminaires must be certified by manufacturer.

c. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
d. Include operating characteristics, electrical characteristics, and furnished accessories.
e. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on Drawings.
f. Include battery and charger data for emergency lighting units.
g. Include ballast factor.
h. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
i. Include photometric data and adjustment factors obtained from qualified laboratory tests.
j. Include manufacturer's sample warranty language.

2. For luminaire fittings.

a. Product Listing: Include copy of unexpired approval letter, on letterhead of qualified electrical testing agency, certifying product's compliance with specified listing criteria.

1) If listed manufacturer differs from selling manufacturer, indicate relationship between entities on submittal. Clearly indicate which entity warrants product performance and fitness for purpose.
2) Listing criteria identified in approval letter must match specified listing criteria. Approval of only equipment's enclosure is not considered approval of equipment for intended application.
3) Product identification in approval letter must match product branding and model numbers in submittal. Approval letters for similar products are not acceptable.

b. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
c. Include operating characteristics, electrical characteristics, and furnished accessories.
d. Include schedule of submitted lighting products. Arrange schedule and accompanying product data in order by luminaire and lamp designations indicated on Drawings.
e. Include manufacturer's sample warranty language.

B. Shop drawings.

1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect exposed surface finishes on lighting equipment by applying strippable, temporary protective covering before shipping.

1.6 WARRANTY FOR LUMINAIRES

A. Installer Warranty: Installer warrants that fabricated and installed luminaires perform in accordance with specified requirements and agrees to repair or replace products that fail to perform as specified within extended-warranty period. Warranty must convey to Owner upon acceptance of the Work.

1. Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Manufacturer Warranty: Manufacturer warrants that luminaires perform in accordance with specified requirements and agrees to provide repair or replacement of products that fail to perform as specified within extended-warranty period.

1. Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 LUMINAIRES

A. Performance Criteria:

1. Regulatory Requirements:

a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
b. See individual product types below for listing criteria.
c. Marked in accordance with UL CCN HYXT, including UL 1598, for compatible power supply, installation location, and environmental conditions.

B. Pole-Mounted Luminaire:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings to match existing adjacent King Farm Farmstead Parking Lot Project.
2. Product Listing Criteria, LED: UL CCN IFAM; including UL 1598.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF LIGHTING

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Installation of Exterior Lighting Systems: NECA NEIS 501.
2. Installation of Luminaires, Lampholders, and Lamps: Article 410 of NFPA 70.
3. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. Install luminaires level, plumb, and square with finished floor or grade unless otherwise indicated.
2. Install luminaires at height and aiming angle as indicated on Drawings.
3. Coordinate layout and installation of luminaires with other construction.
4. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.
5. Exterior Corrosion Prevention:

    a. Do not use aluminum in contact with earth or concrete. When in direct contact with dissimilar metals, protect aluminum with insulating fittings or treatment.
    b. When embedding steel conduits in concrete, wrap conduit with 10 mil thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

6. Install wiring connections for luminaires.
7. Identification: Provide labels for luminaires and associated electrical equipment.

    a. Identify field-installed conductors, interconnecting wiring, and components.
    b. Provide warning signs.
    c. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 FIELD QUALITY CONTROL OF LIGHTING

A. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.

2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
3. Verify operation of photoelectric controls.

B. Nonconforming Work:

1. Luminaire will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

## 3.4 SYSTEM STARTUP

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.
2. Burn-in lamps that require specific aging period to operate properly, prior to occupancy by Owner.

## 3.5 PROTECTION

A. After installation, protect lighting equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 265000

# SECTION 265613 - LIGHTING POLES AND STANDARDS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Laminated wood poles.
2. Mounting hardware.

### 1.2 DEFINITIONS

A. EPA: Equivalent projected area.

B. Pole: Luminaire-supporting structure, including tower used for large-area illumination.

C. Standard: See "Pole."

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. Laminated wood poles.
2. Mounting hardware.

B. Shop Drawings:

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of poles and pole accessories.
4. Foundation construction details, including material descriptions, dimensions, anchor bolts, support devices, and calculations, signed and sealed by a professional engineer licensed in the state of installation.
5. Anchor bolt templates keyed to specific poles and certified by manufacturer.
6. Method and procedure of pole installation. Include manufacturer's written installations.

### 1.4 CLOSEOUT SUBMITTALS

A. Warranty documentation.

### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Store poles on decay-resistant skids at least 12 inch above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

B. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.

C. Retain factory-applied pole wrappings on poles until right before pole installation. Handle poles with web fabric straps.

1.6 WARRANTY

A. Special Installer Extended Warranty: Installer warrants that fabricated and installed pole(s) perform in accordance with specified requirements and agrees to repair or replace products that fail to perform as specified within extended-warranty period.

1. Extended-Warranty Period: Four years from date of Substantial Completion; full coverage for labor, materials, and equipment.

B. Special Manufacturer Extended Warranty: Manufacturer warrants that pole(s) perform in accordance with specified requirements and agrees to provide repair or replacement of products that fail to perform as specified within extended-warranty period, including materials that corrode, fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs from special warranty period.

1. Extended-Warranty Period: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.
2. Warranty Period for Corrosion Resistance: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.
3. Warranty Period for Color Retention: Five years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Characteristics: Comply with AASHTO LTS-6-M.

B. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied in accordance with AASHTO LTS-6-M.

C. Live Load: Single load of 500 lb distributed in accordance with AASHTO LTS-6-M.

D. Ice Load: Load of 3 lb/ft2, applied in accordance with AASHTO LTS-6-M for applicable areas on the Ice Load Map.

E. Wind Load for Poles Not Exceeding 50 ft (15 m) Height: calculated and applied according to AASHTO LTS-6-M.

F. Strength Analysis: For each pole, multiply the actual EPA of luminaires and brackets by a factor of 1.1 to obtain the EPA used in pole selection strength analysis.

G. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless steel fasteners and mounting bolts unless otherwise indicated.

H. General Finish Requirements:

1. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
2. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.2 LAMINATED WOOD POLES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings to match existing adjacent King Farm Farmstead Parking Lot Project.

## 2.3 MOUNTING HARDWARE

A. Anchor Bolts: Manufactured to ASTM F1554, Grade 55, with a minimum yield strength of 55,000 psi.

1. Galvanizing: Hot dip galvanized in accordance with ASTM A153, Class C.

B. Nuts: ASTM A563, Grade A, Heavy-Hex.

1. Galvanizing: Hot dip galvanized in accordance with ASTM A153, Class C.

C. Washers: ASTM F436, Type 1.

1. Galvanizing: Hot dip galvanized in accordance with ASTM A153, Class C.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine poles, luminaire-mounting devices, lowering devices, and pole accessories before installation. Components that are scratched, dented, marred, wet, moisture damaged, or visibly damaged are considered defective.

C. Examine roughing-in for foundation and conduit to verify actual locations of installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 POLE FOUNDATION

A. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Structural steel complying with ASTM A36/A36M and hot-dip galvanized in accordance with ASTM A123/A123M; and with top-plate and mounting bolts to match pole-base flange and strength required to support pole, luminaire, and accessories.

B. Anchor Bolts: Install plumb using manufacturer-supplied template, uniformly spaced.

## 3.3 POLE INSTALLATION

A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on pole.

B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on drawing.

1. Fire Hydrants and Water Piping: 60 inches.
2. Water, Gas, Electric, Communications, and Sewer Lines: 60 inches.
3. Trees: 15 ft from tree trunk.

C. Concrete Pole Foundations: Set anchor bolts in accordance with anchor-bolt templates furnished by pole manufacturer.

D. Raise and set pole using web fabric slings (not chain or cable) at locations indicated by manufacturer.

## 3.4 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum using insulating fittings or treatment.

B. Steel Conduits: Comply with requirements in Section 260533.13 "Conduits for Electrical Systems." In concrete foundations, wrap conduit with 0.010 inch thick, pipe-wrapping plastic tape applied with a 50-percent overlap.

## 3.5 GROUNDING

A. Ground Metal Poles and Support Structures: Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."

1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

B. Ground Nonmetallic Poles and Support Structures: Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."

1. Install grounding conductor and conductor protector.
2. Ground metallic components of pole accessories and foundation.

## 3.6 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.7 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Inspect poles for nicks, mars, dents, scratches, and other damage.

B. Nonconforming Work:

1. Unit will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

END OF SECTION 265613

**City of Rockville**
**Rockville, Maryland**

# BID PROPOSAL FORMS

## INVITATION FOR BIDS #01-25
## KING FARM FARMSTEAD ELECTRIC INFRSTRUCTURE PROJECT

**THESE FORMS, UNLESS NOTED OTHERWISE, MUST BE COMPLETED, SIGNED AND SUBMITTED**

**FAILURE TO COMPLY WILL RESULT IN THE DISQUALIFICATION OF YOUR BID**

In response to the advertisement by the City of Rockville inviting bids for the work and in conformance with the bid document on file in the Purchasing Division of the City of Rockville, we hereby certify that we are the only person, or persons interested in this bid proposal as principals, and that an examination has been made of the work site, the specifications, the plans and the bid documents. We propose to furnish all necessary machinery, materials, equipment, tools, labor, and other means of construction required to complete the project. Bidders must bid all items.

The following items shall be performed per the referenced Standard Specification and the Contract Documents. Measurement and Payment shall be as described in the Technical Specifications unless otherwise specified in the Contract Documents. All work items described in the Contract Documents that are not referenced buy a specific pay item shall be considered incidental to all other items in the Contract Documents.

**IFB #01-25 – KING FARM FARMSTEAD ELECTRICT INFRSATRUCTURE SERVICE PROJECT**
**SECTION V: BID PRICING FORM/BID PACKET**

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL. FAILURE TO SUBMIT THIS FORM MAY DEEM THE BIDDER NON-RESPONSIVE.**

IN ACCORDANCE WITH ALL TERMS, SPECIFICATIONS AND REQUIREMENTS, WE PROPOSE TO FURNISH ALL LABOR, EQUIPMENT, MATERIALS AND SERVICES AND THE PERFORMANCE OF ALL WORK NECESSARY FOR THE PROJECT. PROVIDE PRICING BELOW TO INCLUDE OVERHEAD, PROFIT, TAXES, INSURANCE AND OTHER APPLICABLE FEES AND COSTS. ALTERATIONS TO THIS FORM OR BID ALTERNATES (UNLESS OTHERWISE SPECIFIED) ARE NOT ACCEPTABLE. LINE ITEMS LEFT BLANK OR MARKED "$0" MAY DEEM THIS BID NON-RESPONSIVE.

| Bid Item No. | Description | Labor | | Equipment | Total Bid Price |
|---|---|---|---|---|---|
| GENERAL CONSTRUCTION | | | | | |
| 1. | General Conditions | | | | |
| 2. | Site Demolition | | | | |
| 3. | Electrical Demolition | | | | |
| 4. | Pepco Coordination | | | | |
| 5. | Sitework Landscaping | | | | |
| 6. | Concrete | | | | |
| 7. | Duct Banks | | | | |
| 8. | Electrical-800a 480cv Service | | | | |
| 9. | Electrical-Other Work | | | | |
| 10. | Construction Stakeout | | | | |
| Base Bid Grand Total (Bid Items 1 through 10) | | | | | |

**GRAND TOTAL IN WORDS** _____

_____ **($ )**

**EXCEPTIONS**

All exceptions taken to the specifications contained in this document must be clearly indicated in the space provided below. Unless noted as an exception, the bidder will be held responsible for providing each component or standard called for.

The City Manager for the City of Rockville, Maryland retains the exclusive right to approve or reject any exception taken to the specifications contained in this bid. It is hereby agreed that if this bid is rejected due to an exception taken to a specification by the bidder, the rejection taken will be final and no further action may be taken.

Do you claim an exception to any specification to this bid? If yes, please explain.

_____

_____

**NAME OF BIDDER**_____

# COMPREHENSIVE SIGNATURE PAGE

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

## Instruction for Signature on Bid Proposal

The bid, if submitted by an individual, shall be signed by an individual; if submitted by a partnership, shall be signed by such member or members of the partnership as have authority to bind the partnership; if submitted by a corporation the same shall be signed by the President and attested by the Secretary or an Assistant Secretary. If not signed by the President as aforesaid, there must be attached a copy of that portion of the By-Laws, or a copy of a Board resolution, duly certified by the Secretary, showing the authority of the person so signing on behalf of the corporation. In lieu thereof, the corporation may file such evidence with the Administration, duly certified by the Secretary, together with a list of the names of those officers having authority to execute documents on behalf of the corporation, duly certified by the Secretary, which listing shall remain in full force and effect until such time as the Administration is advised in writing to the contrary. In any case where a bid is signed by an Attorney in Fact the same must be accompanied by a copy of the appointing document, duly certified.

| **IF AN INDIVIDUAL** | | | | | |
|---|---|---|---|---|---|
| Individual Name | | | | | |
| DBA | | | | | |
| Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Signature | | | | | |
| Printed Name | | | | | |
| Title | | | | | |
| Date | | | | | |
| Witness Signature | | | | | |
| Witness Name | | | | | |
| Witness Title | | | | | |
| Date | | | | | |

## COMPREHENSIVE SIGNATURE PAGE (CONTINUED)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| IF A PARTNERSHIP | | | | | |
|---|---|---|---|---|---|
| Name of Partnership | | | | | |
| Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Member Signature | | | | | |
| Printed Name | | | | | |
| Title | | | | | |
| Date | | | | | |
| Witness Signature | | | | | |
| Witness Name | | | | | |
| Witness Title | | | | | |
| Date | | | | | |

## COMPREHENSIVE SIGNATURE PAGE (CONTINUED)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| IF A CORPORATION | | | | | |
|---|---|---|---|---|---|
| Name of Corporation | | | | | |
| Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Fed ID or SSN | | | | | |
| State of Incorporation | | | | | |
| Signature | | | | | |
| Printed Name | | | | | |
| Title | | | | | |
| Date | | | | | |
| Witness Signature | | | | | |
| Witness Name | | | | | |
| Witness Title | | | | | |
| Date | | | | | |

## COMPREHENSIVE SIGNATURE PAGE (CONTINUED)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| CONTACT FOR ADMINISTRATION | |
|---|---|
| Individual Name | |
| e-mail | |
| Telephone | |
| FAX | |
| EMERGENCY SERVICE (24hr.) PHONE | |

| REMITTANCE ADDRESS (if different than the Organizational Address above) | | | | | |
|---|---|---|---|---|---|
| Address | | | | | |
| City | | State | | ZIP+4 | |

| MFD-V INFORMATION | |
|---|---|
| MFD-V Information | For informational purposes only – Is your company certified as a Minority, Female, Disabled or Veteran (MFD-V) business:<br><br>_____ yes _____ no _____ I choose not to respond. |

# AFFIDAVIT OF QUALIFICATION TO CONTRACT WITH A PUBLIC BODY

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

I hereby affirm that: I am the_____(insert title) and the duly authorized representative of the firm of_____(insert organization name) whose address is _____
and, that I possess the legal authority to make this affidavit on behalf of myself and the firm for which I am acting.

I affirm:

1. Except as described in Paragraph 2 below, neither I nor the above firm nor, to the best of my knowledge, any of its controlling stockholders, officers, directors, or partners, performing contracts with any public body (the State or any unit thereof, or any local governmental entity in the state, including any bi-county or multi-county entity), has:

A. been convicted under the laws of the State of Maryland, any other state, or the United States of any of the following:

(1) bribery, attempted bribery, or conspiracy to bribe.
(2) a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract.
(3) fraud, embezzlement, theft, forgery, falsification or destruction of records, or receiving stolen property.
(4) a criminal violation of an anti-trust statute.
(5) a violation of the Racketeer Influenced and Corrupt Organization act, or the Mail Fraud Act, for acts in connection with the submission of bids or proposals for a public or private contract.
(6) a violation of Section 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland.
(7) conspiracy to commit any of the foregoing.

B. pled *nolo contendere* to, or received probation before verdict for, a charge of any offense set forth in subsection A of this paragraph.

C. been found civilly liable under an anti-trust statute of the State of Maryland, another state, or the United States for acts or omissions in connection with the submission of bids or proposals for a public or private contract.

D. during the course of an official investigation or other proceeding, admitted, in writing or under oath, an act or omission that would constitute grounds for conviction or liability under any law or statute described in subsection A or C of this paragraph.

2. [State "none," or as appropriate, list any conviction, plea or admission as described in Paragraph 1 above, with the date, court, official or administrative body, the individuals involved and their position with the firm, and the sentence or disposition, if any].

_____

3. I further affirm that neither I nor the above firm shall knowingly enter into a contract with the Mayor and Council of Rockville under which a person or business debarred or suspended from contracting with a public body under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland, will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

I acknowledge that this Affidavit is to be furnished to the Mayor and Council of Rockville and, where appropriate, to the State Board of Public Works and to the Attorney General. I acknowledge that I am executing this Affidavit in compliance with the provisions of Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland which provides that persons who have engaged in certain prohibited activity may be disqualified, either by operation in law or after a hearing, from entering into contracts with the Mayor and Council of Rockville. I further acknowledge that if the representations set forth in this Affidavit are not true and correct, the Mayor and Council of Rockville may terminate any contract awarded and take any other appropriate action.

**Signature**_____ **Date**_____

**Printed Name and Title:** _____

# NON—COLLUSION AFFIDAVIT

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

I hereby affirm that: I am the_____(insert title) and the duly authorized representative of the firm of_____(insert organization name) whose address is _____
and, that I possess the legal authority to make this affidavit on behalf of myself and the firm for which I am acting.

I affirm:

1. Am fully informed respecting the preparation and contents of the attached bid and of all pertinent circumstances respecting such bid;

2. Such bid is genuine and is not a collusive or sham bid

3. Neither the said bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other bidder, firm or person to submit a collusive or sham bid in connection with the Contract for which the attached bid has been submitted or to refrain from bidding in connection with Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, firm or person to fix the price or prices in the attached bid or of any other bidder, or to fix any overhead, profit or cost element of the bid price or the bid price of any other bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Mayor and Council of Rockville, Maryland (Local Public Agency) or any person interested in the proposed Contract; and
4. The price or prices quoted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant. I do solemnly declare and affirm under the penalties of perjury that the contents of these affidavits are true and correct.

**Signature**_____ **Date**_____

**Printed Name and Title**_____

# BIDDER REFERENCE FORM

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

The City of Rockville reserves the right to reject bids from any company not meeting the minimum qualifications. The Bidder shall be a competent and experienced contractor with an established reputation within the community performing the type of work required for this contract. The bidder shall have performed similar work for a minimum period of five (5) years. Indicate below a listing of three (3) recent projects completed by your firm that can substantiate past work performance and experience in the type of work required for this contract. The City may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all such information and data for this purpose as the City may request.

| **BIDDER REFERENCE NO. 1** | | | | | |
|---|---|---|---|---|---|
| Project Name | | | | | |
| Project Owner's Name | | | | | |
| Project Site Address | | | | | |
| | | | | | |
| Project City | | Project State | | Project ZIP | |
| Project Owner's Contact Name | | | | | |
| Project Owner's Contact Telephone | | | | | |
| Project Owner's Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |
| Name of Your Project Foreman | | | | | |

**BIDDER REFERENCE FORM (CONTINUED)**
**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| **BIDDER REFERENCE NO. 2** | | | | | |
|---|---|---|---|---|---|
| Project Name | | | | | |
| Project Owner's Name | | | | | |
| Project Site Address | | | | | |
| | | | | | |
| Project City | | Project State | | Project ZIP | |
| Project Owner's Contact Name | | | | | |
| Project Owner's Contact Telephone | | | | | |
| Project Owner's Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |
| Name of Your Project Foreman | | | | | |

## BIDDER REFERENCE FORM (CONTINUED)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| BIDDER REFERENCE NO. 3 | | | | | |
|---|---|---|---|---|---|
| Project Name | | | | | |
| Project Owner's Name | | | | | |
| Project Site Address | | | | | |
| | | | | | |
| Project City | | Project State | | Project ZIP | |
| Project Owner's Contact Name | | | | | |
| Project Owner's Contact Telephone | | | | | |
| Project Owner's Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |
| Name of Your Project Foreman | | | | | |

# SUB-CONTRACTOR REFERENCE FORM

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL
SEPERATE REFERENCE FORMS MUST BE SUBMITTED FOR EACH PROPOSED SUB-CONTRACTOR**

| | | | | | |
|---|---|---|---|---|---|
| Sub-Contractor's Name | | | | | |
| Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Telephone | | | | | |
| Sub-Contractor's Contact Name | | | | | |
| Description of the Work that will be Sub-Contracted | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **SUB-CONTRACTOR REFERENCE NO. 1** | | | | | |
| Reference Organization Name | | | | | |
| Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Contact Name | | | | | |
| Contact Telephone | | | | | |
| Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |

## SUB-CONTRACTOR REFERENCE FORM (CONTINUED)

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE BID SUBMITTAL**

| SUB-CONTRACTOR REFERENCE NO. 2 | | | | | |
|---|---|---|---|---|---|
| Reference Organization Name | | | | | |
| Address | | | | | |
| City | | State | | ZIP | |
| Contact Name | | | | | |
| Contact Telephone | | | | | |
| Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |

| SUB-CONTRACTOR REFERENCE NO. 3 | | | | | |
|---|---|---|---|---|---|
| Reference Organization Name | | | | | |
| Address | | | | | |
| City | | State | | ZIP | |
| Contact Name | | | | | |
| Contact Telephone | | | | | |
| Contact e-mail | | | | | |
| Contract Value | | | | | |
| Scheduled Completion Date | | Percent Complete | | | |
| Description of Project Work | | | | | |

# BIDDER'S QUESTIONNAIRE

In order to be considered for award, the Bidder must complete this questionnaire in its entirety and submit it to the Purchasing Issuer of this IFB within the time specified. The bidder must answer all questions. If additional space is required, attach continuation sheets and clearly indicate the question being answered. The City reserves the right to verify any information contained within this report and to request additional information or clarification. The City reserves the right to reject the bid of a bidder who has previously failed to perform properly or to complete in a timely manner contracts of a similar nature, or if investigation shows the bidder unable to perform the requirements of the Contract or if the bidder fails to complete and submit the Bidder's Questionnaire in its entirety. If additional sheets are necessary, then please attach them to this form and reference the applicable IFB number and title.

| | | | | | |
|---|---|---|---|---|---|
| Bidder's Name | | | | | |
| Bidder's Address | | | | | |
| | | | | | |
| City | | State | | ZIP | |
| Telephone | | Fax | | | |
| Organized under the laws of the State of: | | | | | |
| Signature of the Bidder's Authorized Representative | | Date | | | |
| Print Name | | | | | |
| Title | | | | | |

## 1. ORGANIZATION

1.1 How many years has your organization been in business as a Contractor?

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

1.3 Under what **other** or former names has your organization operated?

1.4 If your organization is a corporation, answer the following:

Date of incorporation:

State of incorporation:

President's name:

## BIDDER'S QUESTIONNAIRE(CONTINUED)

Vice-president's name(s):

Secretary's name:

Treasurer's name:

1.5 If your organization is a partnership, answer the following:

Date of organization:

Type of partnership (if applicable):

Name(s) of general partner(s):

1.6 If your organization is individually owned, answer the following:

Date of organization:

Name of owner:

1.7 If the form of your organization is other than those listed above, describe it, and name the principals:

**2. LICENSING**

2.1 List ALL jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

2.2 Pepco Certification/License #_____

3. **EXPERIENCE**

3.1 List the categories of work that your organization normally performs with its own forces.

3.2 Has your organization ever failed to complete any work awarded to it? If yes, please provide details on a separate sheet.

## BIDDER'S QUESTIONNAIRE(CONTINUED)

3.3 a) Are there any judgment, claims, arbitration, proceedings, or suits pending or outstanding against your organization or its officers? b) Has a surety bond or similar instrument ever been called on your company? (i.e., has the oblige ever called a surety bond issued on behalf of your company)?

3.4 Within the past five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? If yes, please provide details.

3.5 Within the last two years, has any owner of any project threatened to impose or imposed liquidated damages against your organization? If yes, provide details.

3.6 Within the last two years, has your organization constructed any projects where the date of substantial completion was more than 30 days after the contract completion date as determined by the contract and any changes orders? If yes, provide details.

3.7 Within the last 2 years, has your organization constructed any projects where the change orders exceeded 10% of the contract price? If yes, provide details.

3.8 State the total worth of work in progress and under contract:

3.9 State the average annual amount of construction work performed during the past five years:

4. **FINANCIAL**

4.1 State that you will provide a copy of your company's audited financial statements for the past two (2) years, if requested, by the City of Rockville.

## BIDDER'S QUESTIONNAIRE(CONTINUED)

4.2 Is your company currently for sale or involved in any transaction to expend or to become acquired by another business entity? If yes, please explain the impact both in organizational and directional terms.

4.3 Is your company currently in default on any loan agreement or financing agreement with any bank, financial institution, or other entity? If yes, specify date(s), details, circumstances, and prospects for resolution.

**CERTIFICATION**

**The above statements are certified to be true and accurate.**

**BY:**_____ _____

**Signature** **Date**

_____

**Print Signature/Title**

**SAMPLE – DO NOT COMPLETE OR RETURN**

# CITY OF ROCKVILLE, MARYLAND
# CONSTRUCTION CONTRACT AGREEMENT (STIPULATED PRICE)

This Construction Contract Agreement (this "**Agreement**") is entered into as of this _____ day of May, 2024, (the "**Effective Date**") by and between **THE MAYOR AND COUNCIL OF ROCKVILLE**, a body corporate and politic and municipal corporation of the State of Maryland with an address of 111 Maryland Avenue, Rockville, Maryland (the "**Mayor and Council**", "**City**" or the "**Owner**"), acting by and through its City Manager, and _____[Contractor Name]___**,** a ___[Contractor State of Incorporation]___ company with a principal office address of _____[Contractor Address]____ (the "**Contractor**"). Individually, the Mayor and Council and the Contractor may each be referred to hereinafter as the "**Party**," or collectively as the "**Parties**."

**RECITALS**

On _____, 2024, the City Manager caused to be issued an Invitation for Bid ("**IFB #_____**") for [Project Scope].

On _____, 2024, the IFB #_____ closed and Contractor, was determined to be the best qualified responsive bidder.

On _____, 2024, Mayor and Council awarded this Agreement to Contractor and authorized the City Manager to execute this Agreement.

For ease of reference, Exhibit A to this Agreement is the Form of the Performance Bond; Exhibit B to this Agreement is the Form of the Payment Bond; Exhibit C to this Agreement is the General Conditions; and Exhibit D to this Agreement is the Contractor's Bid Submission.

Terms used in this Agreement but not defined have the meanings stated in the General Conditions, attached hereto as Exhibit C.

For good and valuable consideration, each to the other given, the receipt and sufficiency of which each Party acknowledges, Owner and Contractor agree as follows:

The Parties agree and acknowledge that the Recitals stated above are incorporated and form a material part of this Agreement.

**ARTICLE 1—WORK**

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents which are defined in Article 7 of this Agreement, and include the details set forth in IFB #18-24. The Work is generally described as follows: Contractor shall provide construction and construction-related services including but not limited to _____[Insert Project Scope]___, and incidental items of work as shown on the "**Drawings**", as defined in Exhibit C, attached and incorporated in this Agreement, and more particularly provided as a part of IFB #_____, and referred to herein as the "**Contract Drawings**"**,** specified herein and/or in the other Contract Documents, or as may be directed by the Owner and/or Architect. In addition, the Work includes, without limitation, the

following additional components: Add Alternates __[Insert Add Alts if applicable]__. The Work and scope thereof are set forth in further detail herein and in the other Contract Documents. All of the same, all other work, services, labor, materials and supplies associated with the Project and to be performed, acquired and/or installed, incorporated or otherwise included by or on behalf of the Contractor, and all of Contractor's obligations under or in connection with any of the Contract Documents are collectively referred to as the "**Work**".

**ARTICLE 2—THE PROJECT**

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: ___[Insert Project Title]_____ as advertised in IFB #_____, including all addenda, attachments, and enclosures. The Project is located at __[Project Address]__, Rockville, Maryland 20850. The Project is as defined in the General Conditions and as further described in the other Contract Documents. For purposes of all Contract Documents and the "**Project**", the "**Proposal**" or "**Contractor's Proposal**" means that certain response to the IFB #_____ from the Contractor and proposal to the City Manager for completion of the Work and the Project, including all attachments and other materials, answers to clarifications and other inquiries, and including all external documents, materials and things referenced therein, as accepted by the City in connection with award of the Contract.

**ARTICLE 3—ARCHITECT**

3.01 The Owner has retained __[Design Representative]___, a __[State of Incorporation]__ corporation ("**Architect**") to act as Owner's representative, assume all duties and responsibilities of Architect, and have the rights and authority assigned to Architect in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by the Architect.

**ARTICLE 4—CONTRACT TIMES AND DAMAGES**

4.01 *Time is of the Essence*

A. All time, time limits, dates and deadlines for completion and delivery of the Work and the Project, including Substantial Completion, Final Completion and all other respective requirements and obligations of the parties, including completion and readiness for final payment as stated in the Contract Documents, and all other aspects of the Work and the Project, including Contractor's performance, are of the essence of the Contract. "**Substantial Completion**" and "**Final Completion**" are defined in Exhibit C, General Conditions, Subsection 62.

4.02 *Contract Times: Days*

A. Contractor shall begin performance of the Work within 10 calendar days of Owner's issuance of a City of "Rockville Purchase Order" (the "**Notice to Proceed**"). Contractor shall finally complete all Work within ____ consecutive calendar days from the date of the Notice to Proceed. The City may, but is not obligated to, issue a limited Notice to Proceed (a "**LNTP**") to allow for mobilization, coordination, field measuring, shop drawing review/approval, submission of Work plan and ordering long lead time components, and possible Work.

4.03 *Final Completion Date*

A. Contractor shall achieve Final Completion of the Work and the Project on or before __[Completion Date]___, the date that is _____ consecutive calendar days from the date of the Notice to Proceed.

4.04 *Liquidated Damages*

A. Contractor and Owner recognize and agree that time is of the essence for all purposes of the Work and the Project and that Owner will suffer, without implied limitation, financial and other losses if the Work is not completed and milestones not achieved within the Contract Times. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner Four Hundred and 00/100 Dollars ($400.00) for each calendar day that expires after the time (as duly adjusted pursuant to the Contract) specified in this Agreement or elsewhere in the other Contract Documents for Substantial Completion, until the Work is substantially complete in all respects.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse or fail to complete any component of the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner Four Hundred and 00/100 Dollars ($400.00) for each calendar day that expires after such time until the Work is finally completed in all respects and ready for final payment.

3. Liquidated damages for failing to timely attain any Project milestone, Substantial Completion, Final Completion or any other component of the Work or Project are not additive, and will not be imposed concurrently or cumulatively, all of the same to be assessed and imposed severally.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages shall in no event be deemed Owner's sole and exclusive remedy for such delay, and Owner shall be entitled to seek and recover any and all other losses and other damages, whether actual, direct, excess, consequential or otherwise, for such delay, as well as any and all other remedies and relief available at law, in equity or otherwise, except only such special damages (if any) expressly specified in the General Conditions.

C. Owner and Contractor acknowledge and agree that Owner's actual losses and damages in any of the foregoing circumstances, as well as in the event of any other event or circumstance entitling Owner to liquidated damages related to the Project, are extremely difficult, if not impossible, to ascertain and calculate as of the Effective Date and that the aforementioned amounts represent the good faith, reasonable estimation and approximation of the anticipated compensation for such losses and damages by and between the parties hereto, determined as of the Effective Date.

4.05 *Special Damages*

A. Contractor shall reimburse Owner upon demand (1) for any and all fines and penalties imposed on Owner in connection with the Contractor's failure to attain Substantial Completion, Final Completion or any other date for performance according to the Contract

Times, and (2) for any and all costs and expenses, including reasonable attorneys' fees, incurred by Owner for engineering, construction observation, inspection, administrative services, or any other work or services needed or otherwise utilized or obtained after the time specified for performance.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse or fail to complete any component of the remaining Work within the Contract Times, Contractor shall reimburse Owner for any and all costs and expenses, including reasonable attorneys' fees, incurred by Owner for engineering, construction observation, inspection, administrative services, or any other work or services needed or otherwise utilized or obtained after the time specified for Work to be completed and ready for final payment.

C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

D. For the avoidance of doubt, Owner may, but in no event be obligated to, complete all or any portion of the Work not timely performed in full by Contractor, on behalf of Contractor and at Contractor's sole cost and expense. Contractor shall, on demand, reimburse Owner the positive difference, if any, between (i) all costs and expenses incurred by Owner in connection with so performing on behalf of Contractor, including reasonable attorneys' fees, and (ii) the Contract Sum.

**ARTICLE 5—CONTRACT SUM**

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow:

A. For all Work, including all Work for Add Alternates _____, a lump sum of _____[Insert Written Value]_____ and 00/100 Dollars (___[Insert Numerical Value]____) (the "**Contract Sum**"), as set forth in further detail in the Proposal. Of such Contract Sum, _____[Individual Breakdown of Add Alternates]____, in total for both, all as set forth in further detail in the Proposal. The Contract Sum represents Contractor's full compensation for performance of the Work and completion of the Project. All specific cash allowances are included in the above price.

B. Notwithstanding the foregoing, for all items of Work for which a unit price ("**Unit Price**" has been allocated in the Proposal ("**Unit Price Work**") necessitated beyond the amounts set forth in the Proposal, Owner shall pay Contractor an amount equal to the amount reached by multiplying the unit price of such items as set forth in the Proposal by the actual quantity of that item installed or otherwise incorporated into the Work. The amounts for Unit Price Work set forth in the Proposal are based on estimated quantities and remain estimates only as of the Effective Date. Estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Architect.

C. Total of Contract Sum and Unit Price Work (subject to final Unit Price adjustment), inclusive of Add Alternates _____, is _____[Contract Value, Written and Numerical]_____.

D. For all Work, at the prices stated in Contractor's Proposal.

**ARTICLE 6—PAYMENT PROCEDURES**

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit "**Applications for Payment**" in substantially the form identified in Subsections 57 ("Progress Payments and Retainage") and 58 ("Final Payment Request") of the General Conditions. Applications for Payment will be processed by Architect as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment within 30 days of receipt, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will, in the case of Unit Price Work, be based on the number of units completed.

1. Progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract or otherwise authorized pursuant to any one or more Laws and Regulations.

a. ninety-five percent (95%) of the value of the Work completed (with the balance being retainage) as set forth in further detail in the General Conditions.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work and the Project, Owner shall pay Contractor the remainder of the Contract Sum.

6.04 *Consent of Surety*

A. Owner will not make final payment nor return or release retainage at Final Completion or any other time unless Contractor submits written consent of the surety to such payment, return or release in each instance, as the case may be.

6.05 *Interest*

A. All amounts not paid when due and payable will bear interest at the rate of two percent per annum.

**ARTICLE 7—CONTRACT DOCUMENTS**

7.01 *Contents*

A. The Contract Documents consist of all of the following including any and all exhibits, schedules, addenda, attachments and other documents, materials and things attached thereto and/or referenced, linked or otherwise incorporated therein:

1. This Agreement.

2. Bonds:

a. Performance bond (together with power of attorney).

b. Payment bond (together with power of attorney).

3. General Conditions.
4. The IFB #_____.
5. Contractor's Proposal/Bid.
6. All Plans, Specifications, and Drawings. The following Contract Drawings are included, without limitation:

   (a) ___[List all Permits here]___;

7. Exhibits to this Agreement (enumerated as follows):
   a. form of Performance Bond
   b. form of Payment Bond
   c. General Conditions
   d. Contractor's Proposal/Bid

   (the IFB #_____ and Plans, Drawings and Specifications are not attached as exhibits to this Agreement.)

8. The following which may be delivered or issued on or after the Effective Date of this Agreement and are not attached hereto:
   a. Limited Notice to Proceed and/or Notice to Proceed.
   b. Work Change Directives.
   c. Change Orders.
   d. Field Orders.
   e. Warranty Bond, if any.

B. There are no Contract Documents other than those listed above in this Article 7. All Contract Documents are incorporated into this Agreement by reference as if fully restated herein.

C. This Agreement and all other Contract Documents may only be amended, modified, or supplemented by written agreement duly authorized and executed by Owner and Contractor as provided in the Contract.

**ARTICLE 8—**REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations, warranties and certifications to Owner that:

1. Contractor has examined and carefully studied the Contract Documents, including all addenda, attachments, supplements, and materials referenced and/or linked therein.
2. Contractor has visited the Project site, conducted a thorough examination of the Site and adjacent areas, and become familiar with the general, local, Site and other conditions that may affect cost, progress, and/or performance of the Work.
3. Contractor is familiar with all laws and regulations, as defined in the Exhibit C, General Conditions, Subsection 9 "Legal Requirements"), that may affect cost, progress and/or

performance of the Work or that are otherwise applicable to any component of the Work or Project.

4. Contractor has carefully studied all reports of explorations and tests of subsurface conditions at and adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures and other conditions and characteristics at the Site.

5. Contractor has carefully studied all reports and drawings relating to hazardous, toxic, or otherwise dangerous or harmful (or potentially so) environmental conditions, if any, at, near and adjacent to the Site.

6. Contractor has considered all information known to Contractor itself; all information commonly known to contractors doing business in the locality of the Site; all information and observations obtained from visits to the Site; the Contract Documents; and all technical specifications and other information and data set forth in the IFB ("**Technical Data**"), with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress and/or performance of the Work; (b) the means, methods, techniques, sequences and/or procedures of construction to be employed by Contractor; (c) Contractor's safety precautions and programs; and (d) any other aspect or component of the Work or Project.

7. Based on the information, observations and Technical Data referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, data or other information or materials are necessary for the performance of the Work at the Contract Sum, within the Contract Times, and in accordance with all terms and conditions of the Contract.

8. Contractor is aware of the nature of work to be performed by Owner and others at the Site that relates to the Work, whether in whole or in part, as may be indicated in the Contract Documents.

9. Contractor has given Architect written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and that all of the same have been resolved or otherwise rectified to Owner's full satisfaction as of the Effective Date.

10. The Contract Documents are sufficient to indicate and convey clear understanding of all terms and conditions for performance and furnishing of the Work, and Contractor does, in fact, have such an understanding thereof.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in this Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

12. Contractor is a duly formed, registered and qualified entity in good standing in all applicable jurisdictions and is otherwise fully authorized to do business in the State of Maryland, and further that the Person executing this Agreement on behalf of Contractor is a duly qualified officer of Contractor and that he or she is duly authorized to execute, acknowledge and deliver this Agreement and all other Contract Documents to the Owner such that all of the same shall be binding upon Contractor in accordance with their terms.

13. Contractor (a) has adequate power and authority to enter into this Agreement and all other Contract Documents and to fully perform Contractor's obligations under these Contract Documents; (b) possesses full authority to execute and deliver this Agreement and all other Contract Documents and that same does not contravene any of the Laws and Regulations; (c) neither Contractor nor any principal (or beneficiary) of Contractor is subject to any pending, threatened or current litigation, merger or acquisition, corporate or other restructuring or financial oversight; (d) neither Contractor nor any of Contractor's principals (or beneficiaries) is currently subject to any voluntary or involuntary bankruptcy or other insolvency, reorganization, bankruptcy, receivership or other similar proceeding, Contractor has no knowledge of any of the same pending or being imminent, none of such parties have been subject to any of the same at any time during the 10 year period immediately preceding the Effective Date, and Contractor has not made an assignment for the benefit of its creditors; (e) Contractor is not in violation of any order, decree or judgment arising out of, connected with or otherwise related to the design, construction, operation or management of any facility, building, project or system; (f) all representations, warranties, certifications and other statements set forth in the Proposal or otherwise made by, under, through or at the direction of Contractor in or in connection with the Proposal or Contractor's response to the IFB #_____ and/or other aspect of the Project were true, complete and correct when made and remain true, complete and correct as of the Effective Date; (g) Contractor is financially and professionally positioned and has all appropriate wherewithal to perform all covenants and other obligations on the part of Contractor to be performed and observed under or in connection with this Agreement or any of the other Contract Documents, all in accordance with their terms and by the dates and other deadlines set forth in the Agreements and other Contract Documents; (h) this Agreement and the other Contract Documents is and shall be binding upon the Contractor in accordance with their respective terms, provisions and conditions; (i) neither Contractor's entering into the Contract nor performing in accordance therewith shall breach or contravene any contract, agreement or relationship to which Contractor is a party or is otherwise bound, and there are no additional impediments whatsoever; (j) Contractor is in compliance with all Laws and Regulations of both the State of Maryland and the City of Rockville, Maryland, including all of the same related to campaign finance and/or contribution.

All representations, warranties and certifications of Contractor set forth in this Agreement or elsewhere in the Contract Documents shall remain true, correct, and complete for the Duration of the Project through and including Contractor's final completion of the Work, and Contractor shall immediately inform Owner of any and all changes thereto arising during the Project.

8.02 *Contractor's Certifications*

A. Contractor further certifies to Owner that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "**corrupt practice**" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "**fraudulent practice**" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner,

(b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "**collusive practice**" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "**coercive practice**" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *General Conditions*

A. The general conditions of the Contract are attached as Exhibit C (the "**General Conditions**"). Owner and Contractor agree to perform in accordance with the terms, conditions and provisions of this Agreement, the General Conditions, and all other Contract Documents.

**ARTICLE 9—MISCELLANEOUS PROVISIONS**

9.01 *Governing Law*

This Agreement and all other Contract Documents are entered into in and shall be construed in accordance with the laws and regulations of the State of Maryland without regard to the choice-of-law rules thereof.

9.02 *Party Contacts*

Except for matters requiring compliance with the notice provisions of the General Conditions, the parties' respective contacts for emergencies and all other purposes of the Contract are as follows:

City Contact:

[Contact Name]
City of Rockville
111 Maryland Ave
Rockville, MD 20850
Phone: [Contact Phone Number]
Email: [Contact Email]

Contractor Contact:

[Contact Name]
[Contractor]
[Street Address]
[City, State, Zip]
Phone: [Contact Phone Number]
Email: [Contact Email]

9.03 *Certificate of Good Standing*

Contractor shall deliver to Owner no later than the Effective Date an original Certificate of Good Standing issued by the State of Maryland or its applicable department or agency showing Contractor in good standing as of the Effective Date for all intents and purposes of contracting and otherwise transacting business in the State of Maryland.

9.04 *Integration; Incorporation*

The Contract Documents collectively represent the entire and integrated agreement between the City and the Contractor with respect to the subject matter and supersede all prior negotiations, representations and agreements, either written or oral, concerning the same. All other Contract Documents and all exhibits, schedules and other attachments hereto, as well as all other external documents, instruments and things expressly referenced herein, are hereby incorporated into this Agreement by reference and made a part hereof. Further, the parties acknowledge and agree that one (1) or more of the Laws and Regulations may require that certain legally required provisions be contained in the Contract. Accordingly, while every attempt to expressly include all of the same in the Contract, any and all legally required provisions not expressly set forth in the Contract are hereby deemed incorporated into this Agreement as if fully set forth herein.

9.05 *Precedence of Documents for Interpretation*

In the event of a material conflict between/among the provisions of this Agreement, the General Conditions, the IFB #____ and/or the Proposal, the provisions govern and control in accordance with the following order of precedence: first, provisions of this Agreement shall govern and control over all others; second, provisions of the General Conditions shall govern and control over those of the IFB #_____ and those of the Proposal; third, provisions of the IFB #_____ shall govern and control over those of the Proposal.

9.06 *Owner's Appropriation*

The Owner's obligations under the Contract are subject to Owner having appropriated all funds sufficient to carry out its obligations thereunder in accordance with applicable Laws and Regulations.

**[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK. SIGNATURES TO FOLLOW.]**

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement, intending to be legally bound. This Agreement will be effective as of and on the Effective Date (which is the Effective Date stated above).

Owner:

MAYOR AND COUNCIL OF ROCKVILLE, MD

By: _____

Name: Jeffrey J. Mihelich

Title: City Manager

Signature Date: _____

Attest: _____

Name: Sara Taylor-Ferrell

Title: City Clerk

Signature Date: _____

Contractor:

[Contractor]

By: _____

Name: _____

Title: _____

Signature Date: _____

Attest: _____

Name: _____

Title: _____

Signature Date: _____

Approved as to form and legality:

By: _____
Name: Robert Dawson, Esq.
Title: City Attorney
Signature Date: _____

**EXHIBIT A – FORM OF PERFORMANCE BOND** **SAMPLE – DO NOT COMPLETE OR RETURN**

# CONTRACT PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we (1)_____

_____a (2)_____

hereinafter called "Principal" and (3)_____

of_____, State of_____hereinafter called the "Surety", are held and firmly bound unto (4) The Mayor and Council of Rockville, Maryland, hereinafter called "Owner", in the penal sum of *(100% of Contract Amount)* _____

Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the ___ day of_____, 20_____, a copy of which is hereto attached and made a part hereof for the construction of: _____

_____

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

**EXHIBIT A – FORM OF PERFORMANCE BOND** **SAMPLE – DO NOT COMPLETE OR RETURN**

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IT WITNESS WHEREOF, this instrument is executed in two (2) counterparts, each one of which shall be deemed an original, this the day of_____, 20___.

| | |
|---|---|
| | _____ |
| ATTEST: | Principal |
| _____ | By_____(Seal) |
| Corporate Secretary or Asst. Secretary | President or Vice President |
| _____ | _____ |
| (Print or Type Name and Title) | (Print or Type Name and Title) |
| | _____ |
| | (Address) |
| | _____ |
| ATTEST: | Surety |
| _____ | By_____(Seal) |
| Witness as to Surety | Attorney-in-Fact |
| _____ | _____ |
| (Print or Type Name and Title) | (Print or Type Name) |
| _____ | _____ |
| (Address) | (Address) |

NOTE: Date of Bond must not be prior to date of Contract.

(1) Correct name of Contractor
(2) A Corporation, a Partnership or an Individual
(3) Name of Surety
(4) Name of Owner
(5) If Contract is Partnership, all partners should execute bond

**EXHIBIT B – FORM OF PAYMENT BOND** **SAMPLE – DO NOT COMPLETE OR RETURN**

# CONTRACT PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we (1)_____

_____ a (2)_____

hereinafter called "Principal" and (3)_____

of_____, State of _____hereinafter called the "Surety", are held and firmly bound unto (4) The Mayor and Council, of Rockville, Maryland , hereinafter called "Owner", in the penal sum of *(100% of Contract Amount)*_____

_____ Dollars ($_____)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the_____day of_____20___, a copy of which is hereto attached and made a part hereof for the construction of:_____

_____

_____

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contact or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contact or to the work or to the specifications

**EXHIBIT B – FORM OF PAYMENT BOND** **SAMPLE – DO NOT COMPLETE OR RETURN**

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in two (2) counterparts, each one of which shall be deemed an original, this the ____ day of_____ 20__.

| | |
|---|---|
| | _____ |
| ATTEST: | Principal |
| _____ | By_____(Seal) |
| Corporate Secretary or Asst. Secretary | President or Vice President |
| _____ | _____ |
| (Print or Type Name and Title) | (Print or Type Name and Title) |
| | _____ |
| | (Address) |
| | _____ |
| ATTEST: | Surety |
| _____ | By_____(Seal) |
| Witness as to Surety | Attorney-in-Fact |
| _____ | _____ |
| (Print or Type Name and Title) | (Print or Type Name) |
| _____ | _____ |
| (Address) | (Address) |

NOTE: Date of Bond must not be prior to date of Contract.

(1) Correct name of Contractor
(2) A Corporation, a Partnership or an Individual
(3) Name of Surety
(4) Name of Owner
(5) If Contract is Partnership, all partners should execute bond

**Exhibit C – General Conditions SAMPLE – DO NOT COMPLETE OR RETURN**
**GENERAL CONDITIONS**

**CITY OF ROCKVILLE, MD IFB #_____**

[Project Name]

**1.TERMS AND CONDITIONS; DEFINITIONS** The terms and conditions of this document govern in event of conflict with any terms of the bidder's proposal and are not subject to change by reasons of written or verbal statement by the Contractor unless accepted in writing. Words and abbreviations which have well known technical, or trade, meanings are used in accordance with such meanings. Terms used but not defined in these Conditions shall have the definition ascribed in the Agreement. Further, the following terms shall have the following definitions for all purposes of all Contract Documents:

"**City**" is synonymous with "Owner", meaning the Mayor and Council of Rockville.

"**City Manager**" means the City Manager or the Manager's designee.

"**Contract**" means, collectively, all Contract Documents and the relationship of the Parties in connection to the Contract.

"**Contract Time**" or "**Contract Times**" means the amount of time available for delivery or performance as required by any of the Contract Documents, as well as the dates and deadlines by which any aspect or component of the Work or the Project shall be completed, delivered or otherwise satisfied as required by the Contract Documents.

"**Drawings**" means any and all approved drawings and other graphic representations contained within or included with any of the Contract Documents or otherwise associated with the Work or the Project, including all profiles, cross sections and shop drawings.

"**Person**" means any individual, corporation, company, partnership, venture, association or other form of legal entity, including public and private entities of all types and natures.

"**Plans**" means any and all approved design, engineering, site and other plans contained within or included with any of the Contract Documents or otherwise associated with the Work or the Project.

"**Project**" means that certain Owner's [Project Name] as advertised by the City in the IFB #_____ and located at [Project Address], Rockville, Maryland 20850 and as is further described throughout the Contract Documents.

"**Project Manager**" is synonymous with "Architect" as defined in the Agreement.

"**Special Provisions**" means the provisions set forth in Section III of the IFB #_____.

"**Specifications**" means any and all approved specifications, details and standards contained within or included with any of the Contract Documents or otherwise associated with the Work or the Project, including all technical specifications.

"**State**" means the State of Maryland.

**2. COVID-19 VACCINATION REQUIREMENT** All COVID-19 vaccination requirements have been repealed by Mayor and Council.

**3. SENSITIVE DOCUMENTS** All project participants needing either electronic or hardcopy documents dealing with critical facilities or sensitive information will be required to make application with, and receive approval from, the City prior to receiving this information. Permission to receive said documents ("sensitive") will pertain only to the individual approved. Sensitive documents (either electronic or hardcopy documents dealing with critical facilities or sensitive information) received from the City must be handled consistent with the terms of non-disclosure required for application. Contractor is responsible to restrict use of sensitive documents to project participants only and shall take appropriate measure to prevent distribution of sensitive document to anyone inside or outside of the Contractor's company except Contractor's project participants. After completion of the project, all sensitive documents remaining in the Contractor's possession shall continue to be governed under the terms of non-disclosure and must continue to be stored in a secure manner. After such records are no longer needed for record purposes, the records shall be destroyed or returned to the City. Where services require the Contractor to access the City's electronic information resources and/or its electronic data assets, the Contractor shall adhere to all requirements, terms and conditions of the City's Contractor/Vendor On-Site and Remote Access Confidentiality Agreement, which can be viewed at the following web address: https://www.rockvillemd.gov/documentcenter/view/36407

**4. DOCUMENTS, MATERIALS AND DATA** All documents, materials, or data developed as a result of the Contract are the City's property. The City has the right to use and reproduce any documents, materials, and data, including confidential information, used in the performance of, or developed as a result of the Contract. The City may use this information for its own purposes, including reporting to state and federal agencies. The Contractor warrants that it has title to or right to use all documents, materials or data used or developed in connection with this contract. The Contractor must keep confidential all documents, materials and data prepared or developed by the Contractor or supplied by the City.

**5. INSPECTION OF THE WORK SITE** Contractor shall visit the site of the Work and become fully acquainted with the existing conditions and fully informed as to any facility involved, and the difficulties and restrictions attending the performance of the Contract. Applicable Drawings and Specifications and all Contract Documents shall be thoroughly examined by Contractor. The Contractor shall in no way be relieved of any obligation due under the executed Agreement by the failure to examine any form of instrument or to visit the site.

**6. RISK OF LOSS AND CONDITION OF SITE** The City makes no representation and assumes no responsibility for the condition of the site or applicable structures on the site. The Contractor shall accept the site and the contents thereon in the condition in which they are represented. Any damages or loss whatsoever

while the Contract is in effect (whether by reason of fire, theft, breakage, or other happenings) shall not relieve the Contractor from any obligations under the Contract. The Contractor shall store any materials on site as not to damage the materials and shall maintain such storage areas, as directed by the City, in hazard free condition.

**7. SUBCONTRACTORS** Nothing contained in the Contract Documents shall create any contractual relationship between the City and any subcontractor or sub-subcontractor. Unless otherwise indicated, if the Contractor proposes to subcontract the delivery, installation, or other portion of the Work, it will submit to the Project Manager, prior to the start of Work, the following information:

1) A description of the items proposed to be subcontracted,
2) the proposed subcontractor's name, address, and telephone number, and
3) the nature and extent of the Work utilized during the life of the Contract.

Subcontractors shall be considered agents of the Contractor, who shall be held fully accountable for all the subcontractor services, labor, and materials relative to the Contract.

Contractor may not subcontract any component or portion of the Work or the Project to a subcontractor or other party without the City's prior written consent in each instance, except only as expressly identified and detailed in Contractor's Proposal accepted by the City.

**8. BONDS**

**A.) PERFORMANCE BOND** The Contractor shall execute and deliver to the City the required Performance Bond for 100% of the bid amount by no later than the Effective Date.

**B.) PAYMENT BOND** The Contractor shall execute and deliver to the City the required payment bond in an amount equal to 100% of the bid amount by no later than the Effective Date.

Bonds shall name the City as beneficiary and shall be in the forms attached to the Agreement as Exhibits A and B and shall be provided and executed by a surety company authorized to do business in the State of Maryland rated "A" or better per current A.M. Best Company ratings, and whose name appears on U.S. Treasury Department Circular 570. Contractor shall pay all costs and expenses of and associated with obtaining and maintaining all bonds during the life of the Project and thereafter as required by the Contract Documents.

**9. LEGAL REQUIREMENTS** All materials, equipment, supplies and services shall conform to applicable Federal, State, County, City and other laws, statutes, rules, ordinances, orders, codes, and regulations. The Contractor shall observe and comply with all Laws and Regulations applicable to or that otherwise affect or may affect the Work to be done or any portion of the Project. The provisions of the Contract shall be governed by the laws of the State of Maryland.

**10. INDEMNIFICATION** To the fullest extent permitted by law, the Contractor shall indemnify, defend and save harmless the City, the Mayor and Council, and all of their respective officers, employees, agents,

representatives, consultants and contractors from and against any and all suits, actions and damages, costs, losses, injuries and other recoveries of every name and description, including all reasonable attorneys' fees, to which any of the foregoing may be subjected or put by reason of, in relation to, or otherwise in connection with, whether in whole or in part: (i) injury to persons or property as a result of any portion of the Work or the performance thereof, whether caused by negligence or carelessness on the part of the Contractor, or subcontractors or agents thereof, or otherwise; (ii) any breach of, default under or other failure on the part of Contractor to fully perform pursuant to the Agreement or any of the other Contract Documents by and in accordance with all terms, conditions and provisions thereof strictly by the dates and other deadlines established therein; (iii) any negligence, willful misconduct or other act or omission of Contractor or any Contractor Party; or (iv) any labor, product, material or supply furnished and/or utilized in connection with any portion of the Work or the Project or any other aspect of the Work or Project or performance thereof. The foregoing provisions of this Section 10 shall not apply to losses, injuries or damages caused directly and in full by the City's gross negligence or willful misconduct.

**11. DELIVERY** Time is of the essence. The Contractor shall expedite the Work and achieve Substantial Completion and Final Completion within the Contract Time. Defective or unsuitable materials or workmanship shall be rejected and shall be made good by the Contractor, notwithstanding that such materials/workmanship may have previously been overlooked and accepted.

**12. CHANGES IN QUANTITIES/ITEMS** The City reserves the right to add or delete any item(s) from the Contract in whole or in part at the City's discretion as given in the IFB #_____ or Proposal wherever it deems it advisable or necessary so to do and such changes shall in no way vitiate the Contract nor affect the Contract Sum or other prices for any item or remaining Work. Unit prices submitted in the Proposal shall not be increased or decreased regardless of changes in quantity. The Contractor will be paid for the actual amount of authorized Work done or material furnished under any item of the Proposal at the price set forth in the Proposal. In case any quantity is increased, the Contractor shall not be entitled to any increased compensation over and above the unit price for such item, or any claim for damages on account of loss of anticipated profits should any quantities be decreased. The Contractor shall be responsible for confirming the accuracy of the specified quantities prior to ordering materials or supplies and the City's payment shall be based on the actual quantities incorporated in the Work in accordance with the Contract. The quantities must not exceed the Contract specified quantities without specific prior written authorization of the Project Manager and it is the Contractor's responsibility to obtain said authorization.

**13. MATERIALS** All materials shall be new and free from defects. They shall be standard products of current manufacture. Unless otherwise expressly noted in the Contract Documents, the Contractor shall abide by specific manufacturer instructions and recommendations on installation and operation.

**14. DEFECTIVE MATERIALS/WORKMANSHIP** Defective or unsuitable materials or workmanship shall be rejected and shall be made good by the Contractor. If any portion or component of the Work shall be found to be defective or to have been damaged before final acceptance, the Contractor shall make good such defect in a manner satisfactory to the City, without extra compensation even though said defect or injury may have not been due to any act or negligence of the Contractor. Contractor further agrees to return to the Project site at any time during the one-year period following Final Completion to fix, repair

and/or replace any component of the Work found to be noncompliant with any provision of any one or more of the Contract Documents, notwithstanding acceptance or payment.

**15. TIME OF BEGINNING AND COMPLETION** Contractor shall begin work on the Contract and shall diligently prosecute the same, so that it shall be fully completed within the time as stated in the Contract, all as set forth in Section 4.02 of the Agreement. The Contractor shall not commence any work under the Contract until a written Notice to Proceed or LNTP is received from the Purchasing Agent.

**16. FAILURE TO COMPLETE WORK ON TIME/ LIQUIDATED DAMAGES** The Contractor accepts the Contract with the understanding and intention to perform fully and in an acceptable manner within the time stated. Should Contractor fail to complete fully, to all intent and purpose, the Work specified in the time specified, or within the time as it may have been extended by the City, the Contractor shall pay, for each calendar day that any work shall remain uncompleted the sum of $400 per calendar day as set forth in and per the provisions of Section 4.04 of the Agreement. This sum is agreed upon, not as a penalty, but as liquidated damages and the City shall have the right to deduct the amount of such damages from any moneys due the Contractor under the Contract. The City may, but shall not be obligated to, recover such liquidated damages by deducting the amount thereof out of any moneys due or that may become due the Contractor, and if said moneys are insufficient to cover said damages, then the Contractor or the Surety shall pay the amount due upon demand by the City. The City may also seek any and all other and/or alternative methods of collecting liquidated damages as may be available or allowable at law, in equity or otherwise, there being no limitation implied as to the provisions of this Section 16.

**17. AUTHORITY OF THE CITY MANAGER IN DISPUTES** Any dispute concerning a question of fact arising under the Agreement which is not disposed of by the Agreement shall be decided by the City Manager who shall notify the Contractor in writing of his determination. The Contractor shall be afforded the opportunity to be heard and offer evidence in support of the claim. Pending final decision of the dispute in question, the Contractor shall proceed diligently with performance under the Agreement and all other Contract Documents. The decision of the City Manager shall be final and conclusive unless an appeal is taken pursuant to the City Purchasing Ordinance.

**18. CONTRACT DELAYS/EXTENSION OF TIME** The Contractor shall pursue the Contract so as to complete all work within the time allotted. The completion date as set in the Agreement allows for inclement weather, holidays and coordination with other companies and parties. If the Contractor is delayed in the delivery of the supplies, equipment, or services by any act of neglect of the City or by a separate Contractor employed by the City, or by any delay authorized by the City, the City shall review the cause of such delay and shall make an extension of time if warranted. All claims for extensions must be in written notice sent to the Project Manager within 10 calendar days after the date when such alleged cause for extension of time occurred. All such claims shall state specifically the amount of time of the delay the Contractor believes to have suffered. If written notice is not received within the prescribed time, the claim shall be forfeited and invalidated. Relief in the form of time extension shall be the sole and exclusive remedy available to Contractor in connection with any Project delay whatsoever, notwithstanding any contrary provision of any of the other Contract Documents, except that the provisions of this sentence shall not apply in instances in which it has been determined by a court or other tribunal of competent jurisdiction

that a particular delay was caused by the City's gross negligence or intentional wrongdoing, a fraud perpetrated by the City or an intentional misrepresentation by the City.

**19. CONTRACT DELAYS - NO DAMAGE CLAIMS ACCEPTED** The Contractor shall make no claim for extra monetary compensation for any delay, whether ordered by the City or not, caused by delays in funding, governmental approvals, private or public companies' actions, inclement weather, site conditions, or from any cause whatsoever. The Contractor shall adjust its operation to continue the Work at other locations under the Contract, if available, and as directed by the City. If it is necessary to discontinue the Work temporarily, the Contractor shall resume Work within 48 hours of notice from the City. The City may adjust the completion date to compensate for the lost day(s) on a day-for-day basis, if the City finds that the Contractor could not make up for such lost day(s) by reallocating its forces or rescheduling the work, up to the time remaining on the original schedule at the time of shutdown.

**20. PROGRESS SCHEDULE AND SCHEDULE OF OPERATIONS** The construction of the Project will be planned and recorded by the Contractor with an Activities Chart Project Schedule (the "AC Project Schedule" or "AC") and Written Narrative ("WN") unless specifically determined in writing to be unnecessary by the Project Manager. The AC Project Schedule and WN will break down, in detail, the time (working days or completion date) involved in performing major construction activities for the duration of the Project. The AC Project Schedule shall be used for the coordination and monitoring of major Work under the Contact including the activities of subcontractors, vendors, and suppliers. The AC Project Schedule shall be prepared in accordance with the requirements of the Maryland State Highway Administration Standard Specifications for Construction and Materials dated January 1982, and the errata and addenda thereto, subsequent supplement(s) and the Special Provisions as set forth in the IFB #_____, unless otherwise directed or approved by the Project Manager in writing. The schedule shall be consistent with the Contract specified completion date(s) and/or working days. The Contractor is responsible for preparing the AC Project Schedule and Written Narrative.

Preparation of Initial Schedule - The Contractor will complete development of an initial AC Project Schedule and Written Narrative (describing the logical time representations as proposed in the AC Project Schedule) and submit two copies of each AC and WN to the Project Manager for review and approval by no later than 10 calendar days from the Effective Date. Updating Project Schedule**:** At any time that it becomes apparent the schedule, created as above, and approved by the Project Manager, is not being implemented, either because the Work or service is ahead or behind schedule, the Contractor shall immediately notify the Project Manager and shall submit a revised, written, updated AC and WN for the Project Manager's review, revision, and written approval. The Contractor shall make every effort to meet the original completion date and/or working days allowed unless otherwise so directed by the Project Manager. Payment for Schedule AC/WN**:** No special compensation will be paid for preparing or revising the Project AC or WN, as the cost shall be considered incidental to the Contract with compensation incorporated into the Contract Sum.

**21. SPECIFICATIONS** The Specifications for the Contract will be those shown below, and additions included in the IFB #_____, if applicable. In the event of conflict, the City's determination shall govern. The following specifications and standards, listed below, including all subsequent addenda, amendments and errata are made part of the Contract to the extent required by the references thereto:

(a) Maryland Department of Transportation, State Highway Administration, "Standard Specifications for Construction and Materials" (Maryland Department of Transportation, State Highway Administration), dated January 2008 and all errata and addenda thereto. MDSHA Book of Standards for Highway and Incidental Structures.

(b) Montgomery County Department of Transportation "Montgomery County Road Construction Code and Standard Specifications."

(c) Standard Specifications of WSSC dated July 2005.

(d) Montgomery County Department of Transportation "Design Standards" August 1991.

(e) Maryland Dept of the Environment "1994 Standards and Specifications Soil Erosion and Sediment Control".

(f) The U. S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices" latest edition.

(g) Montgomery County Noise Ordinance.

**22. CONTRACT DOCUMENTS** The Contract Documents are complementary and what is required by one shall be binding as if required by all. Words and abbreviations that have well known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings. On Drawings, the figured dimensions shall govern in the case of discrepancy between the scales and figures. Anything shown on the Plans and not mentioned in the Specifications or mentioned in the Specifications and not shown on the Plans shall have the same effect as if shown or mentioned respectively in both. The City may direct that the Work proceed by any method indicated, specified, or required, in the judgment of the City, by any of the Contract Documents. Such direction by the City shall not constitute the basis for a claim for extra costs by the Contractor. The Contractor acknowledges that it has been afforded the opportunity to request clarification prior to the Effective Date and that Contractor is not entitled to a claim for extra cost or otherwise because of failure to request or receive such clarification. Any discrepancies which may be discovered during the execution of Work between actual conditions and those represented by the Contract Documents shall be reported to the City and Work shall not proceed until written instruction has been received by the Contractor from the City.

**23. INTERPRETATION** Any questions concerning terms, conditions and definitions of the contract and bidding regulations shall be directed in writing to the Project Manager. Any questions concerning any of the Specifications and Drawings shall be directed in writing to the Project Manager. The Contractor shall take no advantage of any error or omission in any of the Contract Documents.

**24. PROJECT MEETINGS; PRE-CONSTRUCTION MEETING** A pre-construction meeting(s) may be held in person or virtually as set forth in the IFB #_____. The meeting(s) must be attended by the Contractor. Further, Contractor agrees to attend, participate in, and otherwise perform in accordance with the IFB

#_____ and other Contract Documents regarding additional Project meetings, including keeping all minutes thereof and details of attendance. No compensation will be made by the City to the Contractor for meetings.

**25. EMERGENCY CONTACT** The Contractor has provided the following two local telephone numbers which may be used for contacting an official of the Contractor at all times, 24 hours per day, seven days per week, at which numbers person(s) of responsibility will be available to respond to City directives relative to the contract: [Contractor Emergency Contact Phone Numbers]. The Contractor shall have available sufficient personnel and equipment to immediately respond to emergency needs, as determined by the City. There will be no special compensation paid for this requirement, but the cost is to be considered incidental to the other Contract pay items.

**26. SUPERVISION AND DIRECTION OF WORK** The Work shall be under the general supervision of the Project Manager. While it is intended that the Contractor shall be allowed in general to carry on the Contract in accordance with such general plan as may appear to the Contractor most desirable, the Project Manager, at the Project Manager's discretion, may from time to time, direct the order in which, and points at which, the Work shall be prosecuted and may exercise such general control over the conduct of the Work at a time or place, as shall be required, in the Project Manager's opinion, to safeguard the interests of the City, and the Contractor shall have no claims for damages or extra compensation on account of the fact that it shall have been necessary to carry on the work in different sequence from that which the Contractor may have contemplated. The Contractor shall immediately comply with all orders and instructions given by the Project Manager, but nothing herein contained shall be considered such an assumption of control over the Work by the City or the Project Manager as to relieve the Contractor of any obligations or liabilities under the Contract.

**27. INSPECTION** Work and materials will be inspected promptly to see that the same strictly correspond with the Drawings and Specifications and all Contract Documents, but if, for any reason, delay should occur in connection with such inspection, the Contractor shall have thereby no claim for damages or extra compensation. Materials and workmanship shall be always subject to the approval of the Project Manager, but no inspection, approval or acceptance of any part of the Work or of the materials used therein, nor any payment on account thereof shall prevent the rejection of said materials or Work at any time thereafter, should said Work or materials be found to be defective or not in accordance with the requirements of the Contract Documents. Any costs for any "re-inspection" of the job shall be the responsibility of the Contractor.

**28. DEFAULT AND TERMINATION** The Contract may be terminated by the City in whole or in part by written notice of default to the Contractor upon nonperformance or violation of contract terms as set forth in further detail below in this Section 28. In either event, the Contractor shall, without limitation, be liable to the City for all costs and expenses of the City in excess of the Contract Sum, and the Contractor shall continue the performance of the Contract to the extent not terminated under the provisions of this clause. The Contract may be terminated by the Contractor only as expressly set forth in this Section 28.

(a) Except as set forth to the contrary in subsection (b) below, either party to the Contract may terminate the Contract should the other party fail to perform in accordance with any provision thereof; provided,

however, that prior to terminating the Contract, the terminating party must have delivered a 30 day written notice of such failure to perform and must have allowed the other party 30 days (unless a different cure period is specifically provided for in this Section 28, in which case such period shall apply) in which to cure the same. Notwithstanding the foregoing, if a party's failure to perform is such that it cannot reasonably be cured within 30 days, the other party shall not have the right to terminate the Contract by reason thereof as long as the non-performing party commences to cure within the applicable cure period and thereafter diligently pursues the same towards completion. Notwithstanding the foregoing or any other provision of the Contract to the contrary, any failure to perform a covenant under or in connection with the Contract performable by the payment of money shall be subject only to a seven-day cure period following notice from the other party thereof.

(b) In addition to all other rights and remedies set forth in the Contract, including those set forth elsewhere in this Section 28, the City may terminate the Contract, by notice to Contractor if the Contractor:

(i) fails to submit or deliver any item by the date required by the Contract, or if no date is indicated, within a reasonable time consistent with the date of Substantial Completion of the Project;
(ii) refuses or fails to supply proper materials or the appropriate subcontractors or enough properly skilled workers;
(iii) fails to make timely payment to any subcontractor or consultant, except only if the Contractor has a good faith claim against such subcontractor or consultant;
(iv) disregards or violates any of the Laws and Regulations or any other requirement;
(v) has breached any material provision of the Contract or has at any time provided a representation, warranty, or certification to the City in connection with the Project that was untrue, misleading, incorrect or incomplete; or
(vi) files for bankruptcy, receivership, or other manner of insolvency, has any of the same filed against it, admits it cannot pay any one or more of its debts as they become due, makes an assignment for the benefit of creditors, or becomes otherwise financially positioned such that Contractor can no longer perform the Contract in accordance with its terms.

(c) Notwithstanding the provisions of Section 28(a) above, when any of the above reasons (i), (ii), (iii) or (v) in Section 28(b) exist, the City may, without prejudice to any other rights or remedies of the City, immediately terminate the Contract, with a three day curing option to the Contractor, and, for items (iv) and (vi) in Section 28(b), the City may immediately terminate the Contract. Further, in any of such events described in the above sections (i) through (vi) shall occur, the City shall, without prejudice to any other right or remedy of the City, also be entitled to:

(i) Exclude the Contractor from the Project site and take possession of the Work and Project and all materials, equipment, tools, and construction equipment and machinery thereon or thereat owned or controlled by the Contractor;
(ii) Accept assignment of one or more of the subcontractor, consulting and/or other agreements entered into by Contractor in connection with any aspect of the Project (although the City shall under no circumstances be obligated to do so); and

(iii) Finish the Work, at the sole cost and expense of the Contractor, by whatever means and method the City may deem appropriate.

**29. TERMINATION FOR CONVENIENCE** The Contract may be terminated, in whole or in part, upon written notice to the Contractor when the City determines that such termination is in its best interest. The termination is effective 10 days after the notice is issued unless a different time is given in the notice. The City is liable only for payment for goods and services delivered, accepted, and approved by the City prior to the effective date of the termination.

**30. EMPLOYEES** The Contractor shall employ only competent, skillful persons to do the Work, and whenever the Project Manager shall notify the Contractor in writing that any person employed on the Work is, in his opinion, incompetent, disobedient, disorderly, discourteous or otherwise unsatisfactory, such person shall be discharged from the work and shall not again be employed for the Contract or the Project except with the prior written consent of the Project Manager.

**31. NON-WORKDAY** The City observes the following holidays: New Year's Day, Martin Luther King's Birthday, President's Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Thanksgiving Friday and Christmas Day, all days of general and congressional elections throughout the State, and a five-day work week. The Contractor will not be permitted to do any work which requires the services of the City's inspection, supervisory or line and grade forces on the days on which the above-mentioned holidays are observed by the City or on Saturdays or Sundays, unless otherwise authorized by the Project Manager in writing. However, the Contractor, with verbal permission of the Project Manager, may be permitted to perform clean up and such other items for which no specific payment is involved on Saturdays and holidays. The normal number of working hours per day on the Contract will be limited to eight, unless otherwise authorized by the Project Manager in writing. In case of an emergency which may require the services of the City on Saturdays, Sundays, holidays or longer than eight hours per day, the Contractor shall request permission of the Project Manager to work. If, in the opinion of the Project Manager the emergency is bona fide, he will grant permission to the Contractor to work such hours as may be necessary. Also, if in the opinion of the Project Manager, a bona fide emergency exists, the Project Manager may direct the Contractor to work such hours as may be necessary whether the Contractor requests permission to do so or not, and Contractor shall abide by such direction.

**32. LANGUAGE** The Contractor shall appoint one or more crewmembers or supervisors to act as liaison with the City and emergency services personnel. All liaisons shall be fluently and sufficiently proficient in English and the Contractor’s employees’ language(s), and at least one liaison shall be always present at each work site when any of the Contractor’s employees or agents are at the site.

**33. IMMIGRATION REFORM AND CONTROL ACT**

Contractor represents and warrants to Owner (i) that it does not and shall not hire, recruit or refer for a fee, for employment under the Contract, an individual knowing the individual is an unauthorized individual and hire any individual without complying with the requirements of the Immigration Reform and Control Act of 1986 (the “Act”), including but not limited to any verification and record keeping requirements, and (ii) that, in accordance with the Act, it does not and will not discriminate against an individual with respect to hiring, or recruitment or referral for a fee, of the individual for employment or

the discharging of the individual from employment because of such individual's national origin or in the case of a citizen or intending citizen, because of such individual's citizenship status.

**34. EQUAL EMPLOYMENT OPPORTUNITY** The Contractor will not discriminate against any employee or applicant for employment because of age (in accordance with applicable law), ancestry, color, national origin, race, ethnicity, religion, disability, genetics, marital status, pregnancy, presence of children, gender, sexual orientation, gender identity or expression, or veteran status. The Contractor will take affirmative action to ensure that applicants are employed, and the employees are treated fairly and equally during employment with regard to the above. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment, layoff or termination, rates of pay or other form of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. Contractors must also include the same nondiscrimination language in all subcontracts. If the Contractor fails to comply with any nondiscrimination clause of the Contract or fails to include such contract provisions in all subcontracts that subcontractors will not discriminate against any employee or applicant for employment in the manner described above, the Contract may be declared void AB INITIO, cancelled, terminated or suspended in whole or in part at the City's discretion and, without limitation, the Contractor may be declared ineligible for further contracts with the City of Rockville. Any employee, applicant for employment, or prospective employee with information concerning any breach of these requirements may communicate such information to the City Manager who shall commence a prompt investigation of the alleged violation. Pursuant to such investigation, the Contractor will permit access to the Contractor's books, records, and accounts. If the City Manager concludes that the Contractor has failed to comply with any of the applicable nondiscrimination clauses, the remedies set out above may be invoked.

**35. ETHICS REQUIREMENTS** In accordance with the City's financial disclosure and ethical conduct policy and/or ordinances a prerequisite for payment pursuant to the terms of the Contract is that the Contractor may be required to furnish explicit statements, under oath, that the City Manager, and/or any other officer, agent, and/or employee of the City, and any member of the governing body of the City of Rockville or any member or employee of a Commission, Board, or Corporation controlled or appointed by the City Council, Rockville, Maryland has not received or has not been promised directly or indirectly any financial benefit by way of fee, commission, finder's fee, or in any other manner, remuneration arising from directly or indirectly related to the Contract, and that upon request by the City Manager, or other authorized agent, as a prerequisite to payment pursuant to the terms of the Contract, the Contractor will furnish to the Mayor and Council of the City of Rockville, under oath, answers to any interrogatories to a possible conflict of interest as herein embodied.

**36. DRAWINGS TO BE FOLLOWED** The approved Drawings show the location, details and dimensions of the Work contemplated, which shall be performed by Contractor in strict accordance therewith and in accordance with the Specifications. Any deviation(s) from the Drawings or Specifications as may be required by the exigencies of construction in all cases will be determined by the Project Manager. There shall be no such deviations without the prior written authorization of the Project Manager in each instance. On all Drawings, Plans and Specifications, the figured dimensions shall govern in the case of discrepancy between the scales and figures. The Contractor shall take no advantage of any error or

omission in the Drawings, Plans or Specifications. The Project Manager shall make such corrections and interpretations as he or she may deem necessary for the fulfillment of the intent of the Specifications and of the Drawings as construed by the Project Manager whose decision shall be final.

**37. CERTIFICATION** Under no circumstances will Contractor be paid for materials utilized on or in connection with the Contract unless certified to in writing by the Project Manager. The Contractor must not incorporate any materials into the Project without prior written authorization and certification of the Project Manager, unless necessary to eliminate or avoid hazardous conditions. In the event of such hazardous conditions, the responsibility for notification to the Project Manager and quantity/quality confirmation rests with the Contractor, and Contractor must obtain written confirmation within 24 hours of the commencement of the first of the hazardous conditions in question.

**38. DECISIONS AND EXPLANATIONS BY PROJECT MANAGER** The Project Manager shall make all necessary explanations as to the meaning and intent of the Specifications and Drawings, and shall give all orders and directions, either contemplated therein or thereby, or in every case in which a difficult or unforeseen condition arises during the prosecution of the Work. Should there be any discrepancy, or should any misunderstanding arise as to the intent of anything contained in the Drawings and Specifications, the decision of the Project Manager shall be final and binding. The Project Manager shall in all cases determine the amount, quality, acceptability and estimates of the Work to be paid for under the Contract and shall decide all questions in relation to the Work. In case any question arises between the parties hereto relating to the Contract, a decision to such question shall be a condition precedent to the right of the Contractor to receive payment under that part of the Contract which is in dispute.

**39. WORK TO BE DONE AND MATERIALS TO BE FURNISHED** The Contractor shall do all the Work and furnish all the labor, materials, tools, and equipment necessary or proper for performing the Work required by the Contract, in the manner called for by the Drawings and Specifications and all other provisions of the Contract Documents and within the Contract Time. The Contractor shall complete the entire Project and all Work together with such extra work as may be required, at the prices fixed therefore, to the satisfaction of the Project Manager and in accordance with the Specifications and Drawings.

**40. NOTIFICATION TO OTHER AGENCIES** The Contractor will be responsible for notifying all concerned agencies affected by the Work a minimum of 48 hours in advance of any activity, as prescribed by said agencies, including, but not limited to: the Washington Gas, PEPCO, Verizon Comcast Cable, Transcontinental Gas, City of Rockville Utilities Division, Montgomery County Government, State Highway Administration and the Washington Suburban Sanitary Commission. The Contractor must notify MISS UTILITY at 1-800-257-7777 a minimum of 72 hours and no more than five working days prior to removal of any pavement or beginning any excavation. There shall be no measurement or direct payment to the Contractor for such notification, working around, the protection of, or repair of damage to such existing utilities caused by the proposed construction activities directly or indirectly.

**41. PERMITS AND REGULATIONS** The City is listed as the applicant for all permits, and it is Contractor's responsibility to comply with all permit terms and conditions, including maintenance and warranty requirements. Unless stipulated elsewhere in the Specifications, the Contractor shall be responsible for obtaining and paying for all applicable permits. Where signatures of the City are required in connection

with the obtaining of such permits, certificates, etc., the Contractor shall prepare the proper paperwork and present it to the City for signature. City of Rockville Permit fees shall be waived. If the Contractor ascertains at any time that any requirement of the Contract is at variance with any one or more of the Laws and Regulations, notification to the Project Manager by Contractor shall be made immediately. Without proper notice to the Project Manager, the Contractor shall bear all costs arising from the performance of Work the Contractor knows to be contrary to such laws, ordinances, etc. The Contractor is solely responsible for implementation and compliance with all conditions of all permits, including those listed below, and is also responsible for obtaining additional trade/utility permits in order to successfully complete the Work and the Project:

- **[List Applicable Permits Here]**

**42. EXCAVATION** Unless specifically provided in the Specifications, all trench and roadway excavation is unclassified as to the character of materials. The lump sum or unit price, as specified, for or including excavation shall constitute full payment for removal and disposal of all materials, regardless of type, encountered in trenching and roadway excavation, within the limits of the Contract, as necessary and as shown to be removed on the Drawings and/or as directed by the Project Manager, except as otherwise provided for under the Contract. Contractor hereby represents, warrants, and certifies to Owner that it has familiarized itself with all site conditions including subsurface and the proximity of all adjacent and other nearby features.

**43. SERVICE OF NOTICES** The mailing a written communication, notice or order, addressed to the Owner or Contractor in accordance with this Section 43 at the respective addresses set forth below shall be considered as sufficient service upon the Owner or Contractor, as applicable, of such communication, notice or order, and the date of said service shall be one (1) business day from the date of such mailing or shipping. All of the same shall be either (i) mailed by U.S. First Class certified mail for next business day delivery, postage prepaid, or (ii) shipped by nationally recognized courier service, such as Federal Express, for next business day delivery, with all shipping and other charges prepaid. Unless and until changed by Owner or Contractor by way of written notice delivered to the other in accordance with the provisions of this Section 43, each parties' respective address for notice and service is:

If to Owner:

City of Rockville, MD
Attn: [Contact Name]
111 Maryland Avenue
Rockville, MD 20850

with copies to:
City Attorney's Office
City of Rockville, MD
Attn: Robert Dawson, City Attorney.
111 Maryland Avenue
Rockville, MD 20850

If to Contractor:

[Contractor]
Attn: [Contact Name]
[Contractor Street Address]
[City, State, Zip]

with a copy to:
[Legal Representative]
Attn: [Contact Name]
[Street Address]
[City, State, Zip]

and to:

West Group Law, PLLC
Attn: Managing Partner
81 Main Street, Suite 510
White Plains, NY 10601

**44. PATENT RIGHTS** Whenever any article, material, equipment, process, composition, means, or thing called for by the Specifications is covered by letters of patent, Contractor shall secure, before using or employing such article, material, equipment, process, composition, means, or thing, the assent in writing of the owner or licensee of such letters of patent and file the same with the City. The said assent is to cover not only the use, employment, and incorporation of said article, material, equipment, process, composition, combination, means, or thing in the construction and completion of the Work but also the permanent use thereof thereafter by or on behalf of the City, in the operation and maintenance of the project for the purposes for which it is intended or adapted. The Contractor shall be responsible for any claims made against the City, its agents and/or employees and for any actual or alleged infringement of patents by the use of any such patented articles, etc., in the construction and completion of the Work, and shall save harmless and indemnify the City, its agents and employees from all costs, expenses (including all reasonable attorneys' fees), and damages, including Solicitor's and Attorney's fees which the City may be obligated to pay by reason of any actual or alleged infringement of any patent used in the construction and/or completion of the Work.

**45. CARE AND PROTECTION OF WORK** From the Effective Date until its Final Completion, the Contractor shall be solely responsible for the care of the Work and all injury or damage to the same, from whatever cause, shall be made good by the Contractor at the Contractor's own expense, before the final estimate is made. The Contractor shall provide suitable means of protection for all materials intended to be used in the Work and for Work in progress, as well as completed Work.

**46. ABANDONMENT OF OR DELAY IN WORK** If the Work under the Contract shall be abandoned by the Contractor, or if at any time the Project Manager shall be of the opinion and shall so state, in writing, to the Contractor, that the performance of the Contract is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of the Contract or is executing the same in bad faith or if the Work is not fully completed within the time specified for its completion, together with such extension of time as may have been granted, the City by written notice, may order the Contractor to discontinue all Work, or any part thereof, within the number of days specified on such notice. At the expiration of said time the Contractor shall discontinue the Work, or such part thereof, and the City shall have the power, by Contract, or otherwise, to complete said work and deduct the entire cost, including reasonable attorneys' fees, thereof from any monies due or to become due the Contractor under the Contract. For such completion of Work the City may, for itself or its contractors, take possession of and use or cause to be used any or all materials, tools, and equipment found on the site of said Work. When any part of the Contract is being carried on by the City, as herein provided, the Contractor shall continue the remainder of the Work in conformity with the terms of the Contract and in such manner as not to interfere with the City's workmen.

**47. SUBLETTING OR ASSIGNING OF CONTRACT** The City and the Contractor each bind themselves and their respective successors, assigns and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents. Neither party to the contract shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of the Work provided for therein, or of Contractor's right, title, or interest therein to any person, to any person without the City's prior written consent, nor shall the Contractor assign any monies due or to become due hereunder without the previous written consent of the City. Notwithstanding the foregoing, Contractor may subcontract to the subcontractor expressly identified in the Proposal for the express purposes set forth therein.

**48. NO WAIVER OF CONTRACT** Neither the acceptance by the City or its Project Manager nor any order, measurement, certificate or payment of money, of the whole or any part of the Work, nor any extension of time nor possession taken by the City or its Project Manager shall operate as a waiver of any portion of the Contract, or any right to damage therein provided. The failure of the City to strictly enforce any provision of the Contract shall not be a waiver of any subsequent breach of the same or different nature.

**49. DUTIES, OBLIGATIONS, RIGHTS AND REMEDIES** The duties and obligations imposed by the Contract Documents and every one of the rights, relief, and remedies available thereunder are cumulative, shall be in addition to and not a limitation of the duties, obligations, rights, and remedies otherwise imposed or available by law or in equity, unless so indicated.

**50. IMPLIED WORK** All incidental work required by the drawings or specifications for which no payment is specifically provided, and any work or materials not therein specified which are required to complete the Work and which may fairly be implied as included in the Contract, and which the Project Manager shall judge to be so included, shall be done or furnished by the Contractor without extra compensation. The Project and the Work represent a complete work or improvement which the Contractor undertakes to do in full compliance with the Contract Documents together with any authorized alterations, special provisions, and supplemental agreements.

**51. MEASUREMENT OF WORK AND MATERIAL** The work and material to be paid for will be measured and determined by the Project Manager according to the Specifications and Drawings, and the working lines that may be given. No allowance will be made for any excess above the quantities required by the Specifications, Drawings, and lines on any part of the Work, except only where such excess material has been supplied or work done by written order of the Project Manager and in the absence of default or negligence on the part of the Contractor. Should the dimensions of any part of the Work or of the materials be less than those required by the Drawings or the directions of the Project Manager, only the actual quantities placed will be allowed in measurement for purposes of payment.

**52. EXTRA COSTS** If the Contractor claims that any instructions by the Contract Documents or otherwise involve extra compensation or extension of time, a written protest must be submitted to the Project Manager within 10 calendar days after receipt of such instructions and before proceeding to execute the Work, stating in detail the basis for objection. No such claim will be considered unless so made.

**53. CONTINGENT ITEMS & QUANTITIES** Items and quantities identified as being contingent are provided in the Contract for use when and as directed by the Project Manager in writing. Such items have been included for the purpose of obtaining a price for Contractor's performance and delivery thereof. The quantities for these contingent items may be increased or decreased by the City without any adjustment to the Contract Sum or any unit price(s) or the contingent items may be deleted entirely from the Contract by the Project Manager without negotiation, all at the City's sole discretion. The Contractor shall submit no claim against the City for any adjustment to the Contract Sum or any unit price should the contingent items be increased, decreased, or eliminated entirely. Payment for any contingent items used will be made based on the quantities as actually measured and as specified in the Specifications. Materials, construction requirements and basis of payment shall be as specified elsewhere in the Contract Documents.

**54. CHANGES IN THE SCOPE OR EXTRA WORK** The City, without invalidating the Contract, may issue written changes in the Work consisting of additions, deletions, or modifications with the Contract Sum and completion date being adjusted accordingly. The Contract Sum shall be adjusted in accordance with the unit prices set forth in the Proposal, if covered thereby, or otherwise in accordance with a written change order executed by both the City and the Contractor. All such changes, or additional Work must be authorized in writing by the Architect prior to starting such Work. Costs shall be limited to the actual, verified, and substantiated cost of materials, labor, field supervision and field office personnel directly involved in and directly attributed to the change. All costs and/or credits to the City for a change in the Work shall be determined by the unit price bid or by mutual written agreement, where any agreed upon charges related to overhead may not exceed 5% of the total cost of the changes and any agreed upon charges to profit may not exceed 10% of the total cost of the changes. The Contractor shall do all Work that may be required to complete such Work contemplated at the unit prices bid or at a lump sum price to be mutually agreed upon. The Contractor shall perform extra Work, for which there is no quantity or price included in the Contract, whenever it is deemed necessary or desirable to complete fully the Work as contemplated, and such Work shall be done in accordance with the Specifications therefore, or in the best workmanlike manner as directed. Where such a price or sum cannot be agreed upon by both parties, or where this method of payment is impracticable, the Project Manager may order the Contractor to do such Work on a force account basis, which will be paid for as set forth below in Section 55.

**55. FORCE ACCOUNT WORK** When the Contractor is required to perform Work as a result of additions or changes to the Contract for which there are no applicable unit prices in the Contract, the City and Contractor shall make every effort to come to an agreed upon price for the performance of such Work and reduce same to writing. If a written agreement cannot be reached, the City may require the Contractor to do such Work on a force account basis to be compensated in accordance with the following:

A. Labor. For all labor and for foremen in direct charge of the specific operations the Contractor shall receive the actual wages for each and every hour that said labor and foremen are actually engaged in such work.

B. Materials. For materials accepted by the Project Manager in writing and incorporated into the Project, the Contractor shall receive the actual cost of such materials, including transportation charges paid by Contractor (exclusive of machinery and special equipment rentals as hereinafter set forth). Excess

materials delivered to the job site and not incorporated into the Project will not be paid for and it is the Contractor's responsibility to remove said excess material from the job site.

C. Equipment. For any machinery or special equipment (other than small equipment tools, whether rented or owned), the use of which has been authorized in writing by the Project Manager, the Contractor shall receive the rates agreed upon in writing before such work is begun which price shall include fuel, oil and miscellaneous necessities, or the Contractor shall receive those rates which may be specified elsewhere in the Special Provisions. For the purpose of definition, equipment with a new cost of $1000 or less will be considered small tools and equipment.

D. Materials and Supplies Not Incorporated in the Work. For materials and supplies expended in the performance of the Work (excluding those required for rented machinery and equipment as discussed above) and approved by the Project Manager in writing, the Contractor shall receive the actual cost of such materials and supplies used.

E. Subcontractors. The Contractor shall receive the actual cost of work performed by a subcontractor approved by the City in writing. Subcontractor's cost is to be determined as in A., B., C., and D. above, plus the fixed fee for overhead and profit allowance computed as in G.

F. Superintendence. No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is provided in this Section 55.

G. Contractor's Fixed Fee. The City and the Contractor shall negotiate a fixed fee for force account Work performed pursuant to the Contract by his force and by his subcontractors. The City shall pay 10 percent of A as compensation for overhead and profit for the work performed. The Contractor shall proceed diligently with the performance of the force account Work to completion. The Contractor's fixed fee shall include an amount equal to the sum of 65 percent of A, which shall include, but not be limited to the following:

(1) Compensation for all costs paid to, or on behalf of, workmen by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits that may be required by collective bargaining agreement or other employment contract generally applicable to the laborers employed in the Work; and

(2) Bond premiums, property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions and Social Security taxes on the force account Work. In addition, the Contractor's fixed fee may include an amount not to exceed 10 percent of B. unless specifically authorized by the Project Manager in advance of the Work; 5 percent of D., and 5 percent of E except for that portion chargeable to machinery and/or equipment as defined above.

H. Compensation. The compensation as set forth above shall be received by the Contractor as payment in full for change order work done on a force account basis. At the end of each day, the Contractor and the Project Manager shall compare records of the cost of work as ordered on a force account basis.

Differences shall be immediately resolved, and any unresolved difference shall be brought to the attention of the Project Manager by written notice from the Contractor within two working days of the occurrence.

I. Statements. No payment will be made for any Work performed on a force account basis until the Contractor furnishes the Project Manager duplicate itemized statements of the cost of such force account Work detailed as to the following:

(1) Name, classification, date, daily hours, total hours, rate, and extension for such workmen. Contractor shall provide certified payrolls;
(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment. Contractor shall provide original receipted invoices;
(3) Quantities of materials, prices, and extensions. Contractor shall provide original receipted invoices; and
(4) Transportation of materials. Contractor shall provide original receipted invoices.

If, however, the materials used in the force account Work are not specifically purchased for such Work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor which shall certify that such materials were taken from Contractor's stock and that the quantity claimed was actually used and that the price and transportation of the material as claimed represent actual cost. Any request for payment under this Section should be submitted in the order outlined by the above. The Contractor shall be responsible for all damages resulting from Work done on a force-account basis, the same as if such Work had been included in the original Contract. Work performed without previous written order by the Project Manager will not be paid. Notwithstanding the foregoing or any other provision of these general conditions or any one or more of the other Contract Documents to the contrary, Contractor shall only be compensated for Work actually performed and for materials and supplies actually installed or otherwise incorporated into the work, all such costs and expenses to be properly and sufficiently verified and substantiated by reliable documentation.

**56. ALLOWANCES** The parties acknowledge and agree that the Contract Sum includes the entire amount of all Project allowances. The expenditure of these allowances is to be at the Purchasing Manager's direction. However, the allowance expenditure is limited to items properly inferable from the title and description of the allowance. Unexpended balances are to be credited to the City. Compensation payable to the Contractor for expenditure of allowances directed by the Purchasing Manager shall be based on the cost to the Contractor as shown by actual invoices or receipts, and no additional overhead or profit shall be payable to the Contractor for any such allowances.

**57. PROGRESS PAYMENTS AND RETAINAGE** The Contractor shall submit a detailed application for payment on a monthly basis, preferable on an AIA G702 form (an "Application for Payment") to the Project Manager. Such Application for Payment, notarized, if required, must be accompanied by supporting data and documents substantiating the Contractor's right to payment and reflecting a retainage of five percent (5%) of the Contract Sum. Applications for Payment shall not include payment for equipment or materials delivered to the site but not installed or for materials or equipment properly stored off-site unless specifically approved by the Project Manager in writing in advance. If such approval is granted, the

Contractor must submit with the Application for Payment, bills of sale, or other such documentation satisfactory to the City to establish the City's title to such materials or equipment or otherwise to protect the City's interest, including applicable insurance and transportation to the site for materials and equipment stored off site. Such approvals are typically reserved for "big ticket" items that individually exceed five percent of the Contract Sum. The Contractor shall promptly pay each subcontractor and supplier for Work completed upon receipt of payment from the City the amount to which said subcontractor is entitled, reflecting any percentage retained from payments to the Contractor on account of each subcontractors Work. The Contractor shall, by an appropriate agreement with each subcontractor, require each subcontractor to make prompt payments to its subcontractors in a similar manner. The City shall be under no obligation to pay or to see to the payment of any moneys to any subcontractor except as may otherwise be required by Laws and Regulations. No certificate of payment or partial or entire use of the Work or Project by the City shall constitute an acceptance of any Work which is not in accordance with the Contract Documents.

Payments Withheld – The City may decline to certify payment or because of subsequently discovered evidence or observations, nullify the whole or any part of any certification of payment previously issued, as may be necessary to protect the City from loss because of: (1) defective Work not remedied, (2) third party claim filed or evidence indicating probable filing of such claim, (3) failure of the Contractor to make payments properly to subcontractors or suppliers, (4) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum, (5) reasonable evidence that the Work will not be completed within the Contract Time, (6) persistent failure to carry out the Work.

**58. FINAL PAYMENT REQUEST** Upon reaching Substantial Completion, as defined herein, the Contractor shall submit a written application for final payment. All supporting documentation and data shall be submitted with the request for final payment as is applicable to the monthly requests for payment referenced heretofore. Out of the amount representing the total of the final payment request the City shall deduct five) percent, which shall be in addition to any and all other amounts which, under the Contract, it is entitled or required to retain and shall hold said sum for a period of 120 days after the date of acceptance of the Work by the City. Within 30 days of the approval of the final payment request, the City will pay to the Contractor the amount remaining after deducting from the total amount of the final estimate all sums and amounts as have already been paid to the Contractor under the provision of the Contract and also such amounts as the City has reserved or retained and/or that the City may be authorized under the Contract to reserve or retain. Neither the final payment nor the remaining retainage shall become due until the Contractor submits to the Project Manager:

1. An affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the work for which the City or his property might in any way be responsible, have been paid;
2. Consent of surety to final payment;
3. If requested, data establishing payment or satisfaction of obligations, such as receipt, release and waivers of liens arising out of the Contract; and
4. All punch list items are completed to the satisfaction of the Project Manager.

If any subcontractor refuses to furnish a release or waiver of liens required by the City, the Contractor may furnish a bond satisfactory to the City to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the City all moneys that the latter

may be compelled to pay in discharging such lien, including all costs and reasonable attorney fees. Acceptance by the Contractor of final payment (*i.e.*, final payment under the Contract except for retainage and other amounts otherwise withheld by the City) shall operate as a release of the City, the Mayor and the Council and every officer, employee, representative and agent thereof, from all claims and liabilities to the Contractor for anything done or furnished or relating to the Work under the Contract, except only for any surviving right to retainage or other amount(s) otherwise withheld by the City.

**59. RELEASE OF RETAINAGE** Upon the expiration of the 120 days succeeding the date of acceptance, the City will pay to the Contractor all sums reserved or retained, less such amount as it may be empowered under the provisions of the Contract or any of the Laws and Regulations to retain. Notwithstanding any provision of any of the Contract Documents to the contrary, the City and the Contractor agree to and shall abide by all provisions of the Maryland Little Miller Act, Md. Code Ann., State Fin. & Proc. § 17-101 *et seq.*, as and to the extent applicable, applying to retainage in connection with the Project.

**60. GUARANTEES / WARRANTIES** All guarantees and warranties required shall be furnished by the Contractor and shall be delivered to the Project Manager before final payment is made. The Contractor guarantees that the items conform to the Contract Documents.

**61. GUARANTEE PERIOD** The Contractor shall warrant and guarantee the Work required under the Contract for a period of 12 months from the date of final acceptance. The Contractor warrants and guarantees to the City that materials and equipment furnished under the Contract shall be of good quality and new unless otherwise required or permitted by the Contract Documents, that all Work will be in accordance with the Contract Documents, and that all Work will be of good quality, free from faults and defects. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the City, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. The Contractor's obligation to perform and complete the Work in a workmanlike manner, free from faults and defects and in accordance with the Contract Documents shall be absolute. The Contractor shall remedy, at its own expense, and without additional cost to the Owner, all defects arising from either workmanship or materials, as determined by the City, or City's representative. The obligations of the Contractor under this Paragraph shall not include normal wear and tear under normal usage. If the Contractor does not, within ten (10) days after notification from the Project Manager, signify his intention in writing or in action to correct work, as described above, then the Project Manager may proceed with the Work and charge the cost thereof to the account of the Contract as herein before provided.

**62. SUBSTANTIAL COMPLETION / FINAL COMPLETION** "Substantial Completion" (including similar and like phrases, such as "substantially complete" and "substantially completed") and "Final Completion" (including similar and like phases, such as "finally complete" and "finally completed") of the Project or the portion thereof shall have the meaning respectively ascribed to such terms in this Section 62. "Substantial Completion" means the Work and the Project have been substantially complete to permit utilization of the Project or the Work, or portion thereof, for its intended purpose with only agreed-to punch list items remaining. Substantial completion requires not only that the Work be sufficiently completed to permit utilization, but that the City can *effectively* utilize the substantially completed Work. "Final Completion" means that the Work and the Project are finally, fully and completely installed and completed in

accordance with the Contract Documents, with all punch list items having been finally and fully completed to the City's satisfaction and no outstanding item of Work or other Project obligation on the part of Contractor remains. Determination of substantial completion and final completion is solely at the discretion of the City and shall be determined and certified by the City in writing (for purposes of the Project, all Work, and all Contract Documents, a "Certificate of Substantial Completion" and a "Certificate of Final Completion", respectively). Substantial completion of all or any part of the project entitle the Contractor to acceptance under the contract. At such time as the Contractor believes it has substantially completed the Work and the Project and prior to requesting a final inspection, the Contractor shall make written request for an inspection for substantial completion. Such request shall be made no less than seven calendar days prior to the requested date of inspection. An inspection will be made by the City and a determination will be made as to whether or not the Work is in fact substantially complete. If the City determines that the Work and the Project are substantially complete, a "punch list" will be developed and agreed to in writing by the parties. "Punch Lists" generated by Contractor containing numerous items or items which may affect the intended use of the work will be considered cause to delay issuance by the City of a Certificate of Substantial Completion. Operation and Maintenance manuals shall be submitted and approved by the City prior to issuance of any Certificate of Substantial Completion.

**63. TRANSFER OF TITLE** The Contractor warrants that title to all work, materials and equipment covered by any Application for Payment will pass to the City either by incorporation in construction or upon the receipt of payment by the Contractor, free and clear of all liens, claims, interests or encumbrances, and that no Work, materials, or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any person performing the Work at the site or furnishing materials or equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person(s). Notwithstanding any provision hereof or of any one or more of the Contract Documents to the contrary, the City shall have all, full, sole and exclusive right, title and ownership of, in and to all aspects and components of the Work and the Project for which the City has remitted payment to the Contractor, immediately thereupon and free and clear of all liens, claims, interests and other encumbrances of all types and natures.

**64. USE OF PREMISES** Whenever, in the opinion of the Project Manager, any portion of the Work is completed or is in an acceptable condition for use, it shall be used for the purpose it was intended, however, such use shall not be held as acceptance of that portion of the Work, or as a waiver of any of the provisions of the Contract.

**65. DETERMINATION OF CITY'S LIABILITY** The acceptance by the Contractor of payment made as aforesaid in Sections 58 and 59 above shall operate as and be a release to the City, the Mayor, the Council and every officer and agent thereof, from all claims by and liabilities to the Contractor for anything done or furnished for or relating to or affecting the Work under the Contract.

**66. LIMITATIONS OF LIABILITY** The mention of any specific duty or liability of the Contractor in any part of the Specifications shall not be construed as a limitation or restriction upon any general or other liability or duty imposed upon the Contractor. Except only as expressly set forth to the contrary elsewhere in the Contract Documents, the Contractor waives recovery of any and all punitive, special, indirect and consequential damages, including damages, losses and other injuries incurred by the Contractor for

principal office expenses, including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of overhead and profit, from the City arising out of, relating to or connected with, whether in whole or in part, the Contract, the Work and/or the Project, and Contractor hereby agrees not to seek any of the same from the City. Said waiver is applicable to all punitive, special, indirect, and consequential damages in any way related to the City's termination in accordance with any provision of the Contract or as otherwise authorized by any one or more of the Laws and Regulations. Notwithstanding the foregoing, Contractor does not waive damages arising out of bodily injury to any Person or damage to any property caused by or resulting from the sole negligence of the City or its agents or employees.

**67. PRESERVATION OF MONUMENTS AND TREES** The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, highway signs, markers, fences, and curbs or other appurtenances, and shall use every precaution to prevent damage or injury thereto. Any expense necessary to provide adequate protection, whether such designated item be on or off the right-of-way, shall be assumed by the Contractor.

**68. PUBLIC ACCESS** The Contractor shall at all times conduct the Work in such a manner as to ensure the least obstruction to traffic practicable. The convenience and safety of the general public and the residents along the improvement and anywhere near the Project site shall be provided for by Contractor in an adequate and satisfactory manner. Fire hydrants shall be kept accessible to fire apparatus at all times. ADA access shall remain accessible. Contractor hereby acknowledges and agrees that the Project site is part of a greater public space which is frequented by members of the public on a regular basis for various reasons and uses, and Contractor shall take all necessary and advisable precautions to and for such persons, reasons and uses.

**69. HAZARDOUS AND TOXIC SUBSTANCES** Manufacturers and distributors are required by Federal "Hazard Communication" provision (29 CFR 1910.1200), and the Maryland "Access to Information About Hazardous and Toxic Substances" law to label each hazardous material or chemical container, and to provide Material Safety Data Sheets to the purchaser. The Contractor must comply with these laws and must provide the City with copies of all relevant documents, including Material Safety Data Sheets, prior to performance of services or contemporaneous with the delivery of goods. Further, Contractor shall at all times during or in connection with performance of the Work or the Project observe and follow (and require all subcontractors and all other persons whatsoever to observe and follow) all applicable local, county, state, federal and other laws, statutes, rules, orders, regulations, codes, ordinances, bylaws, orders, requirements and the like governing or addressing in any manner any one or more substances, materials or things which are or may be dangerous or harmful to health and/or the environment or that have otherwise been deemed hazardous, toxic or dangerous (including potentially so) (each a "Hazardous Substance"). Contractor shall be solely responsible for full compliance with all applicable Laws and Regulations governing or otherwise addressing any Hazardous Substance in connection with any aspect of the Project.

**70. MAINTENANCE OF VEHICULAR TRAFFIC** If applicable and unless otherwise directed by the Project Manager, traffic must be maintained on all roadways within the construction area continuously or with the least amount of interruption during the construction period necessary to minimize accidents and

accident severity and maintain safety while at the same time minimizing inconvenience to the traveling public and the Contractor. The Project Manager shall have the exclusive right to order a road to be closed or to remain open. No equipment will be stored or permitted to stand within the limits of the roadway right-of-way where traffic must be maintained. Any earth or other object dropped on the surface of the existing road shall be removed immediately to avoid possible hazardous conditions. The Contractor shall prepare and submit a Traffic Control Plan ("TCP") for the Project Manager's review, revision, and approval, at least ten days before beginning Work, unless otherwise directed. All Traffic Control Devices shall be in accordance with the Manual on Uniform Traffic Control Devices ("MUTCD"), latest edition (and all revisions). With the approved TCP implemented, the Contractor will be permitted to work with the following provisions:

(a) Traffic Lanes; General. All traffic lanes must be restored by Contractor at the end of each day unless specifically authorized otherwise, in advance in writing, by the Project Manager. The City reserves the right to modify or expand on the methods of traffic control specified and to restrict working hours if, in the opinion of the Project Manager, the Contractor's operations are a detriment to traffic during rush hour periods.

(b) Signage. Signs on fixed supports shall be mounted on two posts. Signs mounted on portable supports are suitable for temporary conditions. During periods of partial shutdown, or extended periods when no Work is being performed, the Contractor shall remove or adequately cover all construction signs as directed by the Project Manager. The Contractor shall be responsible for removing, storing, covering, and resetting all existing traffic signs and delineators that become inapplicable and will confuse traffic during the various stages of construction, the cost of which is included in the Contract Sum and it shall be accomplished by Contractor at no additional compensation, as incidental to the Contract. Any signs lost or damaged will be replaced by the Contractor at its expense. The Contractor shall provide, maintain in new condition, and move when necessary or directed all traffic control devices used for the guidance and protection of vehicles. The Contractor shall be responsible for providing the appropriate signs to reflect varying traffic patterns prior to the commencement of a new stage of construction. Traffic must be safely maintained at all times throughout the entire length of the Project. No additional compensation

shall be paid to the Contractor for traffic maintenance, even if the Contract Time exceeds the contractually specified completion date or working days. When required lane shifts are implemented, existing painted lane markings no longer applicable shall be removed by Contractor to the satisfaction of the Project Manager.

(c) Crash Cushions. Temporary crash cushions are to be installed as shown on the Plans. Unless otherwise specified, sand containers shall be used. The crash cushions shall conform to Subsection 104.10 of the MDSHA Specifications. Crash cushions shall be reset to reflect changing traffic patterns caused by different stages of Traffic Control. The crash cushions shall be reset at locations shown on the Plans or as directed by the Project Manager. Should any of the sand container components be damaged during the resetting of the system or during the course of the Project, the Contractor shall replace the damaged components at its own expense.

(d) Flaggers; Traffic Control. The Contractor shall have flaggers on the Project for the purpose of controlling traffic while maneuvering heavy equipment. This may require a temporary lane closure in any of the specified Traffic Control Phases. These temporary lane shutdowns shall be kept to a minimum and the normal traffic pattern for the Traffic Phase shall be restored as quickly as possible. The Contractor shall comply with Section B-20 of the MUTCD regarding flagger signing. Prior to stopping Work each day the Contractor will be required to reshape all graded areas and eliminate all drop-offs not protected by barriers by filling with compacted stone at maximum of 8:1 slope. All barriers and barricades shall be adequately illuminated at night, as specified herein or elsewhere in the Contract Documents, and all lights for this purpose shall be kept operative from sunset to sunrise. No Work shall be commenced in any stage of construction until the barriers and barricades for that stage, indicated on the Plans, or as specified by the Project Manager, are completely in place. The Contractor will be solely responsible for all accidents and damages to any persons and property resulting from its operations. Compliance with prescribed precautions contained herein, elsewhere in the Contract Documents or in the MDSHA Specifications or Manual on Uniform Traffic and Control shall not relieve the Contractor of its primary responsibility to take all necessary measures to protect and safeguard the Work, nor relieve the Contractor from any responsibilities prescribed by GP-7 of the January 2001 MDSHA Standard Specifications for Construction and Materials. The Contractor shall notify and obtain approval in writing from the Project Manager at least 48 hours before changing any Traffic Control Phase. Any construction materials or debris dropped on the roadway surface shall be removed immediately to avoid possible hazardous conditions.

(e) Materials. The Contractor shall provide, maintain in first class condition, replace, and move when necessary or directed all materials, devices, flagging, etc., required to maintain traffic in accordance with the Traffic Control Plans or as directed by the Project Manager. Reference is made to the latest edition of the MUTCD, wherein all such items are fully described with regard to use, application, warranties, size, color and placement, and wherein typical traffic control device layouts are shown, as all such devices and techniques planned for use on the Project shall strictly conform to the Manual's requirements except as noted on the Plans. When any of the following items have been established on the Plans or as directed by the Project Manager, the Specifications will be adhered to in accordance with the respective sections.

(f) Lights; Warnings. All banners and imitation barrels shall be adequately illuminated at night, and all lights for this purpose shall be kept operative from sunset to sunrise. Steady burning warning lights shall be used to delineate channelization through and around obstructions in a construction or maintenance area, on detour curves, on lane closures, and in other similar conditions (MUTCD 6E-4, 6E-5). Flashing warning lights shall be the means for identifying a particular and individual hazard and shall not be used in sequence, in clusters, or for delineation (MUTCD: 6E-5, 6E-6). Where noted on the Plans the first two (2) warning signs shall include a "High Level Warning Device." In addition to the flags the signs shall also be equipped with a Type "B" High Intensity Flag Warning Light. This device must meet the requirements of MUTCD 6C-11 and 6E-5. The device is included in the Contract Sum and shall be considered incidental, and no special compensation will be paid.

(g) Barriers. Temporary concrete barriers shall be installed on the roadway approaches as shown on the Plans or as approved in writing. Any permanent facilities damaged as a result of anchoring temporary concrete barriers (anchor holes. etc.) shall be repaired to the satisfaction of the Project Manager using an epoxy grout or other material as may be specified by the Project Manager. Epoxy grout shall consist of sand and epoxy, mixed by volume according to manufacturer's recommendations.

(h) Method of Measurement and Basis of Payment. All work and materials required under the TCP are included in the Contract Sum and Contractor agrees that there will be no special compensation paid for maintenance of vehicular traffic as described above and the cost shall be considered incidental to the Contract and included in the Contract Sum.

**71. PARKING, STORAGE AND STAGING AREAS** Parking, storage, and staging areas for the Contractor's use during the Project must have prior written approval of the Project Manager. All areas used for storage of equipment or material shall be restored to their original condition, immediately upon completion of the Work. No additional compensation will be provided for restoring, re-grading, placement of topsoil, and seed and mulch in these areas.

**72. PEDESTRIAN TRAFFIC** Pedestrians shall be safeguarded by the use of signs, lights, barricades and barriers as shown on the traffic control plan and/or directed by the Project Manager. Pedestrian traffic shall be maintained by Contractor at all times unless specifically authorized otherwise, in advance in writing, by the Project Manager. The Contractor shall submit a pedestrian traffic safety plan in accordance with the MUTCD, incorporating safety measures and other provisions to fully implement the intent of this paragraph. All work and materials required to prepare and implement the pedestrian traffic safety plan are included in the Contract Sum and shall be considered incidental to the Contract and there shall be no special compensation paid for this item. No additional compensation shall be paid for maintenance of vehicular and pedestrian traffic if for whatever reason the Project time extends beyond the Contract-specified completion date or working days.

**73. ADA ACCESS** Where ADA access exists within the line of work under the Contract, it will be the Contractor’s responsibility to maintain said access during the life of the Contract. This service is included in the Contract Sum and is considered to be incidental to the Contract and no special compensation will be paid for this service.

**74. TOILET FACILITIES** Toilet facilities meeting MOSHA standards shall be provided at the job site. All costs and expenses thereof are included in the Contract Sum. No special compensation shall be paid therefor.

**75. STAKEOUT-CONSTRUCTION CONTROL** Survey construction control provided by the City shall be limited to the baseline with stations not over 100 feet, and the elevation of the top of each marked point. P.C.s, P.T.s. P.I.s, P.V.T.s, and at least one point on the tangent beyond the end of each curve will be staked. The Contractor shall request baseline stakeout a minimum of five days in advance of construction. Stakeout data other than stated above will be furnished by the construction Contractor per MDSHA Section 815 for structures, otherwise per WSSC specs. section 01000(H) and as described in detail below and in any one or more of the other Contract Documents. The City's responsibility for stakeout for the

entire Project shall be limited to that data described above and this shall be provided only once. The Contractor shall preserve or otherwise ensure adequate survey controls exist throughout the life of the Contract.

Surveys and stakeout shall be accomplished by the Contractor as outlined above and in conformance with WSSC specifications Section 01000-10-l l(H), entitled "Construction Stakeout By Contractor." The provisions therein are primarily for pipeline stakeout. The Contractor's responsibilities under the Contract are hereby expanded to include, in addition to pipeline stakeout, similar responsibilities for all phases of stakeout necessary to construct all facilities, systems and other improvements under the Contract including but not limited to clearing and grubbing excavation, pavement, curbs and gutters, storm drainage pipes and facilities, culverts, structures, storm water management facilities, street lights, traffic signal conduits and components, noise walls, retaining walls, ditches and sediment control features. The stakeout and survey record data shall be preserved and turned over to the City for filing following completion of specific components of Work.

Method of Measurement and Payment Generally: stakeout is included in the Contract Sum and shall be considered incidental to the Contract and no special compensation shall be paid therefor. Where payment is provided, progress payments for stakeout shall be made based on the percentage resulting from the price bid for stakeout divided by the total bid, multiplied by the monthly payment exclusive of the stakeout payment, except the final payment shall be adjusted as necessary to equal the total price bid for stakeout.

Grade Sheet by Contractor: Grade sheets showing hub and design elevations for roadway, water mains, drainage structures and piping, walks, lights, infiltration facilities clearing/grubbing, excavation, and related components will be provided by the Contractor at least 8 hours in advance of construction and will be subject to approval by the Project Manager. Stakeout for curb and gutter in all vertical and horizontal curves is to be at intervals of 25 feet or less unless otherwise specifically authorized by the Project Manager. This Work is considered incidental to the Contract and no extra compensation will be paid.

**76. DEBRIS** Under no circumstance will any open fires be permitted within the City of Rockville. All debris will be removed and hauled from site (except when otherwise specifically authorized in the bid document) and disposed in accordance with all applicable Laws and Regulations. No special compensation will be paid as all costs for off-site disposal are included in the Contract Sum and shall be considered incidental to the Contract.

**77. CLEAN UP** In addition to any provisions regarding clean up in any one or more of the other Contract Documents, clean up, including the restoration of areas of construction, shall proceed as quickly as is practicable. The period between construction and final clean up shall normally not exceed one week. If at any time during the course of the Work the cleaning operation in any given area becomes delinquent in the opinion of the Project Manager, the Project Manager may order that construction be stopped until such cleaning is completed. Any such order shall not extend the Final Completion date under the Contract. Unless otherwise indicated, all materials razed, demolished, or otherwise removed from the Work site shall become the property of the Contractor and shall be disposed of legally and properly off site by

Contractor at its expense. Upon Final Completion of the Work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the street, footways, lawns, and adjacent property, all surplus and discarded materials, rubbish and temporary structures, restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the Work, and shall leave the Work area in a neat and presentable condition throughout the entire length of the project under contract. Notwithstanding the foregoing, Contractor shall keep the Work area in a neat and presentable condition at all times during the Project. If the Contractor fails to clean up at Final Completion of the Work or at any other time, the City may do so for and on behalf of Contractor and the cost thereof shall be charged to the Contractor.

**78. SEVERABILITY** If any clause, provision, paragraph, subsection, Section or Article of the Agreement or these General Conditions shall be ruled invalid by any court of competent jurisdiction or other tribunal having jurisdiction, then the parties shall: (i) promptly negotiate a substitute for such clause, provision, paragraph, subsection, Section or Article which shall, to the greatest extent legally permissible, effectuate the intent of the parties in the invalid clause, provision, paragraph, subsection, Section or Article; (ii) if necessary or desirable to accomplish item (i) above, apply to the court or other tribunal having declared such invalidity for a judicial construction of the invalidated portion hereof or thereof, as the case may be; and (iii) negotiate such changes, in substitution for or addition to the remaining provisions hereof or thereof, as the case may be, as may be necessary in addition to and in conjunction with items (i) and (ii) above to effect the intent of the parties in the invalid provision. The invalidity of such clause, provision, paragraph, subsection, Section or Article shall not affect any of the remaining provisions hereof or of the Agreement, and the Agreement and these General Conditions shall be construed and enforced as if such invalid portion did not exist.

**79. CITY'S CONSENT, APPROVAL AND DETERMINATION** For all purposes of the Work, the Project and the Contract Documents, in any and all cases and instances in which the City may or is required to approve, consent, opine, accept or otherwise make any decision, choice or determination, including any determination of satisfaction, the City may do so in each instance at the City's sole, absolute and unfettered discretion, notwithstanding any other provision hereof or thereof to the contrary. Without limiting the generality of the foregoing, the parties agree there shall be no implied or constructive acceptance with respect to any portion of the Work or the Project. For purposes of this Section 79, "City" includes the Architect, Project Manager, the City Council, the Mayor and all other officers, employees, agents and representatives of the City.

**80. CONTRACTOR'S INSURANCE** Prior to the Effective Date, the Contractor must obtain at its own cost and expense and keep in force and effect during the duration of the Work and the Project including all extensions, as well as beyond Final Completion as and to the extent required by any of the Contract Documents, the following insurance with an insurance company/companies licensed to do business in the State of Maryland evidenced by a certificate of insurance and/or copies of the insurance policies. The Contractor's insurance shall be primary. The Contractor must electronically submit to the Purchasing Division a certificate of insurance prior to the start of any Work. In no event may the insurance coverage be less than shown below or otherwise required by any of the Contract Documents. Contractor shall so obtain and maintain insurance as follows:

| Type of Insurance | Amounts of Insurance | Endorsements and Provisions |
|---|---|---|
| *1. Workers' Compensation*<br>*2. Employers' Liability* | Bodily Injury by Accident:<br>$100,000 each accident<br><br>Bodily Injury by Disease:<br>$500,000 policy limits<br><br>Bodily Injury by Disease:<br>$100,000 each employee | Waiver of Subrogation:<br>**WC 00 03 13 Waiver of Our Rights to Recover From Others Endorsement signed and dated.** |
| ***3. Commercial General Liability***<br><br>a. Bodily Injury<br>b. Property Damage<br>c. Contractual Liability<br>d. Premise/Operations<br>e. Independent Contractors<br>f. Products/Completed Operations<br>g. Personal Injury | Each Occurrence:<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage.<br>**CG 20 37 07 04 and CG 20 10 07 04 forms to be both signed and dated.** |
| ***4. Automobile Liability***<br><br>a. All Owned Autos<br>b. Hired Autos<br>c. Non-Owned Autos | Combined Single Limit for Bodily Injury and Property Damage - (each accident):<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage.<br>**Form CA20 48 02 99 form to be both signed and dated.** |
| ***5. Excess/Umbrella Liability*** | Each Occurrence/Aggregate:<br>$1,000,000 | City to be listed as additional insured and provided 30 day notice of cancellation or material change in coverage. |
| ***6. Professional Liability***<br>NOT REQUIRED | Each Occurrence/Aggregate:<br>$1,000,000 | |

Alternative and/or additional insurance requirements, when outlined under the Special Provisions, shall take precedence over the above requirements in part or in full as described therein.

**BUILDERS RISK INSURANCE**

In addition to the insurance requirements contained above, a Builders Risk Insurance Policy with coverage limits equivalent to the amount of the construction materials, equipment and property, evidencing the Mayor and Council as an additional insured to the policy is also required.

Contractor's insurance coverage shall be primary insurance as respects the City, its elected and appointed officials, officers, consultants, agents and employees, and any insurance or self-insurance maintained by the City shall be excess of the Contractor's insurance and shall not be called upon to contribute with it.

No change, cancellation or non-renewal shall be made or allowed in or for any insurance coverage without a thirty (30) day prior written notice to the City Purchasing Division in each instance. The Contractor shall electronically furnish a new certificate prior to any change or cancellation date. The failure of the Contractor to deliver a new and valid certificate will result in suspension of all payments and cessation of on-site work activities until a new certificate is furnished.

The Mayor and Council and the City's elected and appointed officials, officers, consultants, agents, and employees must be named as an additional insured on the Contractor's Commercial and Excess/Umbrella Insurance for liability arising out of Contractor's products, goods and/or work or services provided under

the Contract. Additionally, the Mayor and Council must be named as additional insured on the Contractor's Automobile and General Liability Policies. Endorsements reflecting the Mayor, Council and all others as an additional insured are required to be submitted with the insurance certificate.

For all of Contractor's insurance, the certificate holder shall be the Mayor and the Council shown as follows:

CERTIFICATE HOLDER
The Mayor and Council of Rockville
(Contract #, title)
City Hall
111 Maryland Avenue
Rockville, MD 20850

**81. SUBCONTRACTORS' INSURANCE** Contractor agrees that all of its subcontractors and consultants and all other parties performing any aspect or component of the Work or the Project for or on behalf of Contractor shall obtain and maintain the same insurance as required of Contractor in Section 80 above and shall otherwise comply in full with all provisions thereof and all of the other Contract Documents respecting insurance. In addition, Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All insurance coverages for Contractor's subcontractors and consultants and all other parties performing any aspect or component of the Work or the Project for or on behalf of Contractor shall be subject to all the requirements stated herein and/or elsewhere in the Contract Documents, including those applicable to insurance.

**82. UNCONTROLLABLE CIRCUMSTANCES**

(a) Definition. For purposes of the Contract and all Contract Documents, "Uncontrollable Circumstances" (each, an "Uncontrollable Circumstance") means any act, event or condition that is beyond the reasonable control of the party relying thereon as justification for not performing an obligation required of such party hereunder and that materially interferes with or materially increases the cost or time required for performing its obligations hereunder (other than payment or other monetary obligations) to the extent such act, event or condition is not the result of any error, act, omission, negligence, failure to exercise reasonable diligence, willful misconduct, or breach of the Contract by or on the part of such party. The provisions of this Section 82 shall supersede and govern and control over any contrary provision elsewhere in any of the other Contract Documents.

(b) Inclusions. Subject to the foregoing provisions of Section 82(a) and the below provisions of Section 82(c), Uncontrollable Circumstances shall include the following:

(i) A change in the Laws and Regulations;
(ii) Naturally occurring events (but not including reasonably anticipated weather conditions) for the City of Rockville, MD geographic area, such as landslides,

underground movement, hurricanes, earthquakes, fires, tornadoes, floods, epidemics, pandemics, lightning strikes, and other natural occurrences;

(iii) Explosion, sabotage, or similar occurrence, acts of a declared public enemy, war, terrorism, blockade or insurrection, riot or civil disturbance; and

(iv) Strikes in the State of Maryland or nationwide; provided, however, that in the case of Contractor such strike must make the particular goods or services in question effectively unavailable to Contractor.

(c) Exclusions. The City and Contractor agree that none of the following acts, events or circumstances shall constitute an Uncontrollable Circumstance, notwithstanding the provisions of Sections 82(a) or (b) above:

(i) Any act, event or circumstance to the extent it would not have occurred if the affected party had complied with its obligations under or in connection with the Contract;

(ii) A change in interest rates, inflation rates, wage rates, insurance costs, commodity prices, currency values, exchange rates or other general economic conditions;

(iii) A change in the financial condition of the City, the Contractor, or any subcontractor, consultant or other party, person, individual or entity affecting any party's ability to perform its respective obligations in connection with the Project;

(iv) Any consequence of error, neglect or omission by the Contractor in the performance of any aspect of the Project;

(v) The failure of the Contractor to secure any one or more of the permits, licenses, consents, authorizations or other approvals necessary or advisable for the performance of any aspect of the Project;

(vi) Any reasonably anticipated weather condition for the Rockville, MD geographic area;

(vii) Any labor or other dispute involving one (1) or more employees of the Contractor or any of the Project subcontractors or consultants;

(viii) Any union or labor rule, requirement or demand having the effect of increasing the number of employees employed at the Project or otherwise increasing the cost or burden to the Contractor of performing any aspect of the Project;

(ix) The failure of any subcontractor or supplier to furnish any labor, material, service or equipment for any reason other than for an act or event expressly listed in Section 82(b) above as an Uncontrollable Circumstance;

(x) Any increase for any reason in premiums charged by the Contractor's insurer(s) or the insurance market generally for any of the insurance policies required by the Contract;

(xi) Any impact of prevailing wages, laws, or rates on one (1) or more of Contractor's costs or expenses with respect to wages and/or benefits; and

(xii) Any change in the Laws and Regulations pertaining to income taxes or otherwise monetarily affecting Contractor.

(d) Relief from Obligations. Except as provided elsewhere in the Contract Documents to the contrary, neither the City nor the Contractor shall be liable to the other for any loss, damage, delay, default, or failure to perform any obligation under the Contract to the extent it results directly and wholly from an Uncontrollable Circumstance, provided the Party seeking to rely

thereupon for nonperformance timely complies with all provisions of this Section 82. The City and Contractor agree that the relief for an Uncontrollable Circumstance described in this Section 82 shall apply to all obligations in the Contract, except that, notwithstanding the foregoing or any other provision of this Contract to the contrary, no occurrence of an Uncontrollable Circumstance shall excuse or delay (i) the performance of a party's obligation to pay monies due and owing under this Contract, nor (ii) the performance of any obligation not directly affected by the occurrence of the Uncontrollable Circumstance.

(e) Notice and Mitigation. The party relying upon the occurrence of an Uncontrollable Circumstance shall notify the other party by electronic mail as soon as practicable once the party experiencing such Uncontrollable Circumstance first knew or should have known of the occurrence thereof, followed by written notice delivered to the other party within 15 days of said email notice, which subsequent written notice shall detail: (i) the Uncontrollable Circumstance and the cause thereof (to the extent known); (ii) the date the Uncontrollable Circumstance began, its estimated duration, and the estimated period during which the performance of such Party's obligations hereunder shall be delayed or otherwise affected; (iii) its estimated impact on the other obligations of such party under the Contract; and (iv) reasonable mitigating action(s) which the party relying thereupon shall take in response thereto. The affected party shall also provide prompt written notice to the other party of the cessation of such Uncontrollable Circumstance. Whenever an Uncontrollable Circumstance shall occur, the Party claiming to be adversely affected thereby shall, as promptly as practicable, use all reasonable efforts to eliminate the cause thereof and to otherwise resume performance under the Contract. Further, while any Uncontrollable Circumstance continues, the party relying thereupon for nonperformance shall give notice to the other party before the first day of each succeeding month updating the information previously submitted by way of electronic or other notice. The party relying upon an Uncontrollable Circumstance shall bear the burden of proof and shall furnish promptly any additional documents and other information relating to the Uncontrollable Circumstance reasonably requested by the other party.

(f) Schedule Relief. If and to the extent that an Uncontrollable Circumstance does or will delay Contractor's performance of any aspect of the Project or the Work, Contractor shall be entitled to a reasonable and appropriate extension of the Project schedule which properly reflects the interference with performance or the time lost as a result of the Uncontrollable Circumstance, and the Contractor shall perform all other Work without delay. In the event Contractor believes it is entitled to such Project schedule relief on account of any Uncontrollable Circumstance, Contractor shall expressly state the same in the email notice and subsequent written notice discussed in Section 82(e) above. Within 30 days of its receipt of such subsequent written notice from the Contractor, the City shall issue to Contractor a written determination as to the extent, if any, it concurs with the Contractor's claim for Project schedule relief.

(g) Acceptance of Relief Constitutes Release. The Contractor's acceptance of any schedule relief in connection with an Uncontrollable Circumstance shall be deemed a full release of the City

by the Contractor (as well as all persons claiming by, through or under the Contractor) from any and all losses, costs, expenses, damages, recoveries, remedies, and liabilities resulting from, connected with or otherwise attributable to, the event giving rise to the relief claimed.

**83. CONSTRUCTION** The various headings and captions to sections, subsections, paragraphs other provisions and parts of these General Conditions and those of the other Contract Documents are inserted for convenience, are not a part hereof or thereof, and shall not be used in the interpretation hereof or thereof. For all purposes of all Contract Documents, "including" means "including without implied limitation", unless a different meaning is clearly intended. Further, there shall be no limitation implied with respect to any of the provisions of any of the Contract Documents. Notwithstanding any rule or legal principal to the contrary, no one or more of the Contract Documents nor any provision therein shall be read more favorably for or against any particular party by reason of the fact that such party or its representative(s) may have drafted the instrument or provision in question.

**84. BINDING EFFECT; RELATIONSHIP OF PARTIES; NO THIRD-PARTY BENEFICIARIES**
All Contract Documents are binding upon and inure to the benefit of the City and the Contractor, as well as their respective successors, permitted assigns, and legal representatives. There are no third-party beneficiaries of any of the Contract Documents whatsoever, notwithstanding anything to the contrary contained in any one or more of the same. Notwithstanding the foregoing, any one or more persons or parties associated with the City that are benefitted by any indemnification, defense or hold-harmless provisions hereof or of any of the other Contract Documents may enforce same fully as, if and when applicable, although no such enforcement or any other act or omission by any or such persons or parties shall expose such persons or parties to any liability or obligation whatsoever under or in connection with this Contract at any time. Notwithstanding anything to the contrary contained in elsewhere in any of the other Contract Documents, the City and Contractor are arm's length contracting parties only for all purposes of the Project and the Contract, and no other association, such as a partnership, joint venture, or other relationship, is established or exists between them.

**85. SURVIVAL** All indemnification, defense and hold-harmless obligations set forth in any of the Contract Documents or otherwise associated with the Work or the Project, in whole or in part, shall survive the expiration or earlier termination of the Contract. Further, the following shall survive the expiration or earlier termination of the Contract: (i) all respective covenants, obligations and other liabilities of the parties that per the terms hereof or of any one (1) or more of the other Contract Documents expressly survive expiration or earlier termination of the Contract; and (ii) all respective covenants, obligations and other liabilities of the parties designed and/or intended to survive the expiration or termination of the Contract, although such design or intent is not expressly stated. The provisions of this Section 85 shall operate notwithstanding anything to the contrary contained herein or in any of the other Contract Documents to the contrary.

**86. CONTRACTOR'S COMPLIANCE, GENERALLY** For the avoidance of doubt, Contractor shall abide by and shall cause all its subcontractors and consultants, as well as all other persons and parties performing any portion of the Work by, on behalf of or at the direction of Contractor, all terms, provisions, and conditions set forth in the Contract Documents, timely, fully and completely in accordance with the provisions thereof. Without limiting the generality of the foregoing, Contractor shall follow all Specifications, Plans

and Drawings, shall comply with all Laws and Regulations in connection with the Work and the Project, and shall otherwise perform and complete all Work and the Project in accordance with all Contract Documents.

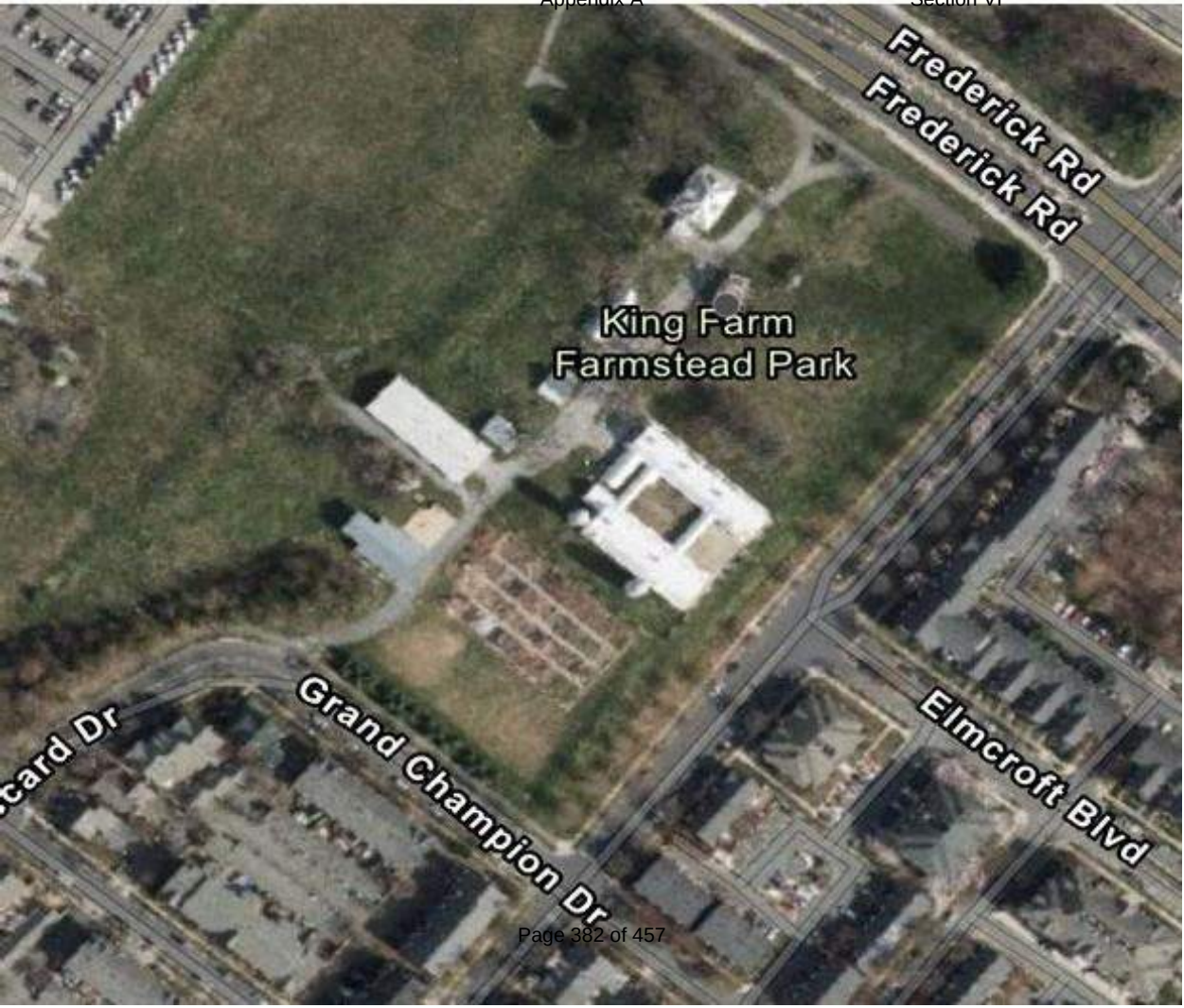
**87. STANDARD OF PERFORMANCE; LICENSURE** The Contractor agrees that all Work and all components of the Project performed by itself or any other person, individual, party or entity shall at all times be performed in accordance with all Laws and Regulations and the following professional standard: All such Work shall be performed consistent with the professional skill and care ordinarily provided by prudent and professional contractors practicing in the same or similar locality under the same or similar circumstances. The Contractor shall perform all Work and shall ensure all Work performed by any other person, individual, party or entity shall be performed as expeditiously as is consistent with such professional skill and care and the orderly progress of the Work and the Project. The Contractor shall staff its office(s) with sufficient personnel and shall otherwise take all actions in order to perform the covenants under or in connection with the Contract in a prompt and continuous manner. Contractor further agrees to ensure that all Work and other aspects and components of the Project required to be provided by certain licensed, registered, authorized, or otherwise qualified persons shall be performed only by persons fully licensed, registered, authorized, and otherwise qualified to perform same, at all times in full compliance with all Laws and Regulations.

**88. STATUTE OF REPOSE.** To the extent applicable to the Project and required by any one (1) or more of the Laws and Regulations, the City shall not seek contribution or indemnity from Contractor for damages incurred for a claim, action or demand for wrongful death, personal injury or injury to real or personal property resulting from the defective and unsafe condition of an improvement to the real property of which the Project is a part occurring more than ten (10) years after the date the entire Work and Project first became available for their intended use. Application of this Section 1 shall be governed and limited by, as well as construed in accordance with, the provisions of applicable Laws and Regulations, the rights, remedies, and relief of and available to the City being restricted only as required thereby. For purposes of this Section 1, the meaning of "Laws and Regulations" is expanded to include all binding precedential case law of the State of Maryland and of the United States.

**89. MARYLAND PUBLIC INFORMATION ACT.** Contractor acknowledges and agrees that the City is subject to and must comply with the State of Maryland's Public Information Act, Annotated Code of Maryland, Chapter 698, Title 4 of the General Provisions Article (the "PIA"). Contractor accordingly agrees that the City may disclose any and all materials, documents and other things, including photographs, photostats, films, microfilms, recordings, tapes, computerized records, communications, maps, drawings and any copy of a public record, subject to the PIA if requested, unless covered by one (1) or more exceptions to disclosure per the PIA. To the extent legally permissible, the City shall notify Contractor of any imminent disclosure of materials Contractor has delivered to the City labeled "Confidential" to afford Contractor a chance to seek judicial protection from disclosure thereof.

**90. DISPUTE RESOLUTION; VENUE; JURISDICTION; CERTAIN WAIVERS** Disputes regarding changes in and interpretations of the terms or scope of the Contract and denials of or failures to act upon claims for payment for extra work or materials or otherwise arising out of, related to or connected with the Project, the relationship of the Parties in connection therewith, and/or the Contract or any one or more of the

other Contract Documents shall be solely and exclusively initiated, filed, tried and maintained in the state court located in Montgomery County, Maryland. The parties each expressly and irrevocably (i) waive any and all rights otherwise provided by any applicable law or legal rule or principle to remove the matter to any other state venue or to a federal venue, (ii) consent to the jurisdiction of such state courts in any such legal proceeding, (iii) waive any objection such party may have to the laying of the jurisdiction of any such legal proceeding, and (iv) waive its right to a trial by jury.


Frederick Rd
Frederick Rd
King Farm
Farmstead Park
Grand Champion Dr
Elmcroft Blvd

# SEDIMENT CONTROL PERMIT (SCP)

PERMIT#: **SCP2022-00021**

DATE OF ISSUE: **12/21/2022**

DATE OF EXPIRATION: **12/21/2024**

PWK PERMIT:

TYPE OF SEDIMENT CONTROL PERMIT: **SC**

APPLICANT: **CITY OF ROCKVILLE DEPT OF R&P RECREATION & PARKS DEPARTMENT**

ADDRESS: **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

DAYTIME PHONE: **240-314-8603**

SITE ADDRESS: **16100 FREDERICK RD**

SUBDIV: **KF BAILEYS COMMONS** LOT: BLK: **A**

TYPE OF WORK: **The King Farm Farmstead Water and Sewer Improvements Project will install water and sewer mains on the City of Rockville's property to provide water and sewer service to the existing buildings. The project will tie into the existing WSSC water main within the public ROW. The sewer is tying into the SHA ROW.**

CONDITIONS:

This permit authorizes the above described construction subject to all applicable laws, regulations, terms and conditions herein and elsewhere.

Approved: Craig Simoneau 12/21/2022
Director of Public Works

rev: fscp2pmt 12/21/2022

AAO 12/21/2022
AAO Staff Contact

# SEDIMENT CONTROL PERMIT (SCP)

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**RECREATION & PARKS DEPARTMENT**

ADDRESS: **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

DAYTIME PHONE: **240-314-8603**

SITE ADDRESS: **16100 FREDERICK RD**

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1. **This permit is for sediment control only. All work must comply with the approved plans dated 09/22/22 and any subsequent revisions. Plan revisions, including field changes, must be reviewed and approved by the Rockville Department of Public Works.**
2. **The Applicant (Permittee) is the entity for which the City of Rockville Department of Public Works (DPW) has issued a permit. The Applicant is responsible for all contractors, agents, subcontractors or other entities completing work under this permit. The Applicant may authorize a person/entity in writing to serve as general contractor to perform work under this permit.**
3. **The permittee must schedule a pre-construction meeting with a minimum notice of 48 hours prior to meeting. Only one pre-construction meeting is necessary when multiple permits for the same project are issued. Failure to schedule a pre-construction meeting may result in the issuance of fines, revocation of permit(s) and/or the posting of a stop work order. The following representatives must be invited:**
   **City Project Inspector, Ralph McElhinney at 240-314-8553 (rmcelhinney@rockvillemd.gov)**
   **City Sediment and Erosion Control Inspector, Arthur Simpson at 240-314-8879 (asimpson@rockvillemd.gov)**
   **City Forester, Paula Perez at 240-314-8705 (pperez@rockvillemd.gov) or City Forestry Inspector, Natasha Shangold at 240-314-8205 (nshangold@rockvillemd.gov)**
   **WSSC**
   **Any Agency Issuing a Permit**
   **Utility Companies, if necessary.**
   **Permittee, Owner, or Owner's Representative**
   **General Contractor**
   **Site Engineer**
   **The following items must be discussed, as needed, during the pre-construction meeting:**
   **Elements that require construction inspection, as determined by the City Inspector, must be completed during normal working hours, Monday through Friday, 7:00 am to 3:00 pm.**
4. **A copy of the permit MUST be on the job-site.**
5. **Permittee must contact MISS UTILITY at 811, 1 800 257-7777, or www.missutility.net for marking of existing utilities. MISS UTILITY requires two full business days notice. Existing utilities must be marked prior to the pre-construction meeting.**
6. **Provide any additional sediment control measures as directed by the City Inspector.**
7. **Comply with all conditions of PWK2022-00059 for work in public right-of-way including traffic control and abandonment of existing utilities.**
8. **Comply with all conditions from City Forester, FSD and FCP plans.**
9. **At the preconstruction meeting, specific details of above and below grade work near trees will be discussed. Permittee is solely responsible for obtaining the services of an ISA Certified Arborist or ASCA Consulting Arborist to determine the impacts of the proposed construction on privately owned trees and prescribe appropriate mitigation measures. Permittee must comply with all applicable laws or regulations when performing tree care operations.**
10. **Filter logs may be used in place of silt fence to protect existing trees if approved in advance by the City Sediment Control Inspector and Forestry Inspector.**
11. **Contractor is to comply with the Montgomery County Noise Ordinance. Apply for a waiver if needed.**
12. **If required, permittee must supply the Chief, Construction Management, with lab results (from a Maryland State Certified Lab) to confirm that all construction work and materials comply with project specifications. This includes acceptable certification for compaction and backfill.**
13. **No storage of materials or equipment will be permitted in public right-of-way.**

This permit authorizes the above described construction subject to all applicable laws, regulations, terms and conditions herein and elsewhere.

Approved: Craig Simoneau 12/21/2022
Director of Public Works

rev: fscp2pmt 12/21/2022

AAO 12/21/2022
AAO Staff Contact

# SEDIMENT CONTROL PERMIT (SCP)

PERMIT#: **SCP2022-00021**

DATE OF ISSUE: **12/21/2022**

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TYPE OF SEDIMENT CONTROL PERMIT: **SC**

APPLICANT: **CITY OF ROCKVILLE DEPT OF R&P RECREATION & PARKS DEPARTMENT**

ADDRESS: **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

DAYTIME PHONE: **240-314-8603**

SITE ADDRESS: **16100 FREDERICK RD**

SUBDIV: **KF BAILEYS COMMONS** LOT: BLK: **A**

14. **No slopes shall be greater than 3:1 unless an approved low maintenance ground cover is planted. Under no circumstance shall a slope exceed 2:1. Approved low maintenance ground cover types include: Trumpet Honeysuckle, Virginia Creeper, Trumpet Vine or other plant species as approved by the City Horticulturist or City Forester.**
15. **Construction shall only disturb that area which can be completed and stabilized by the end of each working day. For areas to be paved, stabilization shall be the application of stone base. For areas to be vegetatively stabilized: permanent seed and soil stabilization matting or sod for all steep slopes, channels and swales; and permanent seed and mulch for all other areas. Any areas which cannot be stabilized by the end of each working day must have silt fence installed on the downslope side. In areas where existing trees are to be protected, filter logs shall be used instead of silt fence.**
16. **This permit does not approve any construction or traffic control within the Washington Suburban Sanitary Commission (WSSC), Maryland State Highway Administration (MSHA) (or Montgomery County's rights-of-way or easements. A separate application must be made through the governing agency. The contractor must also submit an access easement and agreement from the adjacent property owner before grading offsite for the southern driveway.**
17. **Any damage to public improvements must be repaired or replaced in accordance with City standards at the direction of the City Project Inspector.**
18. **Bonds will not be released until:**
    **Bond will not be released until the site has been restored and stabilized to the satisfaction of the City Sediment Control Inspector and Chief, Construction Management. The permittee must comply with final stabilization requirements per the City Sediment Control Inspector.**
    **All permitted work has been completed and inspected, and any damage to public right-of-way has been repaired or replaced to the satisfaction of the City Project Inspector and Chief of Construction Management.**
    **All code violations pertaining to the project have been corrected and all outstanding fines have been paid.**
19. **All work covered by this permit must be completed by the expiration date which is two (2) years from date of permit issuance. Requests for permit extensions must be submitted in writing to the Department of Public Works 30 days prior to the expiration date, justifying the extension in accordance with Chapter 19, Section 29.**

WATER SHED: **ROC**
FLOODPLAIN VARIANCE REQ'D:
USE PERMIT NUMBER:

TOTAL AREA OF PROPERTY:
TOTAL AREA TO BE DISTURBED: **30,500**
TOTAL IMPERVIOUSNESS PROPOSED:

**(INCLUDE 30' CONTIGUOUS RIGHTS OF WAY)**

| ESTIMATED COST OF WORK: | PERMIT FEES: | AMOUNT OF SECURITY: |
|---|---|---|
| S/C: | [redacted] | S/C:<br>BOND:<br>L OF C:<br>CASH: |

This permit authorizes the above described construction subject to all applicable laws, regulations, terms and conditions herein and elsewhere.

Approved: Craig Simoneau 12/21/2022
Director of Public Works

rev: fscp2pmt 12/21/2022

AAO 12/21/2022
AAO Staff Contact

# SEDIMENT CONTROL PERMIT (SCP)

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DATE OF ISSUE: **12/21/2022**

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APPLICANT: **CITY OF ROCKVILLE DEPT OF R&P RECREATION & PARKS DEPARTMENT**

ADDRESS: **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

DAYTIME PHONE: **240-314-8603**

SITE ADDRESS: **16100 FREDERICK RD**

SUBDIV: **KF BAILEYS COMMONS** LOT: BLK: **A**

ENGINEER: **DEWBERRY**
ADDRESS: **10461 MILL RUN CIRCLE**
**SUITE 300**
**OWINGS MILL MD 21117**
DAYTIME PHONE: **301-364-1798**

OWNER/DEVELOPER: **MAYOR & COUNCIL OF ROCKVILLE**
ADDRESS: **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**
DAYTIME PHONE: **240-314-8500**

This permit authorizes the above described construction subject to all applicable laws, regulations, terms and conditions herein and elsewhere.

Approved: Craig Simoneau 12/21/2022
Director of Public Works

rev: fscp2pmt 12/21/2022

AAO 12/21/2022
AAO Staff Contact

City of Rockville
Get Into It

111 Maryland Avenue | Rockville, Maryland 20850-2364 | 240-314-5000
www.rockvillemd.gov

May 25, 2022

City of Rockville
Recreation and Parks Department
111 Maryland Avenue
Rockville, MD
20850

Re: Final Forest Conservation Plan/Tree Save Plan, FTP2022-00012 Approval Conditions

Dear Chris Henry,

The Final Forest Conservation Plan/Tree Save Plan revisions received on May 17, 2022 for "King Farm Farmstead" utility project have been reviewed and found to be compliant with the Forest and Tree Preservation Ordinance and applicable ordinances/requirements by the Community Planning and Development Services Department.

Approval of Final Forest Conservation Plan is pending the following requirements:

- The Historic District Commission approves the application as proposed
- The applicant completes the required items listed under the "Conditions of Approval for Final Forest Conservation Plans."
- The applicant completes the required items listed under the "Forestry Permit" section in this letter.

FOREST AND TREE PRESERVATION ORDINANCE (FTPO) REQUIREMENTS

The proposed Final Forest Conservation Plan/Tree Save Plan submission to the City requires compliance with the City of Rockville's FTPO. The City's Community Planning & Development Services office approved a Natural Resources Inventory/Forest Stand Delineation plan on January 19, 2022.

FOREST CONSERVATION

The forest conservation requirement for this project is based on the following:

- Tract area: 4.68 acres
- Site zoning: MXD/Park
- Existing forest: None
- Afforestation required: .70 acres

*Project is identified as a linear project and is exempt from afforestation and minimum tree cover requirements.

FOREST CONSERVATION

As a linear project as defined in the Forest and Tree Preservation Ordinance, this project is exempt from both afforestation and minimum tree cover.

MINIMUM TREE COVER

The project is exempt from minimum tree cover due to its' status as a linear project.

SIGNIFICANT TREES/SPECIMEN TREES

Significant trees are defined as trees located outside of a forest and being 12" DBH (diameter at breast height) and trees located within a forest and being 24" DBH and greater. Specimen trees are defined as trees with a diameter equal to or greater than 30" DBH or trees that are 75% of the diameter of the state champion tree of that species. The application is proposing to remove a total of 4 significant trees from the property, of which, 3 are specimen trees. Staff notes that 2 of the specimen trees are Silver Maples that are in decline and should be removed for maintenance reasons.

**Significant Trees**

The project proposes to remove 4 significant trees from the property. The replacement requirement is 20 trees to be planted on the property which is being met with the applicant's proposed plan.

STREET TREES

The project has frontage on Frederick Road, which is a state highway authority (SHA) right of way. The plan is not depicting any street tree removals.

Street tree removals and proposed plantings within jurisdictional right of ways outside City limits must be approved by the corresponding jurisdictional authority.

CONDITIONS OF APPROVAL FOR FINAL FOREST CONSERVATION PLANS

A Final Forest Conservation Plan must be reviewed and approved by the City with signature site plan submission and prior to release of any Building, Forestry and DPW permit associated with site plan submission. The Final FCP shall be generally consistent with the PFCP and approval letter and provide tree plantings consistent with outlined requirements.

Final FCP and site plan must comply with FTPO and Zoning Ordinance. In addition to compliance with applicable codes, the following specific directives must be followed:

1. Ensure tree plantings meet minimum spacing requirements, which include:
    a. Shade trees spaced 20 feet apart, large, or small evergreens and ornamental trees spaced 15 feet apart. Shade trees 15 feet from ornamental trees. Spacing between evergreens and shade trees is either 15 or 20 feet, as determined by the City because distance is dependent on the growth habit of the evergreen, which is species/cultivar specific.
    b. 10 feet from wet and dry utilities, except when these are under streets.
    c. 15 feet from street lights and driveways (DPW to provide requirements for sight distances and stop signs)
    d. 10 feet from inlets.
    e. Shade trees and large evergreens shall be spaced a minimum of 7 feet, and ornamental trees and small evergreens to be spaced a minimum of 5 feet from micro bioretention underdrain pipes (6" diameter and smaller)

f. Street trees can be planted over stormwater conveyance pipes when pipes have a minimum of 4 feet of cover and are immediately behind the curb.
g. Trees planted to meet FTPO or other forestry requirements on the site may not be located within existing or proposed easements (excluding forest conservation easements).

2. Use current city tree tables, FTPO notes and details.
3. Soil augmentation per the city's Forest and Tree Preservation Ordinance Notes will be required prior to installation of new trees within existing green space or where pavement was previously located. The current ordinance notes at the time of Final FCP submission shall be included on the Final FCP.
4. **Applicant must obtain Historic District Commission approval for the project as proposed prior to Final Forest Conservation Plan approval.**

FORESTRY PERMIT

The applicant is required to obtain a Forestry permit prior to forestry sign off on any sediment control permit and building permit associated with the site plan. The following items are required before issuance of the Forestry permit:

- Submission of the FTP permit application and fee.
- Approval of a Final Forest Conservation Plan which is consistent with the items listed in this letter under "Conditions of Approval for Final Forest Conservation Plan."

Any significant modification or revision to the project must be submitted to City staff for review and approval in addition to any Historic District approval required.

Sincerely,

Shaun Patrick Ryan

Digitally signed by Shaun Patrick Ryan
DN: C=US, E=sryan@rockvillemd.gov, O=City of Rockville, OU=Principal Planner, CN=Shaun Patrick Ryan
Date: 2025.05.25 18:43:03-04'00'

Shaun Ryan
Principal Planner – Landscape Architect
City of Rockville, Maryland

Cc:

John Foreman, Development Services Manager
Chris Henry, Recreation and Parks

# FORESTRY PERMIT

**DATE OF ISSUE:** 12/15/22
**PERMIT #:** **FTP2022-00012** **EXPIRATION DATE:** 12/15/2024

**PERMITEE:** **DEPARTMENT OF RECREATION AND PARKS**
**ADDRESS:** **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

**PHONE:** **Primary:** **240-314-8608**

**Project Name:** 16100 FRED. RD & 1101 GND CHMP **SITE ADDRESS:** 16100 FREDERICK RD
**SUBDIVISION:** KF BAILEYS COMMONS **LOT:** **BLK:** A

**PROJECT DESCRIPTION:**

NRI/FSD and FCP application for King Farm Farmstead to be completed by the Department of Recreation and Parks.

**THIS PROJECT REQUIRES THE FOLLOWING:**

**PRECONSTRUCTION MEETING**
**SIGNIFICANT TREE REMOVAL**
**ROOT PRUNING**
**TREE PRUNING**
[redacted]
**TREE PROTECTION FENCE**
**TREE PROTECTION SIGNAGE**
[redacted]
**PREPLANTING MEETING**

**SIGNIFICANT TREE PLANTING**
**ON-SITE PLANTING**
[redacted]
**POST PLANTING INSPECTION**
**POST CONSTRUCTION MEETING**
[redacted]
[redacted]
[redacted]
[redacted]
**OTHER**

**CONDITIONS:**

1. The project must be built in accordance with the approved FCP dated 9/16/2022 and 11/17/2022. Failure to build per these plans may result in delays obtaining an Occupancy Permit.
2. This permit is for the construction and improvements related to FTP2022-00012. FTP2022-00012 encompasses two projects on the subject parcel. The first project is utility work involving water and sewer improvements. The second project is for a 47 space parking lot with associated infrastructure.
3. You must notify MISS UTILITY at 1-800-257-7777, 811, or at www.missutility.net at least 48 hours prior to construction.
4. Schedule a pre-construction meeting with the Forestry Inspector, Natasha Shangold at nshangold@rockvillemd.gov and the Senior Sediment and Erosion Inspector, Arthur Simpson at 240 314-8879 or asimpson@rockvillemd.gov. No clearing, grading, or tree removals may be done prior to this meeting.
5. All tree work, including removals, tree protection measures, and stress reduction measures shall be performed by an arborist who is both a Maryland Licensed Tree Expert (LTE) and an ISA Certified Arborist. Proof of these certifications must be provided to the Forestry Inspector.
6. Provide any additional tree save measures as directed by the Forestry Inspector.
7. The applicant is required to schedule a pre planting meeting with the Forestry Inspector prior to installing any plant material. The tree locations must be staked in the field prior to this meeting.
8. All landscape material must be installed per the approved Landscape and Forest Conservation Plan. No substitutions are permitted without prior written permission of the City Forester.
9. Apply approved wildlife protection to newly planted trees as directed by the Forestry Inspector. Deer protection is REQUIRED.
10. This permit is for Forest Conservation only. All work must comply with the approved plans dated 9/16/2022 and 11/17/2022 and all plan revisions, including field changes must be reviewed and approved by Forestry inspector.
11. All work covered by permit must be completed by the expiration date which is two years from date of issuance. Requests for extensions must be submitted in writing to the City Forester 30 days prior to the permit expiration date justifying the permit extension.

THIS PERMIT AUTHORIZES THE ABOVE DESCRIBED CONSTRUCTION SUBJECT TO ALL APPLICABLE LAWS, REGULATIONS, TERMS, AND CONDITIONS HEREIN AND ELSEWHERE

APPROVED: Shaun Patrick Ryan Digitally signed by Shaun Patrick Ryan DN: C=US, E=sryan@rockvillemd.gov, O=City of Rockville, OU=Principal Planner, CN=Shaun Patrick Ryan Date: 2022.12.15 13:51:59-05'00' 12/15/22
Principal Planner - Landscape Architect

REV: FFTPPRM 12/15/22 CRD 12/15/22

# FORESTRY PERMIT

**DATE OF ISSUE:** 12/15/22
**PERMIT #:** **FTP2022-00012** **EXPIRATION DATE:** 12/15/2024

**PERMITEE:** **DEPARTMENT OF RECREATION AND PARKS**
**ADDRESS:** **111 MARYLAND AVENUE**
**ROCKVILLE MD 20850**

**PHONE:** **Primary:** **240-314-8608**

**Project Name:** 16100 FRED. RD & 1101 GND CHMP **SITE ADDRESS:** 16100 FREDERICK RD
**SUBDIVISION:** KF BAILEYS COMMONS **LOT:** **BLK:** A

**PROJECT DESCRIPTION:**

NRI/FSD and FCP application for King Farm Farmstead to be completed by the Department of Recreation and Parks.

**ENGINEER:** **Primary:**
**ADDRESS:** (W) (H) (F)

**PHONE:**

| ESTIMATED COST OF WORK: | PERMIT FEES: | | AMOUNT OF SECURITY: |
|---|---|---|---|
| **PLANTING:** | Permit Fee | $0.00 | **PLANTING:** |
| **OTHER:** | Permit Fee | $0.00 | **OTHER:** |
| | Pre FCP | $0.00 | **BOND:** |
| | Permit Fee | $0.00 | **L OF C:** |
| | | | **CASH:** |
| | | | **OTHER:** |
| | **TOTAL FEES:** | $0.00 | |

THIS PERMIT AUTHORIZES THE ABOVE DESCRIBED CONSTRUCTION SUBJECT TO ALL APPLICABLE LAWS, REGULATIONS, TERMS, AND CONDITIONS HEREIN AND ELSEWHERE

APPROVED: Shaun Patrick Ryan Digitally signed by Shaun Patrick Ryan DN: C=US, E=sryan@rockvillemd.gov, O=City of Rockville, OU=Principal Planner, CN=Shaun Patrick Ryan Date: 2022.12.15 13:51:59-05'00' 12/15/22
Principal Planner - Landscape Architect

REV: FFTPPRM 12/15/22 CRD 12/15/22

City of Rockville
111 Maryland Ave
Rockville, Maryland 20850-2364

Inspection Services Division
240-314-8240
TTY 240-314-8137

# ELECTRICAL PERMIT

PERMIT #: 2023-4655-ELL

DATE OF ISSUE: **03/28/2023**
DATE OF EXPIRATION: **10/24/2024**
TYPE OF BUILDING:

PROPERTY OWNER: **MAYOR & COUNCIL OF ROCKVILLE**
ADDRESS: **111 MARYLAND AVE**
**ROCKVILLE, MD 20850**

DAYTIME PHONE: **(240) 314-8608**

SITE ADDRESS: **16100 FREDERICK RD**
UNIT/SUITE NUMBER:

ZONING: PD SUBDIV: 0503 LOT: BLK:

PROJECT DESCRIPTION: **Electrical infrastructure upgrades to the King Farm Farmstead**

ROUGH WIRE OUTLETS:
FIXTURES: **1**
HEATING/COOLING UNITS:
CABLE HEATING UNITS:
LOW VOLT:

MOTORS <= 1hp
**hp:**
**hp:**
**hp:**
**hp:**

MOTORS > 1hp:

SERVICES/METERS/SUBPANELS

| | |
|---|---|
| <=225 | amp: 1 |
| 225-400 | amp: 1 |
| 401-1000 | amp: 2 |
| >1000 | amp: 0 |

POLE CONSTRUCTION SERVICES:
TRANSFORMERS

| | |
|---|---|
| <200 | kva 0 |
| 200-500 | kva 1 |
| >500 | kva 0 |

REPLACEMENT METERS >5:
SIGNS:
PROTECTIVE SIGNAL CIRCUITS:
PNEUMATIC CIRCUITS:
SMOKE DETECTORS:

PERMIT FEE:

CONTRACTOR: **Undetermined - Undetermined Undetermined**
ADDRESS: **Undetermined**
**Undetermined, MD**

DAYTIME PHONE:
LICENSE #:

Kina Campbell

Approved by: Kina Campbell, Chief of Inspection Services

PERMIT DOES NOT AUTHORIZE ANY CONSTRUCTION IN PUBLIC RIGHT-OF-WAY.
PERMIT VOID IF CONSTRUCTION IS NOT STARTED WITHIN 6 MONTHS OR ABANDONED FOR 6 MONTHS. PERMIT VOID IF ZONING ORDINANCE IS VIOLATED.

ATTENTION

This permit must be posted on the job site. City of Rockville inspectors will not conduct inspections without a posted permit. Failure to post permit will result in the issuance of re-inspection fees.

/Permit/ElectricalPermit

Appendix D

# PERMIT CONDITIONS

1. APPROVEDPLANS, WITHCOMMENTS,MUST BERETAINED ONTHEJOB UNTILTHEFINALINSPECTION HASBEEN MADE. NOBUILDING OR SPACE SHALLBE OCCUPIED UNTIL ALLREQUIREDFINALANDOCCUPANCYINSPECTIONS HAVE BEENMADEWHEREAPPLICABLE. NOINSPECTION WILLBEMADEWITHOUTTHEAPPROVEDPLANS ONTHEJOB SITE.

2. Thispermit conveysnoright to occupy anystreet, alley or sidewalkorany partthereof, either temporarily or permanently. TheCitymust approveencroachmentsonpublicproperty not specificallypermitted under thebuilding code. Streetor alleygrades as well asdepthandlocation of publicsewersmay beobtainedfrom theDepartment of PublicWorks. Theissuanceof thispermit doesnotrelease theapplkant from theconditionsofany applicable subdivision restrictions.

3. TheCity of Rockvillereservesther ht to reject any work whichhasbeenconcealed orcompleted without firsthaving beeninspectedandapproved for complianceto variouscodesby theInspectionServicesDivision.

4. A deviation from the approvedplansmust beauthorizedby theapproval ofrevised plans subject to the same procedureestablished forthe examinationof the or inalplans. Thisrevisionapprovalmust beobtained priorto the proposedchangesbeingmadein the field.

5. Permitsbecomeinvalidif constructionworkisnot startedwithin sixmonths from datethepermitis issued. Ifwork doesnot continue toprogress, thepermit will becomeinvalid six months after thelast inspectionapprovalis made.

6. All items noted onthejobinspectionrecordmust be approvedands ned by theappropriate agenciesandtheCity. It willbe the owner and/or contractor'sresponsibilityto seethat thevariousinspectionsarecalled for andapproved.

7. Approval of theseplansand/or specificationsby theInspectionServicesDivisionSHALLNOTnecessarilymean that these plans or specifications, arein full compliance with theCity ofRockvilleBuildingCode,FireCode, and other Lawsor Ordinances.

8. TheARCHITECT/DESIGNERor ENGINEERcertifying theseplans is charged withresponsibilityforthecompliance of the plans with theBuildingCode, FireCode, andotherLawsandOrdinances. Issuanceof a permit doesnot constitutea waiveror variancefrom a law ordinancegoverning thisconstruction.

9. Theissuanceofa permit shallnot prevent theInspectorfromthereafter requiring acorrectionof error or violationin plans or construction. Thearchitect or engineershall filea verifiedreport at completion of constructionthat the structure hasbeenerected inaccordance with theapproved plansand all applicable ordinances. All reportsshallbear the seal signed by theArchitect/Engineer. (Nophotocopy).

10. Approval ofapplicationandissuanceofapermit doesnotsupersedea required approvalsby anarchitectural reviewcommitteefor residentialpropertieswithrestrictivecovenants.

11. Theapplicant, owner, and/oroperator of theproperty addressunder thispermit, herebyconsentstoallnecessary inspections madeby the City ofRockvilletoenforceallexistingcodes, ordinances, and/orregulationsof the City of Rockville.

12. Thispermit doesnot relievethe owners,or any personinpossessionor control of thebuilding, from obtaining such other permitsorlicensesasmay be prescribed by law for theusesor purposesfor which thebuildingis designed or intended; nor from complyingwith a lawful order issued with the object ofmaintainingthe buildingina safeor lawful condition.

Any individualswith disabilitieswhowouldlike toreceivetheinformationin thispublicationin another formmaycontact the ADA Coordinatorat 240-314-8100;TDD240-314-8137.

Cualquier personaincapacitadaquedesearecibir lainformaci6ndeestapublkaci6n enalgunaotra formapuedecomunkarseconel coordinadordeADA enel telefono240-314-8100;TDD240-314-8137.

RevoroOf/08/11

pepco.com

**Rockville, Maryland *Office***
201 West Gude Drive
Rockville Maryland 20850
Tel: 301-670-8700/Fax: 301-670-8718

Date: 10/27/2022

Henry Adams, LLC
600 Baltimore Ave, Suite 400
Baltimore, MD 21204
Attention: Travis J. Polletto, PE

Re: Project Address: 16100 Frederick Rd
Gaithersburg, MD 20877
WO# 17822971
King Farm Electrical Upgrades

Dear Mr. Polletto,

## I. Review and Approval:

We have reviewed the structural facility drawing(s) for the subject project. These are approved, with additions in red, insofar as Pepco requirements are concerned. Any additional changes must be made and a reproducible drawing submitted to us before we can initiate the design of our job to install the transformer(s), cable, and other facilities to serve this project. (See also the enclosed list of conditions).

**In additional to this approval, it is ultimately the Customer's responsibility to provide a conduit system on the project's property that will enable Pepco to provide the requested services.**

## II. Material List:

We have identified the following key materials for your project. It is your responsible to purchase and install the structural facilities in a timely manner and to allow Pepco sufficient time to complete our installation activities to meet your service needs. Please contact the suppliers as soon as possible as some of these materials have an estimated lead time of ten (10) weeks or longer

| QUANTITY | MATERIAL# | DESCRIPTION |
|---|---|---|
| 1 | 9712-0718 | Steel cable pulling eye, galvanized, 9 1/4" x 9 3/8" |
| 2 | 9713-0112 | Ground Rod CUweld .625x8 |
| 2 | 9713-0113 | Clamp Grd-rod Brnz HD .625 |
| 1 | 9718-8043 | Fiberglass Splice Box w/lid, 520 lbs. |
| 1 | 9721-0208 | Frame, Steel, for Sidewalk MH Roof (6'x14' MH), 564 lbs. |
| 3 | 9721-0648 | Slab, Conc. Sdwk. (2'x6'10"), 850 lbs. |
| 2 | 9721-0663 | Conduit Slab Pan, Concrete,4' Door Grate (4'x6'10"), 850 lbs. |
| 1 | 9721-0669 | Spacer for Sdwk. MH (2.5"x3.5"), 43 lbs. |
| 4 | 9721-0869 | 4" duct. 90 degree x3' radius bend |

pepco
AN EXELON COMPANY

## III. Pre-Construction and Inspection:

Installation of the structural facilities will be subject to Pepco inspection and approval before encasement and concealment. Failure to obtain such inspection will result in the uncovering of facilities at the customer's expense. All corrections/ modifications, if any, must be completed and approved by Pepco before concealment.

Please use the following area assignments and contact us **two weeks in advance** to arrange for a pre-construction meeting and schedule inspections. **For inspection call two days in advance.**

**For the Montgomery County:**

**Planner/Scheduler: Michelle Suggs at MSuggs@pepco.com (301)-548-4341**
**Inspector: Wayne Josey at wjosey@pepco.com (202) 702-3605**

If you have any questions regarding this matter or require additional information, please contact me at the number or email below.

Sincerely,

Name: Benet Tribble
Title: Distribution Designer
Address: 201 W Gude Dr, Rockville, MD 20850
Phone Number: 410-294-1110
E-mail: BTribble@pepco.com

CC:

JB Spear (letter)
JB Sales Company Inc.
7957 Industrial Park Rd
Easton, MD 21601
Ph: 410-822-9611, Cell: 410-924-0752, jbspear@jbsales.com

pepco
AN EXELON COMPANY

# Conduit Notes and Conditions

1) Conduit within building or property line to be furnished, installed, and maintained by the customer.

2) Customer to obtain all permits/permissions by others on private property.

3) 4" PVC schedule 40 for the service conduit.

4) Sweep bends must have a radius of no less than 36".

5) No more than 180 degrees of bends in duct line.

6) Conduit to have a minimum of three feet (3') of cover (top of duct to finished grade) or as specified by Pepco.

7) Conduit to be built in accordance with Pepco Specification Drawings N0.6-2-480

8) No metallic materials (rebar, hold-down wires, etc.) shall be permitted in spaces between each individual duct.

9) Customer is to terminate his duct run with standard 4" couplings and plugs.

10) All materials used are to conform to Pepco specification.

11) Customer is to use 3000 psi concrete with pea gravel for duct encasement.

12) Customer to rod all conduits, clear any obstructions and provide pull lines prior to the installation of Pepco cables.

13) The Customer is to coordinate the installation of all backfill in the vicinity of Pepco work with Pepco construction forces.

14) The backfill for our equipment should conform to the District of Columbia Department of Transportation "Standard Specifications for Highways & Structures".

Section 203 (Soils Construction - General)
Section 207 (Trenching Excavation and Backfill)
Section 804 (Aggregates for Soils and Base Course Construction)

15) Pepco's Construction Division is to be notified 2 weeks in advance to arrange a pre-Construction meeting& 3 days in advance to schedule a conduit inspection and approval.

16) Work to be done in manner acceptable to Pepco and inspected by our Customer Construction Division before encasement or backfilling.

17) Customer is to install 5000 # capacity (dynamic weight) pulling eyes in electric room opposite of duct entrance.

18) Pepco's Construction Phone Number 202 388-2665

**Engineering and Design– DC**
3400 Benning Road, NE; Bldg. #59
Washington, DC 20019-1503
Tel: 202-331-6237/Fax: 202-388-2721

**Engineering and Design – Mont. Co.**
201 West Gude Drive
Rockville, Maryland 20850
Tel: 301-670-8700/Fax: 301-670-8718

**Engineering and Design – PG Co.**
8300 Old Marlboro Pike
Upper Marlboro, MD 20772
Tel:301-967-5800/Fax:301-967-5830

Rockville
Get Into It

111 Maryland Avenue | Rockville,Maryland 20850-2364 | 240-314-5000
www.rockvillcrnd.gov

August 2, 2022

City of Rockville Recreation and Parks Department
c/o Tim Chesnutt, Director of Recreation and Parks
111 Maryland Avenue
Rockville, MD 20850

Re: Certificate of Approval HDC2022-01074, 16100 Frederick Road, King Farm Farmstead

Director Chesnutt:

On June 16, 2022, the Historic District Commission (HDC) approved Certificate of Approval for application HDC2022-01074 which proposed to install water and sewer utilities at the King Farm Farmstead. The HOC found that the application meets the *Secretary of the Interior's Standards for Rehabilitation under criteria #1, #2, and #9.*

The following month, on July 21, 2022, the HOC approved Certificate of Approval for the above-referenced application which proposed construction of a forty-seven (47} space parking lot. The HOC found that the work meets adopted *Rockville Technical Guide #7 - Landscaping and Trees, and #8 - Off-Street Parking.* The HOC likewise conditioned project approval that no less than four (4) of the required replacement tree plantings will be a minimum of 4" caliper at the time of planting in order to provide more immediate canopy replacement for the farmstead.

This letter serves as your HOC Certificate of Approval only. Please note that Section 25.07.13.e of the City of Rockville Zoning Ordinance specifies that this Certificate of Approval becomes void if the work has not commenced within twelve (12} months of the date of approval. For good cause shown, the HOCmay grant two (2) time extensions of up to six (6) months each. Please contact the City of Rockville's Inspection Services Division (ISO}, at 240-314-8240 or permits@rockvillemd.gov, to inquire about other City permits that may be required for the project.

Please call 240-314-8200 to contact the City of Rockville Historic Preservation Staff at least one week before beginning the approved work. With your signature below, you (the applicant) agree to allow City Staff to enter the property to inspect the ongoing and completed work for compliance with the Certificate of Approval.

Sincerely,

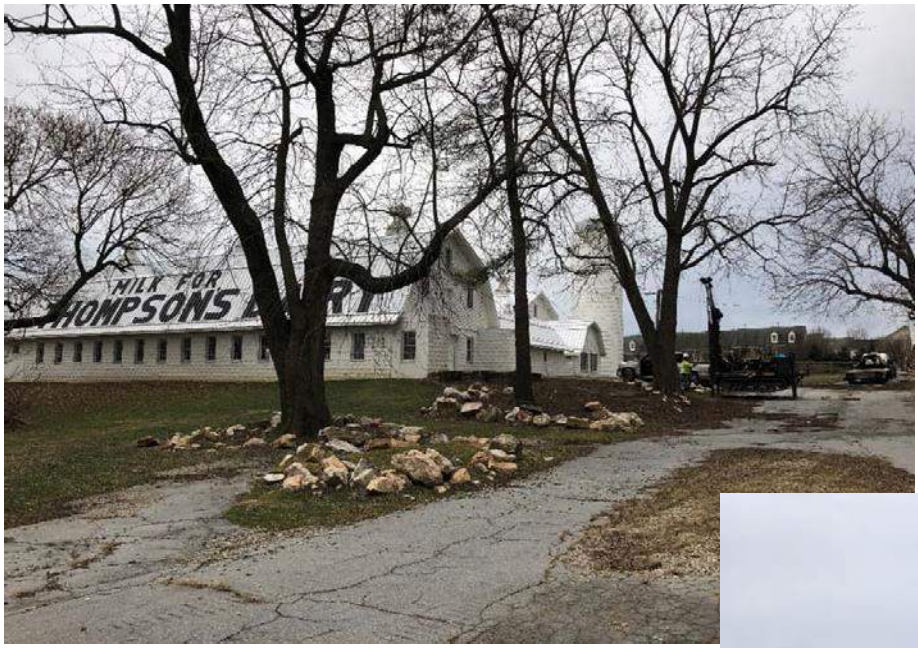
Director of Planning and Development Services

Please sign this letter of approval and return one copy to the Department of Community Planning and Development Services, Rockville City Hall, 111 Maryland Avenue, Rockville, MD 20850.

../ _____ /. d, es/lu/r

Applicant's Signature Applicant's Name Printed

cc: R. James Wasilak, Chief of Zoning
Historic District Commission
Mayor and Council of Rockville
Nancy Pickard, Executive Director of Peerless Rockville
Kate Gould, President of King Farm Community Garden
Pat Martin




# GEOTECHNICAL ENGINEERING MEMO REPORT

# KING FARM FARMSTEAD WATER & SEWER IMPROVEMENTS

## 1101 GRAND CHAMPION DRIVE, ROCKVILLE, MD

*KCI Project# 121906247.01*

Prepared for
Recreation and Parks Department
City of Rockville, Montgomery County, MD

Prepared by
KCI Technologies, Inc.

Date: January 2021

# GEOTECHNICAL MEMO REPORT

Direct: (410) 316-7888
Fax: (410) 316-7935

**To:** Mr. Mauricio Daza, Parks and Facilities Development Coordinator, Recreation and Parks Department, City of Rockville, MD (email: mdaza@rockvillemd.gov)

**Cc:** Jordan Rang, PE (Project Engineer, KCI-Water & Wastewater Engineering Practice)

**From:** KBA
Kofi B. Acheampong, D.GE, PhD, PE, ENV SP; Dennis P. Coyle, Snr. Scientist (KCI-Geotechnical Engineering Practice)


Exp. 12/18/22

**Date:** January 28, 2021

**Subject:** Geotechnical Subsurface Exploration and Evaluations
**King Farm Farmstead Water and Sewer Improvements**
1101 Grand Champion Drive
Architectural and Engineering Services - City of Rockville Agreement #18-18
City of Rockville, Montgomery County, Maryland
*KCI Project No. 121906247.01*

As requested, KCI-Geotechnical Engineering Practice (KCI) is pleased to submit this geotechnical memorandum report for the proposed water and sewer lines improvements at the existing King Farm Farmstead facility located at 1101 Grand Champion Drive in the City of Rockville, Montgomery County, Maryland. The site location map is shown on the attached Figure 1 (Appendix A). The facility is owned by the Department of Recreation and Parks, City of Rockville.

This report contains the results of subsurface explorations, laboratory testing results, and geotechnical recommendations for design and construction of the proposed water and sewer line improvements.

## PROPOSED CONSTRUCTION

Our understanding of this project is based upon information provided to us by Jordan Rang of KCI. This information included the Preliminary *King Farm Farmstead Water and Sewer Improvements Plans* (dated 5/24/2011) and prepared by KCI; and revised plans by KCI (dated 10/2020). The plans show the proposed water and sewer lines profiles and alignment crossing the project site between Grand Champion Drive and Frederick Road (MD Route 355), west to east. In addition, the plans show existing and proposed site topography, with existing site features including several buildings, community garden area, gravel and paved access roadway crossing the project site. The proposed construction will consist of new water and sewer pipelines, about 10 feet horizontal or lateral separation, along an existing gravel and asphalt paved access roadway as discussed briefly below:

**Proposed Water Line**: The new water line includes 2", 4" and 8" DIP CL 54 polywrapped pipes over approximately 460 linear foot, between approximate waterline Sta. 0+00 and Sta. 4+60, from Grand Champion Drive on the west and along the access driveway within the facility. The proposed water pipe inverts will vary between approximate El. 513.2 and El. 499.0. The 8" DIP will be connected to a new 6"

FM Meter Vault (8'x6'x10' depth) with 4" bypass line. The meter vault is located within Washington Suburban Sanitary Commission (WSSC) right-of-way at Sta. 0+50 and connected to the existing 8" water near Grand Champion Drive. The pipe will be located a minimum of four feet below finished site grades.

**Proposed Sewer Line:** The new 8" SDR-35 sewer line will be located about 10 feet north of the water line, and span about 600 linear feet between approximate sewer baseline Sta. 0+00 and Sta. 6+00 from the existing manhole MHU029 located on Frederick Rd (MD Route 355 on the east. The proposed 8" pipe inverts will vary between approximate El. 510.88 and El. 488.54, west to east. The new sewer line will also include other appurtenant structures such as 4" diameter precast concrete manholes along the alignment. The sewer line will be located at a minimum of four feet below finished site grades.

Proposed water and sewer pipeline construction will include conventional cut-and-cover excavation and trenching methods. Pipe line installations will typically entail excavations of less than 5 feet; however, deeper excavations in excess of 5 feet and/or up to 10 feet or more can occur locally at substructures (such as FM meter vault and manhole) locations.

## SCOPE OF SERVICES

The purpose of the subsurface exploration along the water and sewer pipeline alignments was to determine the characteristics of the site-specific soil conditions, and identify potential bedrock (if any) and groundwater depths (if encountered), and provide the following:

- Brief review and description field and laboratory test procedures conducted and results;
- Review of subsurface soil and groundwater conditions encountered with strata descriptions;
- Depths to bedrock and rock excavation and rippability properties (if encountered);
- Discussions of geotechnical issues;
- Foundation recommendations for the water and sewer pipeline bedding and subgrade; and
- General construction recommendations for site/subgrade preparations, re-use site soils, compaction requirements, excavation difficulties, and temporary groundwater control.

Note that assessments of site environmental conditions or the presence or absence of pollutants in the soil, rock, surface water, or groundwater of the site were beyond the proposed objectives of our exploration.

## EXISTING SITE CONDITIONS

KCI conducted site reconnaissance on December 24, 2020 and January 8, 2021 (during our subsurface explorations) to observe and document existing site features and surficial conditions. We used the information gathered during our site visit to help us interpret the subsurface data, and to detect conditions that could impact our evaluations and recommendations.

The project site is inside the existing King Farm Farmstead recreational park. The project site has several buildings including a maintenance facility, a barn, covered pavilion, farm shed, and a community garden. In addition, there are trees and shrubs, and a road that is asphalt paved on the northeast portion of the site and gravel paved on the southwest portion. There is a tree covered berm separating the park from Grand Champion Drive to the southwest. Site topography is generally level and slopes gently downward to the northeast and southeast, the elevation ranges from approximately (El.) 525 to Del. 480. The ground surface is generally covered with grass with the exception of asphalt and gravel paved access roads.

We noted evidence of buried utilities (pins flags and paint marking) to the southwest of the existing

house. We did not observe evidence of rock outcropping, water ponding, or unstable ground conditions.

## GEOLOGIC SETTING

Based on the *Physiographic Map of Maryland* (2008), the project site is located within the Hampton Upland District of the Upland Section of the Piedmont Plateau Physiographic Province. The Piedmont Plateau Physiographic Province lies to the east of the Blue Ridge Mountains and to the west of the Fall Line, and consists of crystalline metamorphic and igneous rock. Bedrock in the eastern part of the Piedmont consists of schist, gneiss, gabbro, and other highly metamorphosed sedimentary and igneous rocks of probable volcanic origin. Soils of the Piedmont Plateau are typically developed from materials weathered in place from igneous and metamorphic rocks.

According to the *Geologic Map of the Frederick 30' x 60' Quadrangle, Maryland, Virginia, and West Virginia (2007),* the specific geologic unit underlying the site is the Cambrian-aged Migmatite Member (ЄZmm) of the Mather Gorge Formation. The Migmatite Member typically consists of light to dark gray, quartz and mica rich migmatie formed from the partial melting of schist and metagraywacke.

According to the *Natural Resources Conservation Service (NRCS) Web Soil Survey* mapping, site soils are mapped predominantly as Glenelg silt loam (2B). Glenelg silt loam typically consists of well drained clay loam, silt loam, and loam with 3 to 8 percent slopes that are classified as Hydrologic Soil Group "B".

## SUBSURFACE CONDITIONS

**Subsurface Exploration Program**: KCI's drilling subcontractor, CenKen Group, performed four borings using a CME 45 ATV-mounted drill rig at the site on January 8, 2021. KCI designated the borings as B-1 through B-4. Approximate boring locations are provided on Figure 2 (Appendix A). We advanced the borings to a depth of 10 feet below existing ground surface (bgs) as indicated in Table 1 below.

**Table 1: Summary of As-Drilled Test Borings**

| Prop. Feature | Boring No. | Boring Depth (ft) | Ex. GS Elev.* (ft) | Groundwater Depth (ft) | | Cave-In Depth (0-hr) (ft) |
|---|---|---|---|---|---|---|
| | | | | in Augers During Drilling | 24-hours after Drilling** | |
| Water FM Vault | B-1 | 10 | 519.5 | NE | NR | 8.0 |
| Sewer | B-2 | 10 | 517.0 | NE | NR | 8.0 |
| Sewer | B-3 | 10 | 508.0 | NE | NR | 7.0 |
| Sewer | B-4 | 10 | 498.6 | NE | NR | 7.0 |

**NOTES:** NE = Not encountered; NR = Not recorded.
* Existing Ground Surface Elevations estimated from site topographic plan.
** Due to safety concerns, borings were backfilled immediately after drilling, 24-hour readings were not recorded.

**Standard Penetration Test (SPT) Borings:** We performed standard penetration test (SPT) sampling in general accordance with ASTM D 1586 test method using Hollow Stem Augers (HSA). The SPT method consists of advancing a two-inch diameter sampling spoon 18 inches by driving it with a 140-pound automatic hammer falling 30 inches. The values reported on the boring logs are the blows required to

advance three successive six-inch increments. The first six-inch increment is considered as seating. The sum of the number of blows for the second and third increments is the "N" value. The "N" value is used to determine the relative density or compactness of the soil.

We obtained representative soil samples and used them to classify the soils encountered. We placed recovered representative disturbed soil samples in six-inch glass jars and transported them to the laboratory for testing. A KCI geotechnical engineer visually classified the recovered soil samples in general accordance with *ASTM D 2488 Standard Practice for Description and Identification of Soils*. We classified soil samples with respect to texture based on the Unified Soil Classification System (USCS) in accordance with ASTM D2487. Boring logs describing the subsurface soils and groundwater conditions encountered are provided in Appendix B.

**Bulk Soil Sampling:** We obtained disturbed bulk samples brought to the surface by the mechanical augers within the upper eight feet of borings B-1 and B-4.

**Subsurface Profile:** The subsurface conditions encountered at the boring location is shown on the attached boring log, and generalized subsurface profile depicted on Figure 3 (Appendix A). The boring logs and profile represent our interpretation of the subsurface conditions based on visual examination of recovered soil samples and laboratory tests. The lines designating the interfaces between various strata represent the approximate interface locations. Actual strata transitions will be gradual.

In general, the borings encountered existing Fill materials and Natural Soils below a 1 to 2-inches of topsoil. However, *we did not encounter weathered rock or bedrock within the boring termination depths.* Subsurface conditions are described below with increasing depth:

- ***Stratum I: Existing Fill:*** Possible existing FILL materials were encountered in borings B-1 and B-3 and occurred up to about 2 feet bgs in B-1 and up to about 6 inches bgs in B-3. The fill consisted of damp, brown, micaceous Sandy SILT (ML) with trace Gravel; and occasional damp, dark brown, tan, Sandy Quartz GRAVEL (GP) with trace Silt. The SPT N-value was 5 blows per foot (bpf), indicating medium stiff consistency.

- ***Stratum II: Natural Soils - Sandy SILT (ML) and Silty SAND (SM):*** We encountered residual natural soils below the existing topsoil or existing Fill. Residual natural soils consisted of damp, brown, gray, and reddish brown, natural micaceous Sandy SILT (ML) with varying amounts of Gravel to the boring termination depths. In boring B-3 below the Silt we encountered damp, brown, gray, micaceous Silty SAND (SM) with trace Gravel from 8 feet bgs to the boring termination depth at 10 feet. The SPT N-values ranged from 5 to 26 bpf, indicating medium stiff to very stiff consistency; or medium dense compactness. Tested soil samples ranged from non-plastic (NP) to slight plasticity (PI=4), and the moisture contents from about 10 to 28 percent.

**Groundwater and Cave-in Conditions:** As provided in Table 1 above, we monitored only short-term groundwater levels and cave-in depths during the period of fieldwork. We did not encounter groundwater or wet soils during drilling. Borehole caved-in occurred between 7 and 8 feet bgs after removing augers. Cave-in may be due typically to collapse of loose/soft soils after removing augers at completion of drilling. However, in granular soils, cave-in could be due to the presence of saturated soil conditions due to groundwater and or perched water (or trapped) conditions.

Fluctuations of the groundwater levels and/or perched water may occur due to in-situ soil types and characteristics, existing ground cover, site topography and drainage conditions, presence of water body,

variations in rainfall, evaporation, construction activity impacting ground conditions and surface runoff, and other site-specific factors not present at the time of drilling.

**SOILS LABORATORY TESTING**

**Index Test Results:** We performed grain size analyses, Atterberg limits (liquid and plastic limits), and natural moisture contents on selected soil samples in accordance with ASTM standards. Detail lab test results are provided in Appendix C. Table 2 below is a summary of the lab index test results.

**Table 2: Summary of Soil Gradation and Index Test Results**

| Boring / Sample No. | Depth (ft) | Description | LL (%) | PI (%) | NMC (%) | Fines (%) | USCS |
|---|---|---|---|---|---|---|---|
| B-1 / Bulk | 0 - 8 | Micaceous Sandy SILT | NP | NP | 11 | 57 | ML |
| B-1 / S-5 | 6 - 8 | Micaceous Sandy Silt | - | - | 16 | - | ml |
| B-2 / S-3 | 4 – 6 | Micaceous Sandy Silt | - | - | 15 | - | ml |
| B-2 / S-5 | 8 - 10 | Micaceous Sandy Silt | - | - | 13 | - | ml |
| B-3 / S-3 | 4 – 6 | Micaceous Sandy Silt | - | - | 15 | | ml |
| B-3 / S-4 | 6 – 8 | Micaceous Sandy Silt | - | - | 14 | - | ml |
| B-3 / S-5 | 8 – 10 | Micaceous Silty SAND | NP | NP | 12 | 36 | SM |
| B-4 / Bulk | 0 – 8 | Micaceous Sandy SILT | 34 | 4 | 15 | 58 | ML |
| B-4 / S-4 | 6 – 8 | Micaceous Sandy Silt | - | - | 28 | - | ml |
| B-4 /S-5 | 8 – 10 | Micaceous Sandy Silt | - | - | 16 | - | ml |

**NOTES: PI:** Plasticity Index**; LL:** Liquid Limit; **NMC:** Natural Moisture Content; **NP:** Non-plastic; **NV:** Non viscous; **Fines:** silt/clay content percent by weight passing US No. 200 sieve; **USCS:** Unified Soil Classification System - Laboratory classification results in UPPER CASE. All LOWER CASE classifications are visual.

In general, the laboratory test results indicate that the site soils are non-plastic with high fines content (typically greater than 35 percent by weight passing the US No. 200 sieve size).

**Moisture-Density Tests**: Table 3 below provides a summary of the standard moisture-density (ASTM D 698) testing results for two selected bulk samples.

**Table 3: Summary of Standard Proctor Moisture-Density Relationship**

| Boring No. | Sample Depth (ft) | Sample Description | Proctor Test | | NMC (%) | USCS |
|---|---|---|---|---|---|---|
| | | | MDD (pcf) | OMC (%) | | |
| B-1 | 0 – 8 | Micaceous Sandy SILT | 108.9 | 17.4 | 10.9 | ML |
| B-4 | 0 – 8 | Micaceous Sandy SILT | 107.0 | 18.4 | 15.3 | ML |

**NOTES: MDD:** Maximum Dry Density**; NMC:** Natural Moisture Content; **OMC:** Optimum Moisture Content

## GEOTECHNICAL EVALUATIONS AND RECOMMENDATIONS

Geotechnical evaluations are based on site reconnaissance, results of the subsurface exploration and soil conditions encountered at the site on 01/8/2021, and our experiences with similar subsurface conditions.

### Geotechnical Issues

We have identified the following geotechnical issues along the proposed sanitary sewer alignment on the basis of the described project characteristics and subsurface conditions encountered during our subsurface explorations. The geotechnical issues are discussed with recommendations below:

- Existing FILL Materials
- Micaceous Site Soils
- Presence of Existing Buried Utilities

***Existing Fill Materials:*** We encountered existing Fill materials along the proposed water and sewer alignments of up to about 2 feet bgs. The fill materials consisted of micaceous Sandy SILT (ML) with trace Gravel; and occasional Sandy GRAVEL (GP). We do not have fill placement records, however, we anticipate that the fill materials were likely derived from excavated on-site materials which were re-used as backfill for the original site developments. Typically, fills may likely contain localized undesirable materials such as organics, pockets of voids, and unstable zones characteristic of inadequate compaction. Other issues associated with uncontrolled fill include unpredictable and potentially excessive settlements and sudden collapse, potential for corrosion of metallic and steel structures, and unknown contamination.

We anticipate that as a matter of course, existing fill materials will be removed during pipeline construction to achieve proposed pipe inverts. However, if encountered at proposed pipe inverts, we recommend that the Engineer evaluate the exposed fill materials. Unsuitable fill conditions characterized by loose/soft and disturbed (pumping and shifting under load) and/or presence of deleterious materials, should be partially excavated to a suitable subgrade and replaced with compacted engineered fill. On-site fill materials desired to be re-used as compacted backfill should be evaluated and tested to meet the project requirements discussed in the construction recommendations section of this report.

***Micaceous Site Soils:*** Consistent with published geology, we encountered micaceous soils (both existing fill and natural soils), at the project site. Micaceous soils are residual and derived from weathering of the underlying parent bedrock. Such soils are highly erodible, sensitive to moisture (high swell potential, susceptible to freeze-thaw and frost action), prone to disturbance and instability with significant loss of shear strength when exposed to prolonged moisture, adverse weather conditions, and construction activities.

In addition, due to the relic structure and platy nature of mica combined with relatively high fines content, such soils are difficult to place and compact (to achieve the requisite in-place relative density to ensure long term stable conditions) if reused as backfill. Thus, reuse of micaceous soils as backfill will require extensive construction quality control and quality assurance. We recommend that the Contractor implement appropriate equipment, means/methods and provide adequate drainage measures during excavation and stockpiling of on-site soils to minimize disturbance and strength loss.

***Presence of Existing Buried Utilities*:** We anticipate that existing utilities at the site include buried water and sewer pipelines, electric and gas lines. We recommend that all active utility lines on site be located and clearly identified prior to construction. The Contractor should provide approved means/methods and measures to remove, bypass or penetrate any inactive utilities and foundations and substructures if

encountered during excavations work. In addition, all abandoned utilities left in place should be sealed using flowable backfill or cement grout.

**Utility Pipe Foundation Bearing Strata and Subgrade Preparations**

***Bearing Strata****:* As indicated by the test borings, the project site is generally underlain by inorganic natural soils consisting of micaceous Sandy SILT (ML) and Silty SAND (SM). Based on the proposed pipeline profile inverts, between approximate El. 499.0 and El. 513.2 for the *water line*, and between approximate El. 488.5 and El. 510.88 for the *sewer line*, and proposed embedment of 4 feet below existing site grades, we anticipate that both the water and sewer pipelines will be located within firm, natural micaceous Sandy Silt or Silty Sand stratum. In addition, our review of the project plans indicate that the proposed *WSSC 6" Water Meter Vault* will have its base at between El. 509 and El. 510. Per borings B-1 and B-2, the vault will be founded on firm micaceous Sandy SILT (ML) stratum.

For the conventional cut-and-cover pipe installations, we recommend that the pipelines with suitable bedding materials and depths should be placed on firm or densified inorganic subgrade soils, and/or on compacted No. 57 stone aggregate backfills.

***Pipe Bedding and Subgrade Preparations***: The water and sewer pipe beddings and subgrade preparations should conform to the pipe *manufacturer's design and construction recommendations*, and in accordance with the requirements of City of Rockville DPW County Standard Details, Montgomery County Standard Specifications, and WSSC Standard Details and General Conditions and Standard Specification.

The backfill materials must be placed with proper compaction and water control as described in the construction recommendations section of this report. We recommend the following guidelines be followed for subgrade preparation:

- Locate the pipes in firm or stable soils. If loose/soft subgrade and/or disturbed pockets of soil are encountered at the invert subgrade levels, they should be improved/densified in-place and/or undercut and replaced with compacted backfill and/or No. 57 stone aggregates. This will provide a *uniformly* firm subgrade and minimize *differential settlement issues* along the pipe alignment (especially at the pipe bents or concrete cradles). The depths of undercutting should extend a minimum of 12 inches below the pipe invert or substructure inverts. If needed, install geotextile separator (MDOT SHA Class SE) to prevent migration of finer particles prior to placing backfill.

- Due to the presence of micaceous site soils with relatively high fine contents, prolong exposure to moisture and adverse weather conditions can weaken the site soils at the bedding levels if the excavations remain open for a long time period. Therefore, the pipes should be laid and backfilled after the trenches are excavated as soon as practical. If the trench cannot be backfilled the same day as the excavation, then the excavation should be protected. If exposed soils are frozen or softened by water intrusion, it must be evaluated by a Geotechnical Engineer. If the soils are deemed disturbed or overly saturated, they should be removed from the excavation bottom and replaced with compacted No. 57 stone aggregates prior to placement of the pipes.

- *Rock Subgrade:* We did not encounter nor cored bedrock within the boring exploration depths. However, note that abrupt changes from soil subgrade to bedrock or hard foundation must be avoided. Where rock is encountered at foundation bearing levels, it must be removed (minimum 12 inches and up to 24 inches maximum; or in accordance with manufacturer's recommendations) to provide more than the minimum bedding thickness underneath the bottom

of the pipes. Excavate wide enough to avoid any possibility of the pipe resting directly on rock and provide access to adequately haunch the pipe. The excavated area should be backfilled with compacted granular fill to cushion the pipe.

- *Groundwater:* We did not encounter short-term groundwater or wet soil conditions during drilling in January 2021. In general, we do not expect groundwater will be encountered during construction excavations within about 10 feet. However, we encountered borehole cave-in at depths of 7 to 8 feet below ground surface. As previously discussed, cave-in could be due to collapse of loose/soft soils without support, and/or due to the presence of saturated soil conditions due to trapped or perched water. Thus, fluctuations in groundwater levels and can occur due to seasonal variations, impacts of rainfall and surface runoff, and construction activity. Moreover, due to the presence of micaceous site soils, where surface water runoff, perched water and/or groundwater are encountered during construction, we recommend temporary water control measures should be implemented to minimize disturbance of subgrade soils. If perched water and/or groundwater are encountered during construction, we recommend dewatering and overexcavation of any loose/disturbed soils and replacement with No. 57 stone aggregate layer.

## CONSTRUCTION RECOMMENDATIONS

Site utility water and sanitary sewer construction should be performed in accordance with the requirements of Montgomery County, City of Rockville DPW, and WSSC General Conditions and Standard Specifications.

**General Site Preparation**: The Contractor should locate and take precautions to protect existing underground utilities within the vicinity of the proposed construction prior to excavations and demolitions. The minimum clearance from existing utility lines should be 12 inches. Debris, organic materials and disturbed soils encountered during excavations should be removed from the construction area. During excavations, site drainage should be maintained to prevent the accumulation of water. If the exposed subgrade becomes excessively wet or frozen, or if conditions are encountered different from those described previously in this report, the geotechnical engineer should be contacted

We recommend that, prior to placing new fill, the exposed subgrade be proof compacted with appropriate construction equipment. The intent is to collapse near surface voids, densify loose/soft surface soils and/or detect unsuitable soil conditions. Proof compaction or densification should be performed with a hand operated compactor or other appropriate equipment and should be done after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade. Unsuitable or disturbed soils encountered during the site preparation, as determined by the geotechnical engineer or his representative should be either improved in place or undercut and replaced with compacted fill.

**Fill Materials and Placement Requirements:** The selection of fill materials used as approved selected and structural backfill, and the methods of placement and compaction and field density testing should be in accordance with the project specifications, City of Rockville DPW or Montgomery County standards.

Satisfactory backfill materials, proper placement and compaction are key factors in obtaining satisfactory performance for pipe installation in excavated trenches. In general, bedding materials beneath and around the water and sewer pipelines should be granular materials with little or no plasticity, and should be free from rocks, frozen lumps, and foreign matter that could cause hard spots or that could decompose and create voids. The materials should conform to suitable specifications recommended by the pipe manufacturer, City of Rockville DPW, Montgomery County or WSSC.

For pipe installations requiring trench-like conditions where compaction is obtained by hand, or walk-behind equipment, or by saturation and vibration, backfill materials should be clean, non-plastic materials that require little or no compactive effort (Unified Soils Classification GP or SP), or well graded granular material classified as GW, SW, GM, SP, SM, or GC with liquid limit of less than 30 percent and plastic index less than 6. Particles larger than three inches in diameter should not be included within two feet of final roadway subgrade. If groundwater is encountered above or at proposed invert levels, we recommend using No. 57 Stone Aggregate or any other suitable material approved by the geotechnical engineer.

***Re-Use of On-Site Soils***: Excavated on-site soils from trenches may be suitable for potential reuse as compacted fill above the pipelines if approved by the geotechnical engineer. According to boring records and laboratory test results, the majority of on-site soils are micaceous Sandy Silt, and could be challenging for reuse as compacted backfill due to the prevalence of mica and high fines content. Unsuitable excavated soils should be replaced with select borrow material meeting the project requirements. The reuse of on-site soils for backfill will require extensive quality control during construction including additional lab testing, field moisture conditioning during excavation and stockpiling with protection against rainfall events and prolong exposure to moisture.

***Compaction Requirements***: To facilitate soil compaction immediately above utility pipes, it will be necessary to cover them with a minimum of 6 inches of crushed stone or 12 to 24 inches of select backfill material. Where trench boxes are used, the excavation should be backfilled with coarse granular materials to the elevation where typical earthwork equipment can be used to properly place and compact soil backfill. Select backfill below and around the pipe should be placed in 8-inch lift loose thickness. We recommend that compacted fill above the select backfill or crushed stone be constructed by spreading acceptable soil in loose layers not more than 8 inches thick.

For trenches outside the right-of-way of County roads, compact backfill to minimum 90 percent following ASTM D1557 or 92 percent of ASTM D698. Within State road rights-of-ways, following ASTM D1557 compact soils to 97 percent within the top 1 foot of the final roadway subgrade, and 92 percent from one foot below final roadway subgrade to the top of the pipe bedding. Within County road right-of-ways and other paved areas, following ASTM D698 compact soils to 100 percent within the top 1 foot of the final roadway subgrade, and 95 percent from 1 foot below final roadway subgrade to the top of the pipe bedding. The moisture content of the fill should be maintained within 2 percentage points of the optimum moisture content determined from the laboratory moisture density relation.

**Temporary Excavations**: Based on the proposed pipe inverts, variable depths of excavations ranging from four to 10 feet will be required for the proposed water and sewer lines construction. Excavations can be accomplished by laying slopes back to a stable configuration (if they will not interfere with existing pipelines). Excavations should be performed in accordance with Montgomery County and OSHA Standards for the Construction Industry (29 CFR Part 1926 Subpart P). The overburden soils encountered appear similar to those classified as Type C as defined in OSHA Standards for the Construction Industry (29 CFR Part 1926 Subpart P). OSHA recommends a maximum slope of 1.5(H):1(V) for temporary excavations, although flatter slopes or sidewall shoring may be required if perched surface water or ground water or granular materials with residual or micaceous soils and/or running sand are present.

Alternatively, where cut back slopes are not feasible due to site constraints, and/or excavations are in excess of 5 feet deep, temporary excavation support systems such as timber shoring, trench boxes or braced thickened steel plates can be used. These will provide temporary earth retention and maintain near vertical side slopes, and also provide some protection against potential bottom heave of excavations due

to groundwater. We recommend using trench boxes where the proposed utility lines will be located adjacent to and/or below existing roadways and existing utility lines. The contractor should provide measures to protect existing roadway and utilities where present. Temporary support of excavations should be designed by a Professional Engineer registered in the State of Maryland.

**Construction Water Controls:** Groundwater was not encountered during drilling. However, due to the presence of micaceous site soils with high fines, the Contractor should provide positive drainage and dewatering measures to control surficial water and groundwater (if encountered) during construction. This will ensure that the foundation excavations and utility trenches are kept free of standing water and in relatively dry conditions. Dewatering can be handled with conventional ditching, sumps and/or pumping to an approved dewatering devices. Run-off from adjacent areas should be diverted from excavations to prevent water ponding.

## ADDITIONAL SERVICES

The recommendations presented in this report are contingent on KCI Geotechnical Engineers observing and/or evaluating earthwork construction activities as part of Quality Assurance/Quality Control including:

- Excavations and subgrade evaluations, including compaction and densification where applicable;
- Evaluating suitability off-site borrow fill materials;
- Fill placement, compaction and testing as; and
- General compliance with the geotechnical engineering recommendations.

## LIMITATIONS

This report is subject to the limitations following the text.

## ATTACHMENTS

### APPENDIX A – FIGURES

*Figure 1: Site Vicinity Map*
*Figure 2: Boring Location Plan*
*Figure 3: Subsurface Profile*

### APPENDIX B – TEST BORING LOGS

*Test Boring Logs*
*USCS Soil Classification Chart*
*Field Exploratory Procedures*

### APPENDIX C – LABORATORY TESTING RESULTS

*Laboratory Test Results*
*Laboratory Testing Procedures*

## GEOTECHNICAL LIMITATIONS

General

1. This report has been prepared to aid in the evaluation of the proposed construction described in this report. Adequate recommendations have been provided to serve as a basis for design and preparation of plans and specifications. The opinions, conclusions, and recommendations contained in this report are based upon our professional judgment and generally accepted principles of geotechnical engineering. Inherent to these are the assumptions that the earthwork construction should be monitored and tested under the guidance of a geotechnical engineer licensed in the State of Maryland or his representative.

Explorations

2. The evaluations provided are, of necessity, based on project information available at the time of the actual writing of the report, including existing site, surface and subsurface conditions that existed at the time the exploratory borings were drilled. Further assumption has been made that the limited exploratory borings, in relation to both the lateral extent of the site and to depth, are representative of general conditions across the site.

   The nature and extent of variations between these explorations may not become evident until further explorations and construction. If variations from anticipated conditions then appear evident, it will be necessary to revise the evaluations in this report.

3. The generalized soil profile described in the text are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. Refer to boring logs for specific information.

4. Groundwater level readings have been made in boreholes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the ground water may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

Review

5. This report has been prepared based on plans and description of the proposed construction cited herein, and information provided by the Client. In the event that any changes in the nature, design or location of the proposed construction are planned, the conclusions and evaluations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by KCI.

Uses of Report

6. This report has been prepared for the exclusive use of the City of Rockville Recreation and Parks Department and members of the design team for specific application to the ***King Farm Farmstead Water and Sewer Improvements Project*** at 1101 Grand Champion Dr., City of Rockville, Montgomery County, Maryland. Our professional services have been performed in

accordance with generally accepted soil and foundation engineering principles and practices; no other warranty, expressed or implied, is made. KCI assumes no responsibility for interpretations made by others on the work performed by KCI.

7. This report is for data purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only. We recommend that this report be made available in its entirety including attachments and appendices to contractors for informational purposes only. The project plans or specifications should include the following note:

   *A geotechnical report has been prepared for this project by KCI Technologies, Inc. This report is for informational purposes only and shall not be considered as part of the contract documents. The opinions and conclusions of KCI represent our interpretation of the subsurface conditions and the planned construction at the time of the report preparation. The data in this report may not be adequate for contractors estimating purposes.*

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# FIGURES

Appendix A


KCI TECHNOLOGIES
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PLANNERS
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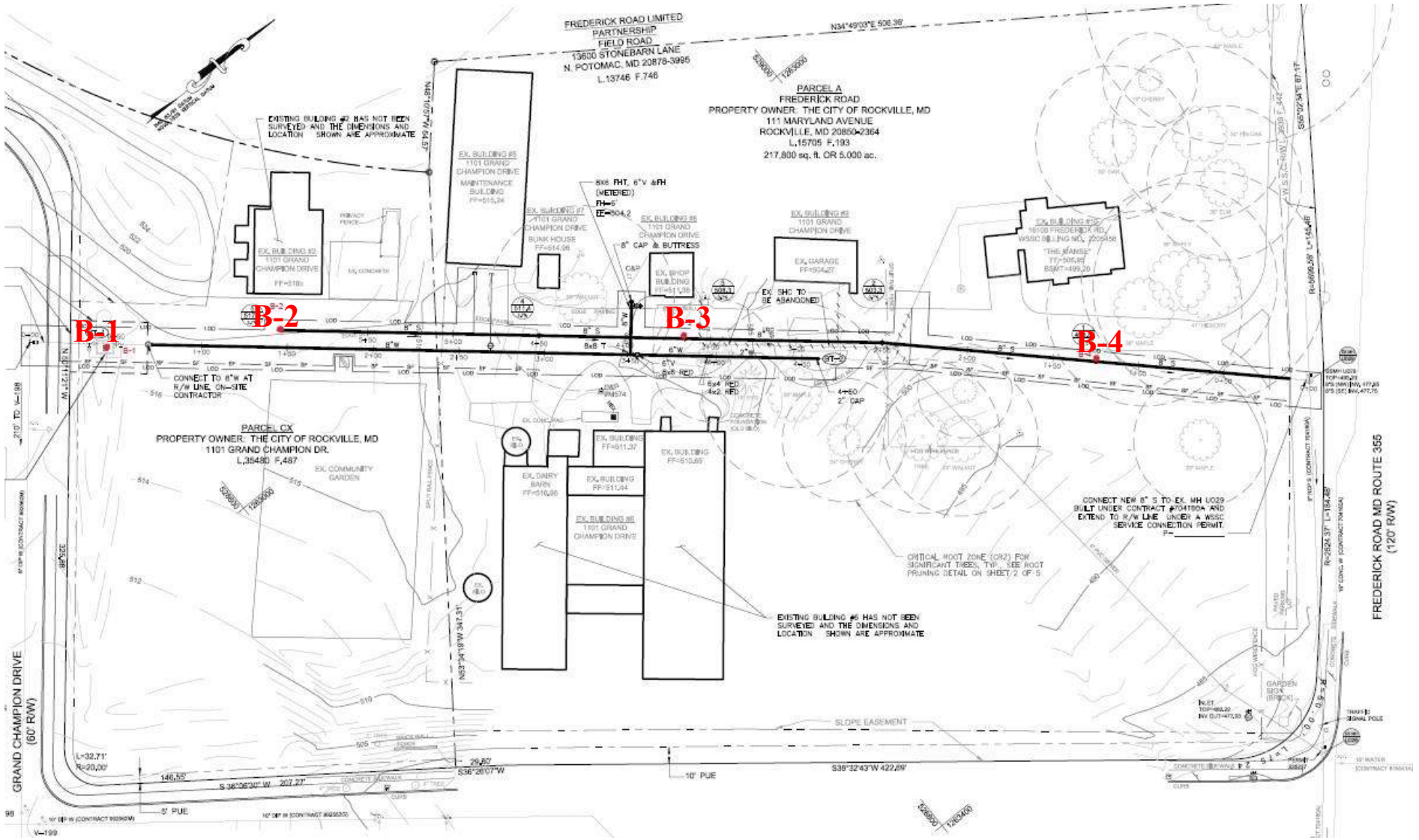
**SITE VICINITY MAP**

**WATER & SEWER IMPROVEMENTS**
**KING FARM FAMRSTEAD**
**CITY OF ROCKVILLE, MONTGOMERY COUNTY, MARYLAND**

Figure No. **1**

| DRAWN BY | APPROVED BY | SCALE | DATE | KCI PROJECT NO. |
|---|---|---|---|---|
| DPC | KBA | NTS | JANUARY 2021 | 121906247.01 |

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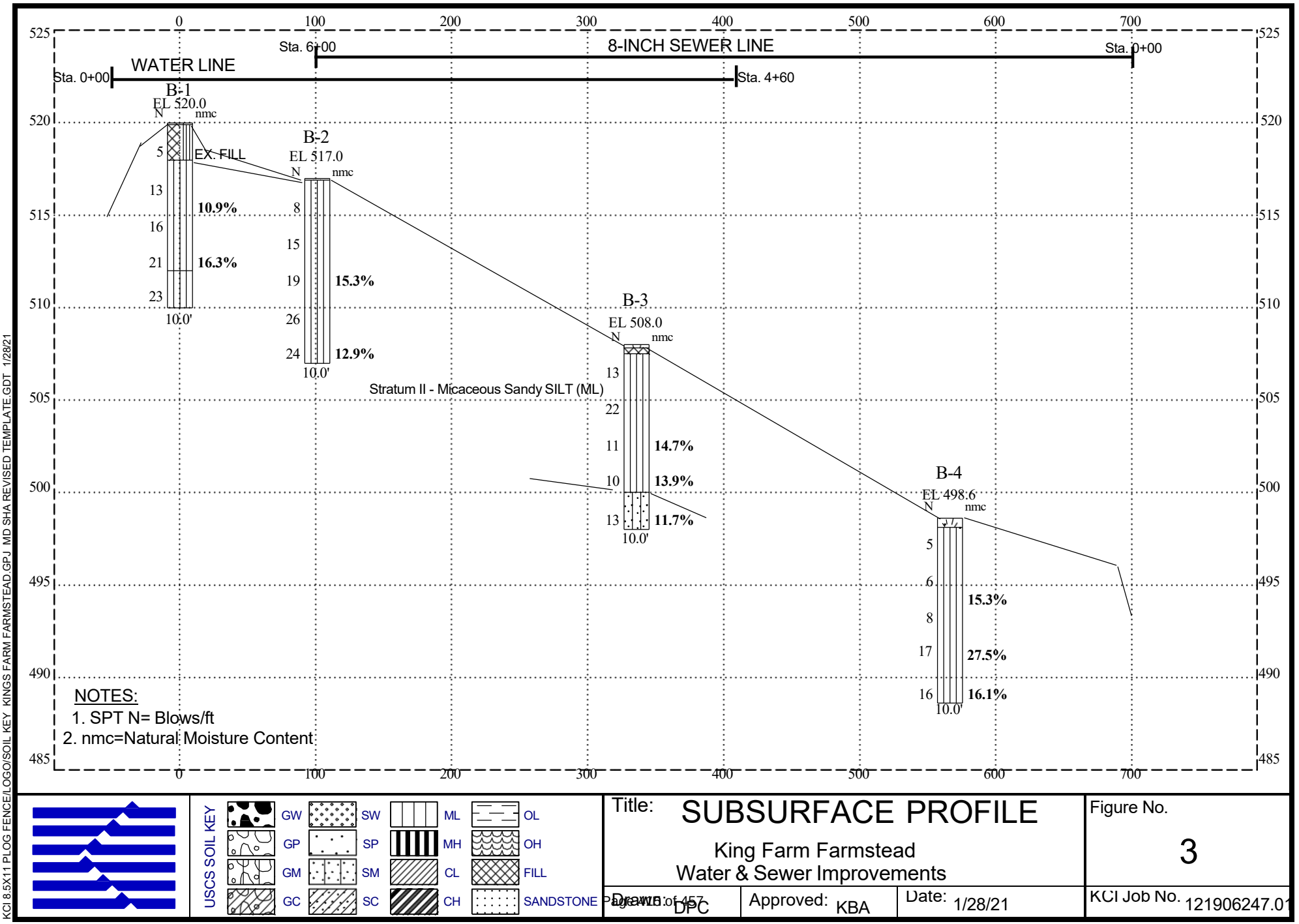
**BORING LOCATION PLAN**

**WATER & SEWER IMPROVEMENTS**
**KING FARM FAMRSTEAD**
**CITY OF ROCKVILLE, MONTGOMERY COUNTY, MARYLAND**

Figure No. **2**

| DRAWN BY | APPROVED BY | SCALE | DATE | KCI PROJECT NO. |
|---|---|---|---|---|
| DPC | KBA | NTS | JANUARY 2021 | 121906247.01 |




Title: SUBSURFACE PROFILE

King Farm Farmstead
Water & Sewer Improvements

Figure No. 3

Drawn: DPC | Approved: KBA | Date: 1/28/21 | KCI Job No. 121906247.01

KCI 8.5X11 PLOG FENCE/LOGO/SOIL KEY KINGS FARM FARMSTEAD.GPJ MD SHA REVISED TEMPLATE.GDT 1/28/21

# BORING LOGS

Appendix B

KCI TECHNOLOGIES

PROJECT **King Farm Farmstead**
**Water & Sewer Lines**
PROJECT NO. **121906247.01**
Surface Elevation **520 (ft)**

# TEST BORING LOG
# B-1

SHEET 1 OF 1

| Driller: | Method: | Auger Depth: | Date Begun: | Groundwater Levels (feet) |
|---|---|---|---|---|
| **Luis / CenKen** | **HSA** | **8 ft** | **1/8/2021** | 0 hour: NE |
| KCI Representative: | Hammer Type: | Auger Diameter: | Date Completed: | 24 hours: |
| **DPC** | **Auto 140** | **2.25 in** | **1/8/2021** | |

SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.

| DEPTH () | SOIL CLASSIFICATION AND REMARKS | LITHOLOGY | ELEV () | IDNET | TYPE | N-COUNT 1st 6" / 2nd 6" / 3rd 6" / 4th 6" | REC RQD | PLASTIC M.C. LIQUID; FINES (%); SPT (bpf) |
|---|---|---|---|---|---|---|---|---|
| | **1" TOPSOIL** | | | | | | | |
| | Possible Fill Sampled As: Damp, medium stiff, brown, micaceous Sandy SILT, trace Gravel (ML) | | | S-1 | | 2-2-3-3 N = 5 REC=4" | | |
| | Damp, stiff to very stiff, light reddish brown, gray, micaceous Sandy SILT (ML) | | | S-2 | | 3-6-7-7 N = 13 REC=18" | | |
| 5 | | | 515 | S-3 | | 6-7-9-11 N = 16 REC=24" | | 5 |
| | | | | S-4 | | 12-10-11-13 N = 21 REC=20" | | |
| | Damp, very stiff, brown, gray, micaceous Sandy SILT, little to some quartz Gravel (ML) | | | S-5 | | 9-11-12-16 N = 23 REC=11" | | |
| 10 | | | 510 | | | | | 10 |
| | Boring terminated at 10 ft. bgs | | | | | | | |
| | Notes: 1) A bulk sample was collected between 0 - 8 ft bgs. 2) Groundwater was not encountered during or after the completion of drilling. 3) Borehole caved-in at 8 ft bgs at completion. 4) Borehole backfilled with auger cuttings and bentonite chips at completion. | | | | | | | |
| 15 | | | 505 | | | | | 15 |

PLASTIC M.C. LIQUID
FINES (%)
SPT (bpf)
20 40 60 80 100

KCI-KOA PLOG KINGS FARM FARMSTEAD.GPJ KCIMOD SHA DF US STD PLOG.GDT 1/28/21

KCI TECHNOLOGIES

PROJECT **King Farm Farmstead**
**Water & Sewer Lines**
PROJECT NO. **121906247.01**

# TEST BORING LOG
# B-2

Surface Elevation **517 (ft)**

SHEET **1** OF **1**

| Driller: | Method: | Auger Depth: | Date Begun: | Groundwater Levels (feet) |
|---|---|---|---|---|
| **Luis / CenKen** | **HSA** | **8 ft** | **1/8/2021** | 0 hour: NE |
| KCI Representative: | Hammer Type: | Auger Diameter: | Date Completed: | 24 hours: |
| **DPC** | **Auto 140** | **2.25 in** | **1/8/2021** | |

SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.

| DEPTH () | SOIL CLASSIFICATION AND REMARKS | LITHOLOGY | ELEV () | SAMPLES IDNET | SAMPLES TYPE | N-COUNT 1st 6" / 2nd 6" / 3rd 6" / 4th 6" | REC RQD | PLASTIC — M.C. — LIQUID; FINES (%); SPT (bpf) |
|---|---|---|---|---|---|---|---|---|
| 0 | **1" TOPSOIL** | | | | | | | |
| | Damp, medium stiff to very stiff, light reddish brown, gray, micaceous Sandy SILT (ML) | | | S-1 | | 4-5-3-3 | N = 8 REC=12" | |
| | | | 515 | S-2 | | 6-8-7-9 | N = 15 REC=11" | |
| 5 | | | | S-3 | | 9-9-10-11 | N = 19 REC=14" | |
| | | | 510 | S-4 | | 6-11-15-18 | N = 26 REC=13" | |
| | | | | S-5 | | 9-11-13-17 | N = 24 REC=19" | |
| 10 | Boring terminated at 10 ft. bgs | | 505 | | | | | |
| | Notes:<br>1) Groundwater was not encountered during or after the completion of drilling.<br>2) Borehole caved-in at 8 ft bgs at completion.<br>3) Borehole was backfilled with auger cuttings and bentonite chips at completion | | | | | | | |
| 15 | | | | | | | | |

PLASTIC — M.C. — LIQUID
FINES (%)
SPT (bpf)
20 40 60 80 100

KCI-KOA PLOG KINGS FARM FARMSTEAD.GPJ KCIMOD SHA DF US STD PLOG.GDT 1/28/21

KCI TECHNOLOGIES

PROJECT **King Farm Farmstead**
**Water & Sewer Lines**
PROJECT NO. **121906247.01**

# TEST BORING LOG
# B-3

Surface Elevation **508 (ft)**

SHEET **1** OF **1**

| Driller: | Method: | Auger Depth: | Date Begun: | Groundwater Levels (feet) |
|---|---|---|---|---|
| **Luis / CenKen** | **HSA** | **8 ft** | **1/8/2021** | 0 hour: NE |
| KCI Representative: | Hammer Type: | Auger Diameter: | Date Completed: | 24 hours: |
| **DPC** | **Auto 140** | **2.25 in** | **1/8/2021** | |

SOIL CLASSIFICATION AND REMARKS

SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.

| DEPTH () | LITHOLOGY | ELEV () | SAMPLES IDNET | TYPE | N-COUNT 1st 6" / 2nd 6" / 3rd 6" / 4th 6" | REC RQD | PLASTIC M.C. LIQUID; FINES (%); SPT (bpf) |
|---|---|---|---|---|---|---|---|
| | | | | | | | 20 40 60 80 100 |
| | | | S-1 | | 12-9-4-6 N = 13 REC=6" | | |
| | | 505 | S-2 | | 8-13-9-11 N = 22 REC=14" | | |
| 5 | | | S-3 | | 5-5-6-7 N = 11 REC=16" | | 5 |
| | | | S-4 | | 5-4-6-6 N = 10 REC=10" | | |
| | | 500 | S-5 | | 6-5-8-9 N = 13 REC=18" | | |
| 10 | | | | | | | 10 |
| | | 495 | | | | | |
| 15 | | | | | | | 15 |

**2" TOPSOIL**

Possible FILL Sampled As:
Damp, medium dense, dark brown, tan, Sandy quartz GRAVEL, trace Silt (GP)

Damp, very stiff to stiff, light orangeish brown, gray, micaceous Sandy SILT, trace Gravel (ML)

Damp, medium dense, light orangeish brown, gray, micaceous Silty SAND, trace Gravel (SM)

Boring terminated at 10 ft. bgs

Notes:

1) Groundwater was not encountered during or after the completion of drilling.
2) Borehole caved-in at 7 ft bgs at completion.
3) Borehole was backfilled with auger cuttings and bentonite chips at completion.

KCI-KOA PLOG KINGS FARM FARMSTEAD.GPJ KCIMOD SHA DF US STD PLOG.GDT 1/28/21

KCI TECHNOLOGIES

PROJECT **King Farm Farmstead Water & Sewer Lines**
PROJECT NO. **121906247.01**
Surface Elevation **498.6 (ft)**

# TEST BORING LOG
# B-4

SHEET 1 OF 1

| Driller: | Method: | Auger Depth: | Date Begun: |
|---|---|---|---|
| **Luis / CenKen** | **HSA** | **8 ft** | **1/8/2021** |
| KCI Representative: | Hammer Type: | Auger Diameter: | Date Completed: |
| **DPC** | **Auto 140** | **2.25 in** | **1/8/2021** |

**Groundwater Levels (feet)**
0 hour: NE
24 hours: _____

| DEPTH () | SOIL CLASSIFICATION AND REMARKS | LITHOLOGY | ELEV () | SAMPLES IDNET | SAMPLES TYPE | SAMPLES N-COUNT 1st 6" / 2nd 6" / 3rd 6" / 4th 6" / REC / RQD | PLASTIC M.C. LIQUID; FINES (%); SPT (bpf) |
|---|---|---|---|---|---|---|---|
| | SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW. | | | | | | 20 40 60 80 100 |
| | **6" TOPSOIL** | | | | | | |
| | Damp, medium stiff to very stiff, brown to orange brown, micaceous Sandy SILT, trace Gravel (ML) | | | S-1 | | 2-2-3-4<br>N = 5<br>REC=10" | |
| | | | | S-2 | | 4-2-4-4<br>N = 6<br>REC=13" | |
| | | | 495 | | | | |
| 5 | | | | S-3 | | 2-3-5-7<br>N = 8<br>REC=4" | 5 |
| | | | | S-4 | | 7-8-9-13<br>N = 17<br>REC=6" | |
| | - brown and gray with dark brown to black lenses | | 490 | S-5 | | 3-8-8-10<br>N = 16<br>REC=14" | |
| 10 | | | | | | | 10 |
| | Boring terminated at 10 ft. bgs | | | | | | |
| | Notes:<br>1) A bulk sample was collected between 0 - 8 ft bgs.<br>2) Groundwater was not encountered during or after the completion of drilling.<br>3) Borehole caved-in at 7 ft bgs at completion.<br>4) Borehole was backfilled with auger cuttings and bentonite chips at completion. | | 485 | | | | |
| 15 | | | | | | | 15 |

KCI-KOA PLOG KINGS FARM FARMSTEAD.GPJ KCIMOD SHA DF US STD PLOG.GDT 1/28/21

# FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

NON-COHESIVE SOILS
(Sand, Gravel, and Combinations)

Density

| | |
|---|---|
| Very Loose | - 4 blows/ft. or less |
| Loose | - 5 to 10 blows/ft. |
| Medium Dense | - 11 to 30 blows/ft. |
| Dense | - 31 to 50 blows/ft. |
| Very Dense | - 51 blows/ft. or more |

Relative Proportions

| Descriptive Term | Percent |
|---|---|
| Trace | 1 to 10 |
| Little | 11 to 20 |
| Some | 21 to 35 |
| And | 35 to 50 |

Particle Size Identification

| | | |
|---|---|---|
| Boulders | | - 12 inch diameter or more |
| Cobbles | | - 12 to 3 inch diameter |
| Gravel | -Coarse | - 3 to 0.75 inch diameter |
| | Fine | - 0.75 to 0.19 inch diameter |
| Sand | -Coarse | - 4.75 to 2 mm diameter (dia. of pencil lead) |
| | Medium | - 2 to 0.425 mm diameter (dia. of broom straw) |
| | Fine | - 0.425 to 0.075 mm diameter (dia. of human hair) |
| Fines | -Silt & Clay | - less than 0.075 mm diameter (Cannot see particles) |

COHESIVE SOILS
(Clay, Silt, and Combinations)

Consistency

| | |
|---|---|
| Very Soft | - 2 blows/ft. or less |
| Soft | - 3 to 4 blows/ft. |
| Medium Stiff | - 5 to 8 blows/ft. |
| Stiff | - 9 to 15 blows/ft. |
| Very Stiff | - 16 to 30 blows/ft. |
| Hard | - 31 blows/ft. or more |

Plasticity

| Degree of Plasticity | Plasticity Index |
|---|---|
| None to Slight | 0 - 4 |
| Slight | 5 - 7 |
| Medium | 8 - 22 |
| High to Very High | over 22 |

Classification on Records of Soil Exploration are made by visual inspection of samples and laboratory testing.

Standard Penetration Test

- Driving a 2.0" - O.D., 1 3/8" - I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140-pound hammer free falling a distance of 30.0 inches. It is required to drive the spoon 6.0 inches to seat into undistured soil, then perform the test. The number of hammer blows for seating and making the test are recorded each 6.0 inches of penetration on the Record of Soil Exploration (Example: 6-8-9). The standard penetration test result can be obtained by adding the last two figures. (i.e. 8+9=17 blows/ft.) (ASTM D-1586).

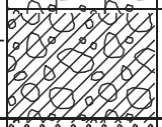
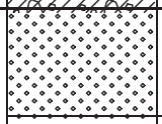
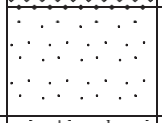
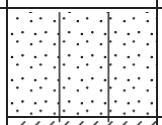
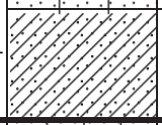
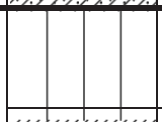
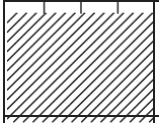
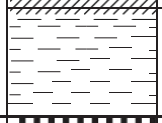
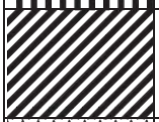
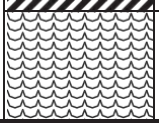
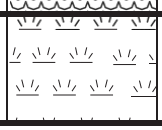
Strata Changes

- In the column "Soil Descriptions" on the Record of Soil Exploration the horizontal lines represent estimated strata changes.

Ground Water

- Observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc. may cause changes in the water levels indicated on the Record of Soil Exploration.

# uSCS SOIL CLASSIFICATION CHART

| MAJOR DIVISIONS | | | SYMBOLS GRAPH | SYMBOLS LETTER | TYPICAL DESCRIPTIONS |
|---|---|---|---|---|---|
| eOARsE GRAINED sOILs — MORE THAN 50% OF MATERIAL Is LARGER THAN NO. 200 sIEVE sIZE | GRAVEL AND GRAVELLY sOILs — MORE THAN 50% OF eOARsE FRAeTION RETAINED ON NO. 4 sIEVE | eLEAN GRAVELs (LITTLE OR NO FINEs) |  | GW | WELL-GRADED GRAVELs, GRAVEL - sAND MIXTuREs, LITTLE OR NO FINEs |
| | | |  | GP | POORLY-GRADED GRAVELs, GRAVEL - sAND MIXTuREs, LITTLE OR NO FINEs |
| | | GRAVELs WITH FINEs (APPREeIABLE AMOuNT OF FINEs) |  | GM | sILTY GRAVELs, GRAVEL - sAND - sILT MIXTuREs |
| | | |  | GC | eLAYEY GRAVELs, GRAVEL - sAND - eLAY MIXTuREs |
| | sAND AND sANDY sOILs — MORE THAN 50% OF eOARsE FRAeTION PAssING ON NO. 4 sIEVE | eLEAN sANDs (LITTLE OR NO FINEs) |  | SW | WELL-GRADED sANDs, GRAVELLY sANDs, LITTLE OR NO FINEs |
| | | |  | SP | POORLY-GRADED sANDs, GRAVELLY sAND, LITTLE OR NO FINEs |
| | | sANDs WITH FINEs (APPREeIABLE AMOuNT OF FINEs) |  | SM | sILTY sANDs, sAND - sILT MIXTuREs |
| | | |  | SC | eLAYEY sANDs, sAND - eLAY MIXTuREs |
| FINE GRAINED sOILs — MORE THAN 50% OF MATERIAL Is sMALLER THAN NO. 200 sIEVE sIZE | sILTs AND eLAYs — LIQuID LIMIT LEss THAN 50 | |  | ML | INORGANIe sILTs AND VERY FINE sANDs, ROeK FLOuR, sILTY OR eLAYEY FINE sANDs OR eLAYEY sILTs WITH sLIGHT PLAsTIeITY |
| | | |  | CL | INORGANIe eLAYs OF LOW TO MEDIuM PLAsTIeITY, GRAVELLY eLAYs, sANDY eLAYs, sILTY eLAYs, LEAN eLAYs |
| | | |  | OL | ORGANIe sILTs AND ORGANIe sILTY eLAYs OF LOW PLAsTIeITY |
| | sILTs AND eLAYs — LIQuID LIMIT GREATER THAN 50 | |  | MH | INORGANIe sILTs, MIeAeEOus OR DIATOMAeEOus FINE sAND OR sILTY sOILs |
| | | |  | CH | INORGANIe eLAYs OF HIGH PLAsTIeITY |
| | | |  | OH | ORGANIe eLAYs OF MEDIuM TO HIGH PLAsTIeITY, ORGANIe sILTs |
| HIGHLY ORGANIe sOILs | | |  | PT | PEAT, HuMus, sWAMP sOILs WITH HIGH ORGANIe eONTENTs |

uses LEGEND 2/7/13

NOTE: DuAL sYMBOLs ARE usED TO INDIeATE BORDERLINE sOIL eLAssIFIeATIONs

## FIELD EXPLORATORY PROCEDURES

The general field procedures employed by KCI are summarized in ASTM specification D 420 entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and ground water conditions. These methods include geophysical and in-situ borings.

Borings are advanced to obtain subsurface samples using one of several techniques depending upon the site and subsurface conditions. These techniques are:

1. Continuous hollow-stem augers;
2. Wash borings using roller cone or drag bits (mud or water);
3. Continuous flight augers (ASTM D 1452);
4. Continuous sampling using a Tripod-mounted drill rig.

These drilling methods are not capable of penetrating through material designated as "refusal materials." Refusal may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound continuous rock. Core drilling procedures are required to determine the character and continuity of refusal materials.

The Driller reports the subsurface conditions encountered during drilling on a field test boring record. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observation of ground water. It also contains the driller's interpretation of the soil conditions between samples. Therefore, these boring records contain both factual and interpretive information.

A geotechnical engineer reviews the soils and rock samples plus the field boring records. The engineer classifies the soils in general accordance with the procedures outlined in ASTM Specification D 2488 and prepares the final boring records, which are the basis for all evaluations and recommendations.

The final test boring records represent our interpretation of the contents of the field records based on the results of the engineering examination and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and ground water conditions at these boring locations. The lines designating the interface between soil or refusal materials on the records and on profiles represent approximate boundaries. The actual transition between materials may be gradual. The final Test Boring Records are included in Appendix B.

# LABORATORY TESTING RESULTS

Sheet 1 of 1

| Boring | Depth (ft) | Liquid Limit (%) | Plastic Limit (%) | Plasticity Index (%) | % < #4 Sieve | % < #200 Sieve | Classification | Water Content (%) | Dry Density (pcf) | Optimum Water Content (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| B-01 | 0.0 - 8.0 | NP | NP | NP | 98 | 57 | ML | 10.9 | 108.9 | 17.4 |
| B-01 | 6.0 - 8.0 | | | | | | | 16.3 | | |
| B-02 | 4.0 - 6.0 | | | | | | | 15.3 | | |
| B-02 | 8.0 - 10.0 | | | | | | | 12.9 | | |
| B-03 | 4.0 - 6.0 | | | | | | | 14.7 | | |
| B-03 | 6.0 - 8.0 | | | | | | | 13.9 | | |
| B-03 | 8.0 - 10.0 | NP | NP | NP | 94 | 36 | SM | 11.7 | | |
| B-04 | 0.0 - 8.0 | 34 | 30 | 4 | 98 | 58 | ML | 15.3 | 107.0 | 18.4 |
| B-04 | 6.0 - 8.0 | | | | | | | 27.5 | | |
| B-04 | 8.0 - 10.0 | | | | | | | 16.1 | | |

CKG_LAB_SUMMARY_BASIC_PROC_LAB.GPJ CKG.2012.GDT 1/22/21

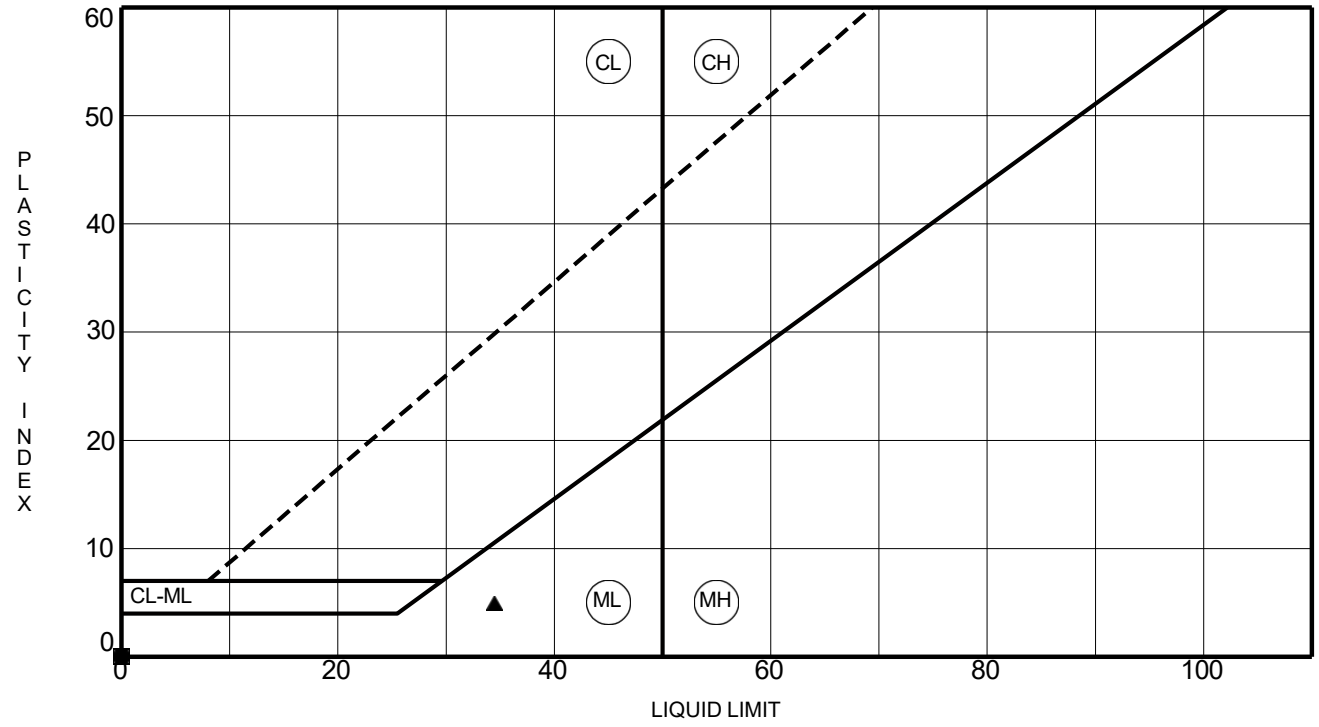
CKG CENKEN GROUP, LLC
Geotechnical Engineering Consultants
*Odenton, MD 21113*

**Summary of Laboratory Results**

Kings Farm Farmstead

Rockville, MD

Project Number: 20-081




| | Boring | Depth | LL | PL | PI | Fines | Classification |
|---|---|---|---|---|---|---|---|
| ● | B-01 | 0.0 - 8.0 | NP | NP | NP | 57 | Brown, micaceous sandy **SILT [ML]** |
| ⧓ | B-03 | 8.0 - 10.0 | NP | NP | NP | 36 | Brown, silty micaceous **SAND [SM]** |
| ▲ | B-04 | 0.0 - 8.0 | 34 | 30 | 4 | 58 | Brown, micaceous sandy **SILT [ML]** |

**Test Method: ASTM D4318**

Tested By: EM Date: 1/21/2021

CENKEN GROUP, LLC
Geotechnical Engineering Consultants
Odenton, MD 21113

## ATTERBERG LIMITS' RESULTS

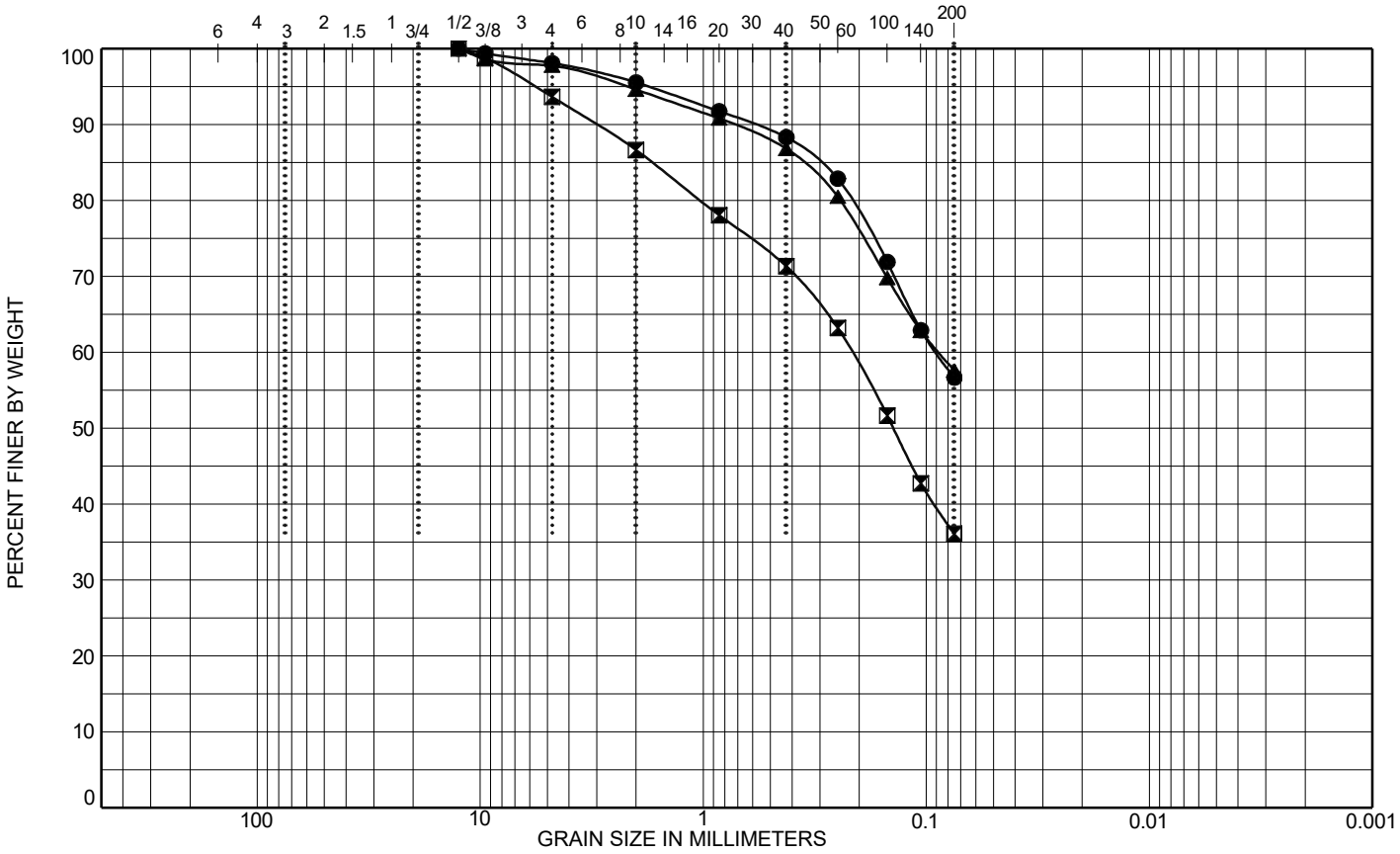
Project: Kings Farm Farmstead

Location: Rockville, MD

Project Number: 20-081



CENKEN ATTERBERG LIMITS LAB.GPJ CKG 2012.GDT 1/22/21




| | D10 | D30 | D60 | D100 |
|---|---|---|---|---|
| ● | | | 0.09 | 12.5 |
| ⊠ | | | 0.217 | 12.5 |
| ▲ | | | 0.088 | 12.5 |
| | | | | |
| | | | | |

**Test Method: ASTM D422**

| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

Tested By: EM Date: 1/22/2021

| | Boring | S No. | Depth | %Gravel | %Sand | %Silt | %Clay | LL | PI | MC(%) | Classification |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ● | B-01 | Bag | 0.0 - 8.0 | 1.9 | 41.4 | 56.7 | | NP | NP | 10.9 | Brown, micaceous sandy **SILT [ML]** |
| ⊠ | B-03 | 5 | 8.0 - 10.0 | 6.4 | 57.5 | 36.1 | | NP | NP | 11.7 | Brown, silty micaceous **SAND [SM]** |
| ▲ | B-04 | Bag | 0.0 - 8.0 | 2.3 | 40.1 | 57.6 | | 34 | 4 | 15.3 | Brown, micaceous sandy **SILT [ML]** |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

CENKEN_GRAIN_SIZE_LANDSCAPE_LAB.GPJ CKG 2012.GDT 1/22/21

CENKEN GROUP, LLC
Geotechnical Engineering Consultants
*Odenton, MD 21113*

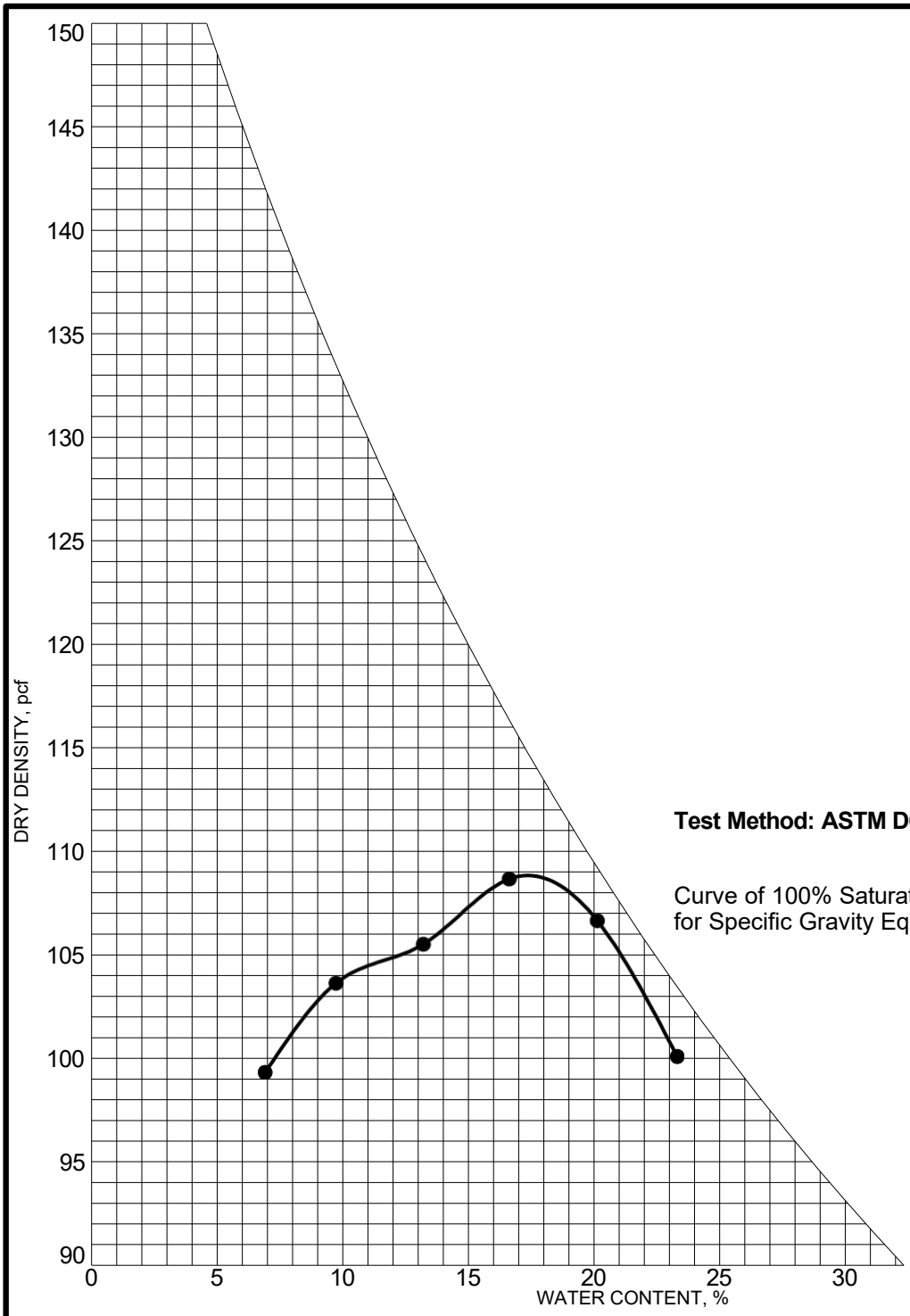
**GRAIN SIZE DISTRIBUTION**

Kings Farm Farmstead

Rockville, MD

Project Number: 20-081

Sheet 1 of 1




**Test Method: ASTM D698 Method A**

Curve of 100% Saturation
for Specific Gravity Equal to: 2.7

| Boring | Sample No. | Depth, Ft | Classification | Max. Dry Density (pcf) | Opt. MC % | LL | PI |
|---|---|---|---|---|---|---|---|
| B-01 | Bag | 0.0 - 8.0 | Brown, micaceous sandy **SILT [ML]** | 108.9 | 17.4 | NP | NP |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Tested By: EM Date: 1/21/2021

CKG CENKEN GROUP, LLC
Geotechnical Engineering Consultants
Odenton, MD 21113

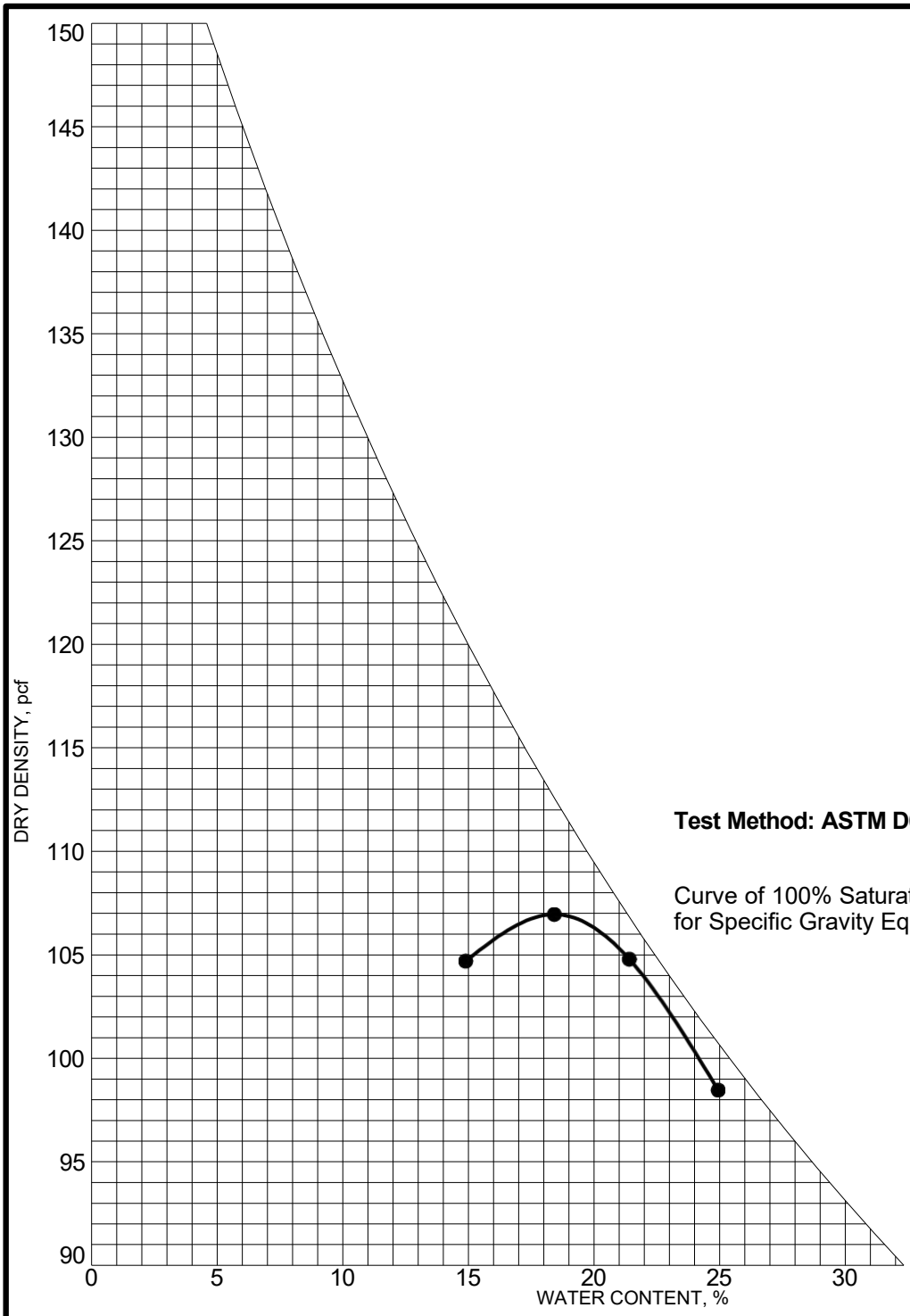
## MOISTURE-DENSITY RELATIONSHIP

Project: Kings Farm Farmstead

Location: Rockville, MD Project

Number: 20-081

CENKEN COMPACTION MULTIPLE LAB.GPJ CKG 2012.GDT 1/22/21




**Test Method: ASTM D698 Method A**

Curve of 100% Saturation
for Specific Gravity Equal to: 2.7

| Boring | Sample No. | Depth, Ft | Classification | Max. Dry Density (pcf) | Opt. MC % | LL | PI |
|---|---|---|---|---|---|---|---|
| B-04 | Bag | 0.0 - 8.0 | Brown, micaceous sandy **SILT [ML]** | 107.0 | 18.4 | 34 | 4 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Tested By: EM Date: 1/21/2021

CENKEN GROUP, LLC
Geotechnical Engineering Consultants
Odenton, MD 21113

## MOISTURE-DENSITY RELATIONSHIP

Project: Kings Farm Farmstead

Location: Rockville, MD Project

Number: 20-081

CENKEN_COMPACTION_MULTIPLE_LAB.GPJ CKG 2012.GDT 1/22/21

***Laboratory Testing Procedures***

Natural Moisture Content

The natural moisture content of selected samples was determined in accordance with ASTM D 2216. The moisture content of the soil is the ratio, expressed as a percentage, of the weight of water in a given mass of soil to the weight of the soil particles. The results are summarized in the table following this section of the report.

Grain Size Distribution

Grain size tests were performed on representative soil samples. Test samples were washed over a U. S. standard No. 200 sieve to remove the fines (particles finer than a No. 200 mesh sieve). The samples were then dried and sieved through a standard set of nested sieves. This test was performed in a manner similar to that described be ASTM D 1140. The results are presented as percent finer by weight versus particle size curves on the attached Grain Size Distribution sheets.

Soil Plasticity

Representative samples of the site soils were selected for Atterberg Limits testing to determine their soil plasticity characteristics. The soil's Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). These characteristics are determined in accordance with ASTM D 4318. The LL is the moisture content at which the soil will flow as a heavy viscous fluid. The PL is the moisture content at which the soil begins to lose its plasticity. The data obtained are presented on the attached Grain Size Distribution sheets and summarized in the table following this section of the report.

Certain soils swell and shrink with increases and decreases in soil moisture. The PI is related to this potential volume change ability. When such volume changes occur in soils confined beneath foundations, floor slabs and pavements, structural deformations can be produced. Past experience has shown that soils having a PI of less than 30 are only slightly susceptible to volume changes. Soils having a PI greater than 50 are generally very susceptible to this volume changes. Soils with a PI between these limits have moderate volume change potential. The soils tested at this site are moderately susceptible to volume change.

*Percent Fines*

The percentage of fine-grained particles present in selected samples was determined by passing the samples through a No. 200 mesh sieve. The percent by weight passing the sieve is the percentage of fines or portion of the sample in the silt and clay size range. This test was conducted in accordance with ASTM D 1140. The results are shown on the attached Grain Size Distribution sheets.

MONTGOMERY COUNTY NOISE ORDINANCE

Notice to Contractors

The Montgomery County Council recently enacted a comprehensive revision to the County Noise Control Ordinance (Chapter 31B, Montgomery County Code), including changes to the provisions concerning noise from construction activities.

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GENERAL ORDINANCE STANDARDS

(Non-construction related)

Maximum allowable sound levels, measured at the nearest receiving property line, are 65 dBA

(A-weighted decibels) during daytime hours and 55 dBA during nighttime hours, for residential receiving properties (67 dBA daytime and 62 dBA nighttime for non-residential receiving property). Mixed Use Zones are considered residential.

- "Daytime" means from 7 a.m. to 9 p.m. weekdays and 9 a.m. to 9 p.m. weekends and holidays.
- "Nighttime" means from 9 p.m. to 7 a.m. weekdays and 9 p.m. to 9 a.m. weekends and holidays.
- "Receiving Property" means any property where people live or work and where noise is heard.

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**CONSTRUCTION EXEMPTION AND STANDARDS**

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"Construction" means temporary activities directly associated with site preparation, assembly, erection, repair, alteration, or demolition of structures or roadways. Construction Noise levels must be measured on a receiving property, but no closer than 50' from the noise source.

From 7 a.m. to 5 p.m. Weekdays, Construction Noise Levels must not exceed:

75 dBA without a "Noise Suppression Plan".

85 dBA with a "Noise Suppression Plan".

"Noise Suppression Plan" means a written plan to use the most effective noise suppression equipment, materials, and methods appropriate and reasonably available for a particular type of construction.

At all times other than 7 a.m. to 5 p.m. weekdays, the general standards specified above must be met.

For example: Assuming a residential or mixed-use receiving property, construction noise levels from 5 p.m. to 9 p.m. weekdays and from 9 a.m. to 9 p.m. weekends and holidays must not exceed 65 dBA. From 9 p.m. to 7 a.m. weekdays and 9 a.m. on weekends and holidays, the standard is 55 dBA (this is unchanged from the previous ordinance).

**Construction activities are also subject to the "Noise Disturbance" provisions of the Ordinance. Examples of Noise Disturbances are delivering materials or equipment, or loading or unloading in a residential area, or operating construction equipment with audible back-up warning devices during Nighttime Hours.**

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**Summary - Construction Noise**

Measured at nearest receiving property, but no closer than 50' from the noise source.

**Weekdays** (Monday - Friday), 7 **a.m. to 5 p.m.**

Without Suppression Plan: **75 dBA**

With Suppression Plan: **85 dBA**
5 p.m. to 9 p.m.: **65 dBA**
9 p.m. to 7 a.m.: **55 dBA**

**Saturday, Sunday, Holidays**

9 a.m. to 9 p.m.: **65 dBA**
9 p.m. to 9 a.m.: **55 dBA**

In the majority of circumstances in the County, the Receiving Property will be considered residential. In cases where the nearest receiving properties are non-residential, the standards will be 67 dBA/Daytime and 62 dBA/Nighttime, except from 7 a.m. to 5 p.m. weekdays, when the higher construction exemption prevails.

While **a Noise Disturbance,** as defined by the Ordinance, could conceivably occur at any time, it is most likely to happen during the **Nighttime Hours.** The most common complaint involves back-up beepers, and can be avoided by employing lawful alternatives to audible devices.

The Department of Environmental Protection is currently developing Regulations for Noise Suppression Plans, as required by the revised Ordinance. In general, such plans will involve equipment selection and maintenance, scheduling and reasonable care in planning and conducting operations. Often, noise suppression measures can be fabricated on-site using materials at hand.

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As a point of reference, two persons, speaking in normal tones of voice at a distance of three feet, will generate about 63 dBA between them. Therefore, normal, fully intelligible conversation would be possible at the receiving property line of a site generating 65 dBA or less. By comparison, for normal, intelligible speech at a distance of about ten feet between speakers, the background sound would have to be 55 dBA or less.

Most equipment manufacturers, an.d especially those who produce or market in Europe or Asia, will have detailed noise performance specifications for their products. Many also provide silencing packages, both design and retrofit.

Copies of the revised Ordinance will be mailed upon request. If there are any questions or comments, please do not hesitate to contact the Office of Environmental Policy and Compliance at 240-777-7770.

**CITY OF ROCKVILLE**
**ROCKVILLE, MARYLAND**

**Addendum #1**
**IFB #01-25**

# KING FARM FARMSTEAD ELECTRIC INFRASTRUCTURE SERVICE PROJECT

**July 16, 2024**

**ATTENTION ALL BIDDERS:**

The following addendum is being issued to amend and clarify certain information contained in the above named Task Order. All information contained herein is binding on all Bidders who respond to this Task Order. Specific parts of the Task Order have been amended. Bidders are required to acknowledge receipt of the addendum by signing in the appropriate space at the end of the addendum. Failure to do so may subject your bid to disqualification. No provided answer to a question may in and of itself change any requirement of the Task Order.

The following is provided for additional clarity to the Task Order process:

**Question:**

1. Would like to verify the following studies will be required: shirt-circuit study, coordination study, and arc-flash hazard analysis.
   Response (by Henry Adams): Yes, short-circuit studies, coordination studies, and arc-flash hazard analysis are required per Specification Sections 260573.13, 260573.16, and 260573.19.

2. Would like to verify the buildings will be unoccupied. The plan set states property will remain unoccupied while the specifications state the property will remain occupied.
   Response by (City of Rockville) Yes, the Manse, Dairy Barns and all other buildings will remain unoccupied except for the Community Gardens and Picnic Shelter on the property that will remain open. The electrical contractor will be responsible for implementing safety procedures if and when working around the community gardens and picnic shelter.

3. Would like clarification regarding Revised Sediment Control Plan (C-400), specifically details on what is expected for “Limits of Disturbance,” “Additional Tree Protection Fence,” and “Additional Root Pruning.” After review of the *2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control,* I was unable to find details of these specific items and what’s expected/required.
   Response (by Clark Azar): The sediment control plan included with our documents was a permit revision which only updated/included the plan view. The details and notes are included in the original permit drawing, which were developed by a different engineering firm (KCI). Please see original documents attached, along with amended forest conservation plans which have details for root pruning and tree protection fence. (4 Attachments included for this response).

4. Multiple sections of the specifications refer to replacement of equipment found unacceptable, inoperable, or unsafe through various required testing. Would like clarification these situations will be addressed as unforeseen circumstances and will be treated as change orders.

   Response: The response to this may vary depending on the specific section. Please be more specific as to what sections are being questioned, so that we can provide specific answers to each item in question.

5. Section 011400-2, 1.3 M. refers to having a heating and cooling plan ready within 14 of receiving NTP. Is this our responsibility and if so, what should be included in the plan?
   Response: This portion of the specification need only apply for the existing farmhouse "Manse", it does not apply to any of the other structures. In the case of the farmhouse, the plan should include either a) the strategy for minimizing the downtime for any existing heating or cooling systems currently in use and/or b) the strategy for bringing in temporary heating/colling systems if the downtime for the existing systems cannot be made negligible to the goal of maintaining temperature within the house to between 65 and 80 degrees F.

6. Some sections of the specifications state electrical install procedures (ie. Section 262416-6, 3.2, C.2 – 7.5' panel mounting height) which may or may not conflict with current NEC guidelines. In these situations, we will defer to the NEC's code year being observed by the local AHJ.
   Response (by Henry Adams): Installations must comply with Code. Please bring to the attention of the Architect/Engineer where specifications call for installations that appear to conflict with Code requirements and prevent the completion of work. With regard to the 7.5 ft mounting height indicated in Specification Section 262416 paragraph 3.2.C.2, it is possible for a panelboard enclosure to be mounted at this height while still complying with the Code requirement for the highest circuit breaker to be at a maximum height of 79 inches, depending on the specific panelboard construction. Install panelboards at a lower height as necessary to comply with the circuit breaker maximum height requirement.

**ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME IN THE TASK ORDER.**

**Additionally, please be sure to submit all required forms with your bid per this addendum and the solicitation instructions.**

**ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 1 BY SIGNING BELOW AND RETURNING A COPY OF THE ADDENDUM WITH YOUR BID OR ACKNOWLEDGING IN YOUR BID.**
**ISSUED BY: PAT RYAN, PRINCIPAL BUYER, 07/11/2023**

**NAME OF BIDDER:** _____

**BID DUE DATE: 2:00PM (ET), FRIDAY, JULY 28, 2023**

**CITY OF ROCKVILLE**
**ROCKVILLE, MARYLAND**

**Addendum #2**
**Task Order**

# KING FARM FARMSTEAD ELECTRIC INFRASTRUCTURE SERVICE PROJECT

**July 27, 2023**

**ATTENTION ALL BIDDERS:**
The following addendum is being issued to amend and clarify certain information contained in the above named Task Order. All information contained herein is binding on all Bidders who respond to this Task Order. Specific parts of the Task Order have been amended. Bidders are required to acknowledge receipt of the addendum by signing in the appropriate space at the end of the addendum. Failure to do so may subject your bid to disqualification. No provided answer to a question may in and of itself change any requirement of the Task Order.

The following is provided for additional clarity to the Task Order process:

## BID DUE DATE IS CHANGED TO WEDNESDAY, AUGUST 2, 2023, @ 2PM (ET)

**Question:**

1. Section 1.11: Bid Security section states that a 5% bid bond is required. Since we're riding the MC Controls Contract, is this necessary and can this be excluded since EAI is the only bidder at the moment and will bid project per DGS contract terms?

   Response: A Bid Bond is not required; Performance and Payment Bonds are required.

2. Section 1.4 -4: If the sediment and erosion control measures put in place by WSSC are sub-par, to what extent does the responsibility fall on the electrical contractor who will need to take over this work and be responsible for closing out the Sediment Control Ticket?

   Response: It is the WSSC contractor's responsibility to install and maintain the erosion and sediment control (SCP) as part of the WSSC project. The SCP will be in-place when the electrical work starts. Before starting the electrical work, the electrical contractor should inspect the SCP before mobilizing and note any deficiencies before accepting the site.

3. Section 1.5: Can there be a provision for long lead time items that may go beyond the five-month period? We're currently seeing equipment with lead-times beyond 26 weeks. Can the City remove liquidated damages for delays beyond the timeline caused by equipment lead times that are outside of the contractors (EAIs) control?

   Response: The City of Rockville will issue a limited Notice to Proceed (see Section 1.5) that allows the electrical contractor to release long lead items but does not start the clock on contractual durations. The 5-month contract duration will start when the full Notice to Proceed is issued after coordination of long-lead items.

4. Section 1.6: Can EAI include time and material cost associated with all the work required for managing the permits?

   Response: Contractor is required to comply with the permits, not manage them. Satisfying electrical permits and Pepco requirements should be incidental to the costs. The other permits are being provided as reference, and should not require any costs unless specifically shown in the bid documents.

5. Section 1.12: As mentioned previously, EAI is already bounded by DGS contract terms. The additional bond requirements may hinder EAI from being able to bid due to the size of the project and the size of the bond. Can this be removed or superseded by the DGS contract terms?

   Response: A Bid Bond is not required; Performance and Payment Bonds are required.

6. Section 1.13: Same question as #5 above.

   Response: A Bid Bond is not required; Performance and Payment Bonds are required.

7. Section II-Section 4-Submission of Bid: Are forms listed in this section still required even though the intent is to ride the DGS contract?

   Response: Yes. The bid submission needs to include the requested forms

8. Section II-Section 7-Submission of Bid: Does this apply to this contract although EAI is the only bidder at the moment?

   Response: Since this is not a public bid, a public bid opening will not be held as outlined in Section 7. However, EAI is expected to be available at the time of the bid submission for discussion.

9. Section II-Section-25 &26-Bid Bond: Same question as the ones asked in previous sections of this Task Order document that have to do with Bid bonds. I'm not sure EAI will be able to get a bond that's 100% of the amount of this contract due to the large bond size.

   Response: A Bid Bond is not required; Performance and Payment Bonds are required.

10. Section II-Section-35: Can this section be removed or amended to reflect potential holdups from equipment manufacturers who currently have long lead times and unforeseen issues that may arise?

    Response: See #3 above. A Limited Notice to Proceed will be issued to allow for ordering of long lead items. A full Notice to Proceed will be issued to start the contract duration.

11. Section II-Section-37: Since the time frame of this project extends to wintertime, inclement weather can become an issue. Can there be exceptions made for potential weather delays or "force measure?"

    Response: Section 37 does not preclude the contractor from filing a claim for weather delays for the City to consider. However, the schedule duration allows for inclement weather, so delays will only be considered for weather events that are outside the norm.

12. Section II-Section-38: This section states that no claims can be made from any delays that can be from the City or any other outside party that hinders the contractor to perform work within the five month delay. If this is the case, can liquidated damages be removed from contract if the delays are caused by factors outside of the contractor's control.

Per Section 37, delay claims can be submitted for the City's consideration; however, Section 38 states that time-related costs, such as extended general conditions, will not be considered for delays. (Example: If Pepco delays the contractor from completing their scope, a time extension will be given to accommodate for that delay; however, the city will not be responsible for extended general conditions or other costs directly attributable to the delay.)

13. Section II-Section-40: Can exception be taken to this section? Is it possible to have only specifications that pertain to the project scope and materials required?

    Response: Similar to #4 above, the list is being provided for reference. Their inclusion does not infer additional work above what is shown in the bid documents. However, because other work will be occurring at the site simultaneously, these specifications are being provided as a precaution in case there is some overlap.

14. Section II-Section-67: If any other terms are waived, will this term be voided because?

    Response: No. Waiving terms prior to signing a contract will have no effect on Section 67. Section 67 deals with acceptance or approval of work in place and will not be voided or waived. This section states that acceptance and payment for completed work does not waive other contract requirements.

15. Section II-Section-76: Will progress payments be made per DGS contract and standard invoicing methods we're currently using with COR or based on what's specified in this contract?

    Response: Progress payments will be made per these contract terms, not DGS.

16. Section II-Section-89: Will traffic control be required for this project? It doesn't seem like it since it's not in public roads.

    Response: Traffic control is not shown in the drawings and will not be required for this project.

17. Section II-Section-91: Will any public pedestrians or COR personal be utilizing the facilities during the time period the work will be performed?

    Response: The buildings are not in use. The only areas on site that is used by the public is the Community Gardens and the Covered Picnic Area.

18. Section II-Section-82: Same as Note 91 above.

    Response: Section II Item 82 deals with Transfer of Title - is this supposed to be Section II Item 92 Handicap Access? If this is for Item 92, then the answer will be similar to #17 above. Contractor is not expected to provide handicap access routes for this project.

19. Section II-3.1: What documentation does COR need from EAI to meet this requirement?

    Response: There is a *Respondent's Questionnaire*, a *Bidder Reference Form*, and a *Sub-Contractor Reference Form* included in the Task Order (pages 49-54 of the PDF) that will need to be filled out and submitted.

20. Section II-3.3: Is there any flexibility to the schedule for any material with long lead times that may impact the schedule?

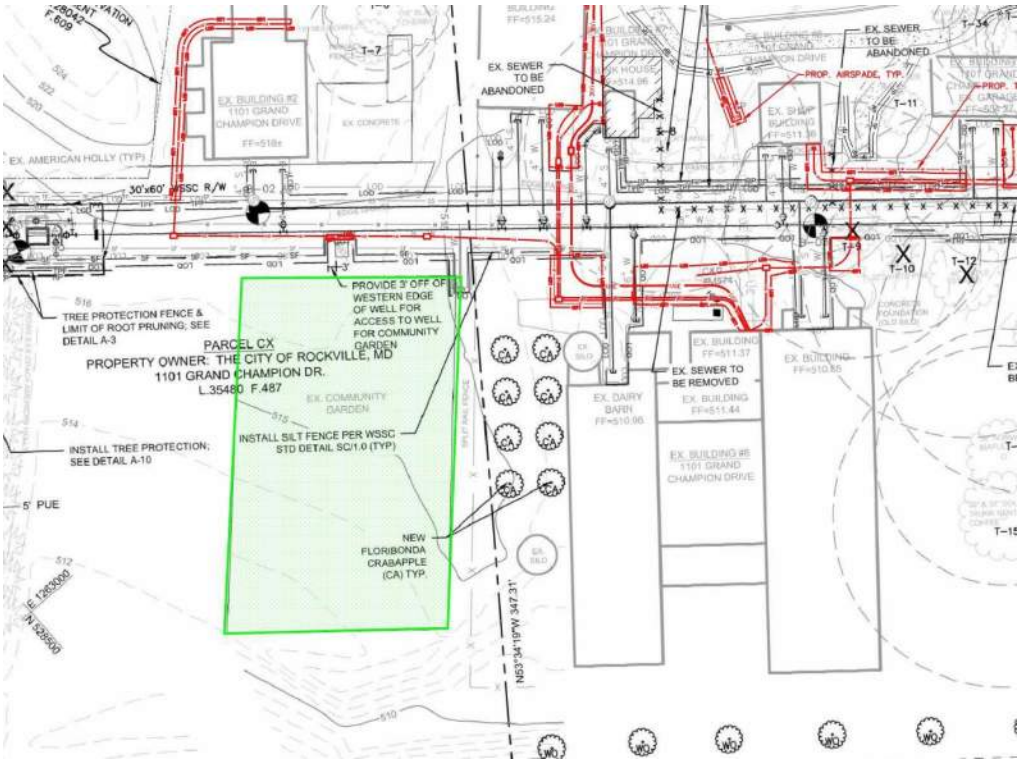
    Response: See #3 above. A Limited Notice to Proceed will be issued to allow for ordering of long lead items. A full Notice to Proceed will be issued to start the contract duration

21. Section V- Special Provisions-Mobilization/Demobilization: Will temporary power be required for the buildings?

    Response: We do not anticipate needing temp power at the buildings. However, the shutdown of the existing power and the switchover to new power will need to be coordinated to limit the time the buildings are without power. We do not anticipate power being shut off to the buildings until EAI is ready to do final switchover, so temp power is not anticipated.

22. Section V- Special Provisions-Site Access: Can you please confirm if this is correct because this is a farm not a park? Also, it's unsafe for this site to be open to the public while construction is going on because there will be trenches, material, and equipment in the way.

    Response: There is a community garden (see area in green below) located on this property that will likely remain open to the public during the growing season. Accommodations, such as relocating the entrance gate to the garden, will be made by COR to segregate construction personnel from pedestrian traffic. Nothing is expected from the contractor at this time.




23. Section V- Forest and Tree Conservation Requirements: Can this be excluded from the contract? Other language in the contract states that work should be completed within five months, but what's listed under these sections is technically additional work for the contractor past the five-month period.

    Response: There are Forest and Tree Conservation requirements shown in the drawings (e.g., air-spading, root-pruning, etc.). No additional work beyond what is shown in the drawings is implied by the inclusion of Section V in this agreement.

24. STANDARD FORM OF AGREEMENT BETWEEN THE CITY OF ROCKVILLE AND CONTRACTOR- Article 2: Same question as question #1 and #5 in this list.

    Response: A Bid Bond is not required; Performance and Payment Bonds are required.

25. STANDARD FORM OF AGREEMENT BETWEEN THE CITY OF ROCKVILLE AND CONTRACTOR- Article 7: Can this section be removed because no definite Guarantee can be made that all material will be available and delivered on time. Based on current lead times from manufacturers and delays we're seeing, there is a possibility that material may not be ready for a 5-month completion schedule project.

    Response: See #3 above. A Limited Notice to Proceed will be issued to allow for ordering of long lead items. A full Notice to Proceed will be issued to start the contract duration

**ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME IN THE TASK ORDER.**

**Additionally, please be sure to submit all required forms with your bid per this addendum and the solicitation instructions.**

**ACKNOWLEDGE RECEIPT OF ADDENDUM NO. 2 BY SIGNING BELOW AND RETURNING A COPY OF THE ADDENDUM WITH YOUR BID OR ACKNOWLEDGING IN YOUR BID.**

**ISSUED BY: PAT RYAN, PRINCIPAL BUYER, 07/27/2023**

**NAME OF BIDDER:** _____

**BID DUE DATE: 2:00PM (ET), WEDNESDAY, AUGUST 2, 2023**

# KING FARM FARMSTEAD
# ELECTRICAL INFRASTRUCTURE SERVICE

16100 FREDERICK ROAD
ROCKVILLE, MD
20850
DELTA PROJECT NO. 2019.331.006
MARCH 1, 2023

**2023-4655-ELL**

**THESE PLANS HAVE BEEN REVIEWED AND APPROVED FOR CODE COMPLIANCE.**
**03/28/2023**
*Chris Dempwolf*

## GENERAL COMMENTS

1. All work performed, whether detailed on the approved plans or not, shall comply with all applicable codes, ordinances and referenced standards as adopted and amended by the City of Rockville and the State of Maryland.
2. This construction must comply with all applicable provisions outlined in the Maryland State Accessibility Code.
3. Any changes to the "APPROVED PLANS" shall be submitted to and approved by this Division prior to the change being made in the field.
4. Review all comments prior to scheduling an inspection.
5. Approved plans MUST be on-site for all inspections. INSPECTIONS WILL NOT BE PERFORMED WITHOUT THE APPROVED PLANS PRESENT.
6. Field inspections shall determine code compliance. Any omissions or errors on the approved plans do not constitute approval of non-compliant installations.
7. The approval of these drawings does not allow the installation of the required/non-required fire protection system. OBTAIN A SEPARATE FIRE ALARM and SPRINKLER PERMIT.

**Refer to trade-specific drawings for trade-specific comments.**

**No further items found at this time; any future findings will require proper resolution to code conformance.**

**Other agency approvals may be required prior to the final inspections and or occupancy of this structure.**

**THE APPROVED PLANS AND ATTACHED NOTES SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES. INSPECTIONS WILL NOT BE CONDUCTED WITHOUT THE APPROVED PLANS**

## PROJECT SUMMARY

THIS PROJECT INCLUDES NEW ELECTRICAL POWER SERVICE ON THE KING FARM FARMSTEAD PARK PROPERTY FOR FUTURE RENOVATIONS AND FIT-OUT OF EXISTING STRUCTURES ON THE PROPERTY. THE MAIN ELECTRICAL DISTRIBUTION AND WIRING SHALL BE CONCEALED UNDERGROUND, AND THE PROJECT ALSO INCLUDES THE SEDIMENT CONTROLL AND FORESTRY MEASURES NECESSARY TO PROTECT THE EXISTING TOPOGRAPHICAL AND LANDSCAPE FEATURES ON THE SITE.

## INDEX OF DRAWINGS



## APPLICABLE CODES

NATIONAL ELECTRIC CODE NFPA 70 2017 EDITION
CITY OF ROCKVILLE MUNICIPAL CODE
MARYLAND STORMWATER DESIGN MANUAL VOLUMES 1 AND 2, REVISED 2009
2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

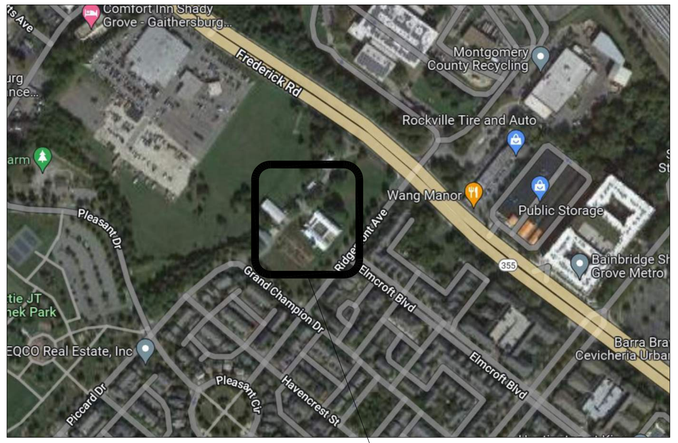
## ARCHITECT/ENGINEER


DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
8401 Connecticut Avenue, Suite 350
Chevy Chase, MD 20815
Tel: 301.718.0080
Fax: 301.718.9520
Email: mail@delta-eas.com
www.delta-eas.com

CLARK | AZAR & ASSOCIATES
20440 Century Boulevard, Suite 220
Germantown, MD 20874
Tel: 301.528.2010
www.clarkazar.com

HENRY ADAMS
Mechanical, Electrical & Plumbing Engineers
600 Baltimore Avenue
Towson, MD 21204
Tel: 410.296.65000
www.henryadams.com


## PROJECT LOCATION




PROJECT LOCATION

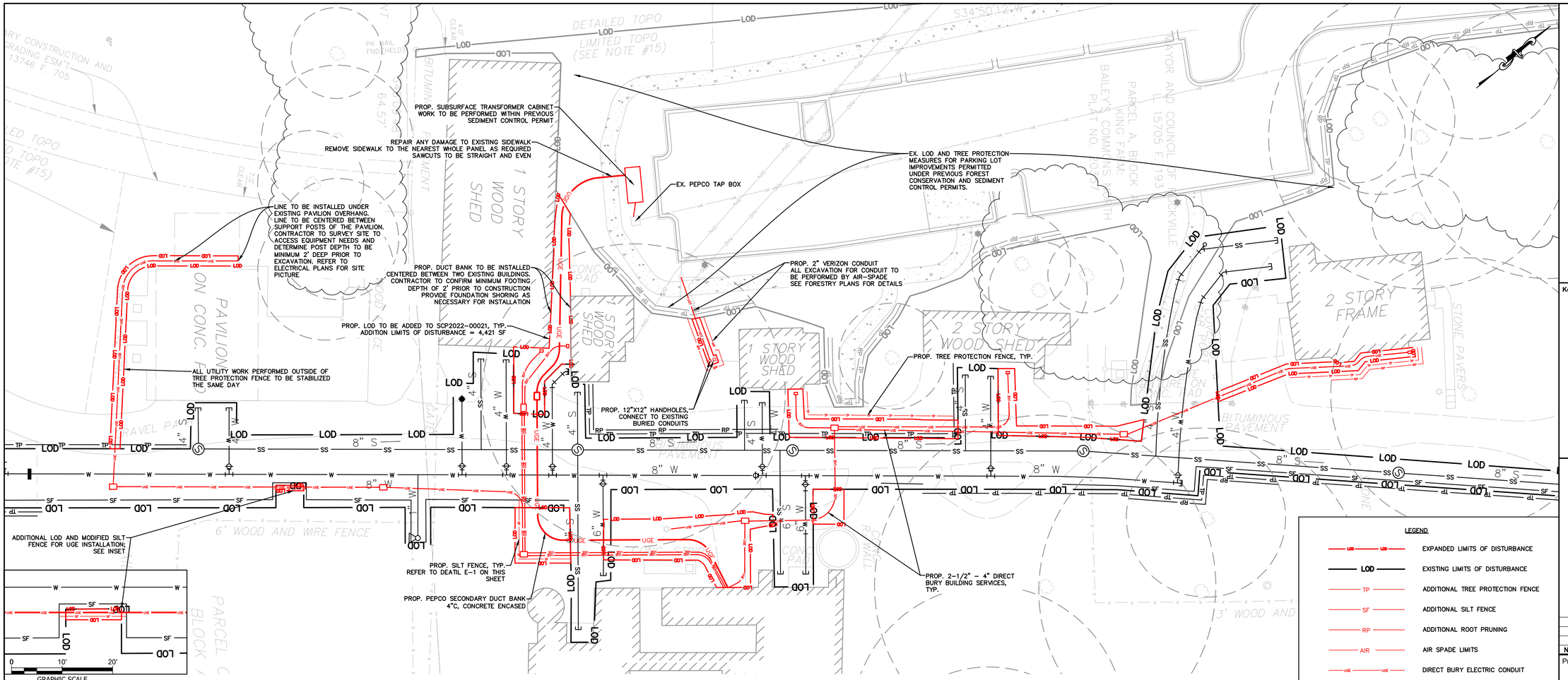
## OWNER

**City of Rockville, Department of Recreation and Parks**
**111 Maryland Avenue**
**Rockville, Maryland 20850**

STATE OF MARYLAND — DAVID FORESMAN — 21380 — REGISTERED PROFESSIONAL ENGINEER — APPROVED 3/28/2023

STATE OF MARYLAND — JAMES J. POLICARPO — 40505 — PROFESSIONAL ENGINEER — 3/1/23

G-001




## REVISED SEDIMENT CONTROL PLAN

SCALE: 1" = 20'

0 20' 40'

GRAPHIC SCALE

LEGEND

| | |
|---|---|
| LOD — LOD | EXPANDED LIMITS OF DISTURBANCE |
| LOD | EXISTING LIMITS OF DISTURBANCE |
| TP | ADDITIONAL TREE PROTECTION FENCE |
| SF | ADDITIONAL SILT FENCE |
| RP | ADDITIONAL ROOT PRUNING |
| AIR | AIR SPADE LIMITS |
| UGE — UGE | DIRECT BURY ELECTRIC CONDUIT |
| UGE | SECONDARY ELECTRIC DUCT BANK |
| UGT | VERIZON CONDUIT |
| | ELECTRICAL HAND HOLE |

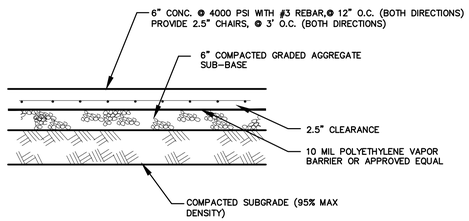
REVISED SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY THE CITY OF ROCKVILLE'S CONSTRUCTION MANAGEMENT DIVISION (240-314-8542), FORESTRY INSPECTOR (240-314-8713), [WSSC INSPECTOR (301-206-8300)] AND SEDIMENT CONTROL INSPECTOR (240-314-8879) AT LEAST 48 HOURS BEFORE COMMENCING WORK TO SCHEDULE A PRE-CONSTRUCTION MEETING. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OF THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS. THE LOCATIONS OF THE PROTECTION FENCING, SILT FENCE AND TRESS DESIGNATED FOR REMOVAL ON THE PLANS SHALL BE CLEARLY STAKED OUT PRIOR TO SCHEDULING THE PRE-CONSTRUCTION MEETING. ALL OTHER AGENCIES ISSUING PERMITS MUST BE PRESENT AT THE PRE-CONSTRUCTION MEETING.
2. CONTACT "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.
3. LOD MUST BE MARK[ED AND STAKED-OUT] IN THE FIELD PRIOR TO THE PRECONSTRUCTION MEETING.
4. INSTALL SEDIMENT AND EROSION CONTROL DEVICES IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND WITH THE REVISED SEDIMENT CONTROL PLANS.
5. INSTALL TREE PROTECTION BARRIERS ALONG THE LIMIT OF DISTURBANCE NEAR EXISTING TREES TO REMAIN, OR AS DIRECTED BY THE CITY OF ROCKVILLE FORESTER AND AS SHOWN ON THE REVISED EROSION AND SEDIMENT CONTROL PLANS.
6. INSTALL 8" WATER MAIN ALONG THE PROPERTYS' DRIVEWAY FROM STA. 0+83 TO STA. 5+34 COMPLETE WITH FITTINGS, VALVES, AND FIRE HYDRANTS AS SHOWN ON THE DRAWINGS. RESTRAIN ALL JOINTS AND FITTINGS.
7. INSTALL THE 4" AND 6" WATER MAINS TO EACH BUILDING COMPLETE WITH FITTINGS AND VALVES AS SHOWN ON THE DRAWINGS. RESTRAIN ALL JOINTS AND FITTINGS.
8. INSTALL 8" WATER MAIN (FROM STA. 0+15 TO STA. 0+83), METER VAULT, VALVES, FITTINGS, AND FIRE HOSE CONNECTION AS SHOWN ON THE DRAWING. RESTRAIN ALL JOINTS.
9. INSTALL 8"X8" TAPPING SLEEVE AND VALVE AT THE LOCATION SHOWN ON THE CONTRACT DRAWINGS, USING APPROVED FITTINGS AND CONNECTIONS. INSTALL 8" WATER MAIN FROM STA. 0+00 TO STA. 0+15. RESTRAIN ALL JOINTS. VALVES SHALL BE OPERATED BY WSSC PERSONNEL ONLY.
10. TEST AND DISINFECT NEW WATER PIPING IN ACCORDANCE WITH WSSC STANDARD SPECIFICATIONS FOR CONSTRUCTION.
11. RESTORE THE AREA TO EXISTING CONDITIONS.
12. INSTALL 8" SEWER MAIN FROM MH-6 TO EX MH U-029.
13. INSTALL 6" AND 4" SEWER MAINS FROM THE 8" MAIN TO EACH BUILDING AS SHOWN ON THE DRAWINGS.
14. INSTALL NEW ELECTRICAL VAULT, CONDUITS, HANDHOLES, AND DUCT BANK. (ADDED FOR CONTRACT AMENDMENT)
15. PERFORM SANITARY SEWER TESTING IN ACCORDANCE WITH WSSC STANDARD SPECIFICATION FOR CONSTRUCTION.
16. CONNECT TO EXISTING SANITARY SEWER.
17. RESTORE THE AREA TO EXISTING CONDITIONS.

[NOTE: ITEMS LISTED ABOVE MAY BE PERFORMED CONCURRENTLY OR OUT OF ORDER WITH WRITTEN PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR.]

GENERAL NOTES:

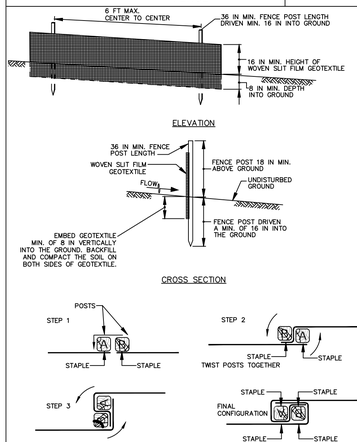
1. ALL NOTES AND DETAILS AS SHOWN ON PERMIT PLANS SU-3319-2021, SCP2022-00021, PWK2022-00059, AND FTP2022-00012 SHALL APPLY TO THESE PLANS.
2. THIS REVISED PLAN ONLY TO ADDRESS AREAS OF INCREASED LIMITS OF DISTURBANCE.
3. NO CHANGES TO THE ORIGINAL APPROVED PLANS ARE PROPOSED EXCEPT FOR EXPANDED LIMITS OF DISTURBANCE. SEE PREVIOUSLY APPROVED PLANS FOR ALL UTILITY INFORMATION.
4. GENERAL CONTRACTOR TO BE RESPONSIBLE FOR LOCATING AND MARKING ALL UTILITIES ON SITE PRIOR TO EXCAVATION.
5. SHOULD WATER AND SEWER WORK AND ELECTRICAL WORK BE PERFORMED BY SEPARATE CONTRACTORS, THE SECOND CONTRACTOR TO MOBILIZE WILL BE REQUIRED TO REPAIR ANY DAMAGE TO THE EXISTING SEDIMENT CONTROL AND FORESTRY MEASURES AND APPROVED BY THE RESPECTIVE INSPECTORS.




## TYPICAL CONCRETE PAVEMENT SECTION

N.T.S.

DETAIL E-1 SILT FENCE — STANDARD SYMBOL SF




1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE — STANDARD SYMBOL SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ¼ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE

Key Plan

SCALE: X" = XX'-X"

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name

CITY OF ROCKVILLE, DEPARTMENT OF RECREATION AND PARKS

KING FARM FARMSTEAD ELECTRICAL INFRASTRUCTURE SERVICE

16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
CLARK | AZAR & ASSOCIATES
20440 Century Blvd, Suite 220
Germantown, MD. 20874
T(301) 528-2010
www.clarkazar.com
A Woman Owned Small Business

Seal

Phase
100% Submission

Project No.
2019.331.006

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 22414, EXPIRATION DATE 1/10/2025.

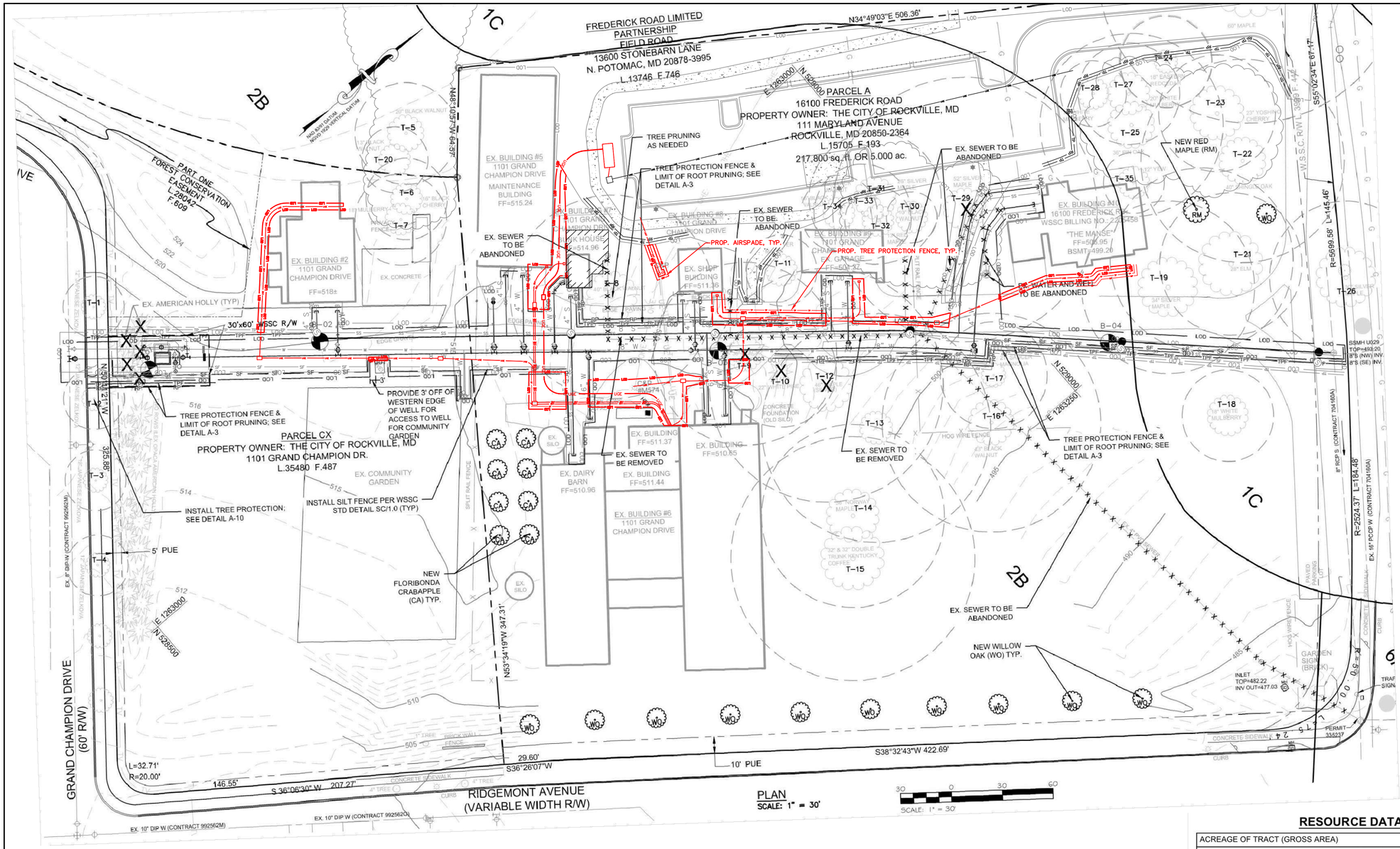
Date
03-01-2023

Drawing Title

REVISED ESC PLAN

Drawing No.

C-400




## REPLACEMENT TREES:

| SYMBOL | SPECIES | COMMON NAME | SIZE | NUMBER |
|---|---|---|---|---|
| WO | QUERCUS PHELLOS | WILLOW OAK | 2 ½" CALIPER B&B | 11 |
| CA | MALUS X "FLORIBUNDA" | CRABAPPLE | 2 ½" CALIPER B&B | 8 |
| RM | ACER RUBRUM "AUTUMN FLAME" | RED MAPLE | 2 ½" CALIPER B&B | 1 |

## SIGNIFICANT TREE REMOVALS

| TREE NUMBER | TREE SPECIES | SIZE | REPLACEMENTS |
|---|---|---|---|
| T-9 | BLACK WALNUT | 36" | 6 |
| T-10 | WHITE PINE | 22" | 2 |
| T-12 | SILVER MAPLE | 46" | 6 |
| T-29 | SILVER MAPLE | 52" | 6 |
| | AMERICAN HOLLY | 6"-8" | 0 |
| TOTAL | | | 20 |

## SOILS TABLE

| SYMBOL | SOIL | CHARACTERISTICS | | | | |
|---|---|---|---|---|---|---|
| | | PRIME AGRICULTURE | HIGHLY ERODIBLE*** | SERPENITIC**** | HYDRIC GROUP* | K FACTOR***** |
| 1C | Gaila silt loam, 8-15% slopes | No | No | No | No | 0.43 |
| 2A | Glenelg silt loam, 0-3% slopes | Yes | No | No | No | 0.43 |
| 2B | Glenelg silt loam, 3-8% slopes | Yes | No | No | No | 0.37 |

SOURCES: * USDA NRCS WEB SOIL SURVEY (http://websoilsurvey.nrcs.usda.gov)
** PAGE 140 TABLE 5 MONTGOMERY COUNTY, MARYLAND SOIL SURVEY
** URBAN OR BUILT UP AREAS OF THE PRIME AGRICULTURAL SOILS ARE NOT CONSIDERED
PRIME FARMLAND PER THE MONTGOMERY COUNTY MARYLAND SOIL SURVEY PAGE 140 TABLE 5
*** PAGE 67 APPENDIX C ERODIBLE SOILS LIST M-NCPPC MONTGOMERY COUNTY ENVIRONMENTAL GUIDELINES
**** PAGE 120 MONTGOMERY COUNTY SOIL SURVEY
***** TABLE 16 PAGE 212 MONTGOMERY COUNTY SOIL SURVEY



## RESOURCE DATA TABLE

| | |
|---|---|
| ACREAGE OF TRACT (GROSS AREA) | 4.68 |
| ACREAGE OF TRACT REMAINING IN AGRICULTURAL USE | 0.00 |
| ACREAGE OF TOTAL EXISTING FOREST | 0.18 |
| ACREAGE OF 100-YR FLOODPLAINS | 0.00 |
| ACREAGE OF FOREST W/IN 100-YR FLOODPLAINS | 0.00 |
| ACREAGE OF WETLANDS | 0.00 |
| ACREAGE OF ENVIRONMENTAL BUFFERS | 0.00 |
| ACREAGE OF FOREST WITHIN ENVIRONMENTAL BUFFERS | 0.00 |
| LINEAR FEET AND AVERAGE WIDTH OF ENVIRONMENTAL BUFFER PROVIDED | LINEAR FEET: 0' |
| | AVERAGE WIDTH: 0' |

## MINIMUM TREE COVER

| MINIMUM TREE COVER | | | |
|---|---|---|---|
| TRACT AREA SF | ZONING | MTC REQUIRED % | MTC SF REQUIRED |
| 203,700 | MXD/PARK | EXEMPT | EXEMPT |

## CERTIFICATION OF QUALIFIED PROFESSIONAL

I HEREBY CERTIFY THAT THE PLAN SHOWN HEREON HAS BEEN PREPARED IN ACCORDANCE WITH MARYLAND STATE, AND THE CITY OF ROCKVILLE FOREST CONSERVATION LAWS.

1.05.2023
DATE

MICHAEL A. NORTON
MDNR / COMAR 08.19.06.01
QUALIFIED PROFESSIONAL

Key Plan

SCALE: X" = XX'-X"

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name

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Date
03-01-2023

Drawing Title

AMENDED FOREST CONSERVATION PLAN

Drawing No.

L-100

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FOREST CONSERVATION WORKSHEET
King Farm Farmstead - Water/ Sewer Connection (Linear Project)

**NET TRACT AREA**:

| | | |
|---|---|---|
| A. Total tract area ... LOD + 100' | | 4.68 |
| B. Additions to tract area (Off-Site Work, etc.; construction required by this plan)... | | 0.00 |
| C. Land dedication acres (parks, county facility, etc.) ... | | 0.00 |
| D. Land dedication for roads or utilities (construction not required by this plan) ... | | 0.00 |
| E. Area to remain in commercial agricultural production/use ... | | 0.00 |
| F. Other deductions (specify) ..... | | 0.00 |
| G. Net Tract Area .....= | | 4.68 |

**LAND USE CATEGORY**:
MXD/Park

| | | | |
|---|---|---|---|
| G. Afforestation Threshold ... | 15% | x G = | 0.70 |
| H. Conservation Threshold ... | 15% | x G = | 0.70 |

**EXISTING FOREST COVER**:

| | |
|---|---|
| I. Existing forest cover .....= | 0.18 |
| J. Area of forest above afforestation threshold .....= | 0.00 |
| K. Area of forest above conservation threshold .....= | 0.00 |

**BREAK EVEN POINT**:

| | |
|---|---|
| L. Forest retention above threshold with no mitigation ....= | 0.00 |
| M. Clearing permitted without mitigation .....= | 0.00 |

**PROPOSED FOREST CLEARING**:

| | |
|---|---|
| N. Total area of forest to be cleared .....= | 0.00 |
| O. Total area of forest to be retained .....= | 0.18 |

**PLANTING REQUIREMENTS**:

| | | |
|---|---|---|
| P. Reforestation for clearing above conservation threshold ....= | 0.00 | |
| Q. Reforestation for clearing below conservation threshold ....= | 0.00 | 1 |
| R. Credit for retention above conservation threshold .....= | 0.00 | |
| S. Total reforestation required .....= | 0.00 | 1 |
| T. Total afforestation required .....= | 0.52 | |
| U. Credit for landscaping (may not exceed 20% of "S") .....= | 0.00 | |
| V. Total reforestation and afforestation required (see note).= | **0.52** | |
| worksheet date | 9/13/2021 | |

**NOTE**: Per City of Rockville Forest Conservation Manual Sec 8.c- Linear projects are exempt from Minimum Tree Cover and Afforestation. Total reforestation/afforestation/MTC is 0 acres) - Only significant tree replacement will apply.

**GENERAL NOTES:**

1. The subject property (Limits of Disturbance -LOD + 100' on each side) is 4.68 acres
2. The subject property is zoned PD-King Farm zone; however the subject property is on park property and therefore should be in the Park Zone
3. The subject property is located within the Rockcreek Watershed. There is no mapped stream or FEMA 100-year flood plan. Verified on FEMA Flood Map Service map 24031C0331D, 9/29/2006.
4. There are no perennial, intermittent streams, or streams on the property. There are two functioning water source wells. One serving the Manse and the other serving the garden plots.
5. Per U.S. Fish and Wildlife Services National Wetlands Inventory - Surface Waters and Wetlands Online Mapper resource, there are no mapped wetlands on the subject property. The site was accessed on September 8, 2021. Visual observations made on September 8, 2021 did not find evidence of wetland plants or seeps. The only hydric soil (6A Baile silt loam) is located outside the perimeter of the LOD + 100' distance.
6. DNR Wildlife and Heritage Division were contacted by the adjacent property owners and based on the General Notes # 7 from the Approved NRI/FSD - FTP 2021-00021 ( adjacent property) there are no Rare, Threatened or Endangered Species noted.
7. Field work was completed by Paula Perez, City Forester and Steve Mader, Superintendent of Parks and Facilities on September 8, 2021.
8. The subject property is within the King Farmstead Historic District, 16100 Frederick Road as indicated on the City of Rockville GIS data base.
9. There is a small portion of an existing forest conservation easement located within the subject property. The location is on the north side of Grand Champion Drive at the entrance to the subject property. The portion of the existing easement is approximately 0.2 acres and comprised of Silver Maple, Red Bud, White Oak, Pin Oak, Mulberry, Black Cherry and numerous NNIs including Tree of Heaven and Bush Honeysuckle.
10. There are no steep slopes within the subject property.
11. The primary soils types found within the subject property include 2B Glenleg silt loam, 3-8 percent slope and Gaila silt loam, 8-15 percent slope. Soil data is from the USDA Natural Resources Conservation Service - Web Soil Survey.
12. Tree shown are survey located or are shown in their approximate locations. CTLA data sheets were completed, and the basis of the ratings include in the Significant Tree Summary Sheet.

## SIGNIFICANT TREE TABLE

| Tree # | Scientific Name | Common Name | Size | Condition | Comment | SQFT CRZ |
|---|---|---|---|---|---|---|
| T-1 | Zelkova serrata | Japanese Zelkova | 12" | 93 | Street tree | 1,017 |
| T-2 | Zelkova serrata | Japanese Zelkova | 12" | 93 | Street tree | 1,017 |
| T-3 | Zelkova serrata | Japanese Zelkova | 12" | 93 | Street tree | 1,017 |
| T-4 | Zelkova serrata | Japanese Zelkova | 12" | 93 | Street tree | 1,017 |
| T-5 | Juglans nigra | Black Walnut | 20" | 81 | Lots of invasive | 2,827 |
| T-6 | Prunus serotina | Black Cherry | 16" | 75 | Lots of invasive | 1,809 |
| T-7 | Morus alba | White Mulberry | 18" | 75 | Lots of invasive | 2,290 |
| T-8 | Juglans nigra | Black Walnut | 40" | 93 | | 11,309 |
| T-9 | Juglans nigra | Black Walnut | 36" | 87 | | 9,160 |
| T-10 | Pinus strobus | White Pine | 22" | 68 | Remove | 3,421 |
| T-11 | Acer saccharinum | Silver Maple | 14" | 90 | | 1,385 |
| T-12 | Acer saccharinum | Silver Maple | 46" | 56 | Remove | 14,957 |
| T-13 | Prunus x yedoensis | Yoshino Cherry | 45" | 69 | | 14,313 |
| T-14 | Acer platanoides | Norway Maple | 36" | 76 | Non-native | 9,160 |
| T-15 | Gymnocladus dioicus | Kentucky coffeetree | 32"/32" (48") | 75 | Double stem | 16,286 |
| T-16 | Juglans nigra | Black Walnut | 43" | 91 | | 13,069 |
| T-17 | Magnolia x soulangiana | Saucer Magnolia | 21" | 78 | | 3,117 |
| T-18 | Morus alba | White Mulberry | 18" | 78 | | 2,290 |
| T-19 | Acer saccharinum | Silver Maple | 34" | 84 | | 8,171 |
| T-20 | Juglans nigra | Black Walnut | 13" | 90 | | 1,194 |
| T-21 | Ulmus spp. | Elm | 28" | 69 | | 5,341 |
| T-22 | Quercus imbricaria | Shingle Oak | 40" | 69 | | 11,309 |
| T-23 | Prunus x yedoensis | Yoshino Cherry | 23" | 63 | | 3,739 |
| T-24 | Juniperus virginiana | Eastern Redcedar | 18" | 91 | | 2,270 |
| T-25 | Quercus Palustris | Pin Oak | 36" | 69 | | 9,160 |
| T-26 | Acer saccharinum | Silver Maple | 30" | 69 | | 6,361 |
| T-27 | Morus alba | White Mulberry | 20" | 63 | | 2,827 |
| T-28 | Morus alba | White Mulberry | 13" | 63 | | 1,194 |
| T-29 | Acer saccharinum | Silver Maple | 52" | 69 | | 19,113 |
| T-30 | Juglans nigra | Black Walnut | 10" | 94 | | 706 |
| T-31 | Acer saccharinum | Silver Maple | 26" | 75 | | 4,778 |
| T-32 | Acer rubrum | Red Maple | 13" | 59 | | 1,194 |
| T-33 | Juglans nigra | Black Walnut | 19" | 78 | | 2,551 |
| T-34 | Julgans nigra | Black Walnut | 15" | 78 | | 1,590 |
| T-35 | Taxus spp | Yew | 12" | 90 | | 1,017 |

**Justification for removal of tree T-9, 39" diameter Black Walnut**
Tree T-9 is located within the Limits of Disturbance (LOD) of the sewer and water line construction project. Owners considered options such as relocation of the lines, reduction of the LOD and sheeting and shoring during construction. Those 3 options were not feasible because the disturbance to the critical roots zone still exceeded 30% with each option. Therefore the recommendation is to remove and replace the Black Walnut.

**Arboricultural Care of Tree T-8, 48" diameter Black Walnut**
1. Remove all deadwood over 1" diameter
2. Saw cut the asphalt at the LOD and remove asphalt and sub base by hand within the remaining CRZ.
3. Air spade to expose roots within CRZ prior to root pruning. Root prune at the LOD line one foot back from trench.
4. Apply 2-3 " over entire CRZ outside of the LOD
5. Apply cambistat per the manufactures recommendations
6. Establish a watering protocol for the first 6 months after construction to include weekly watering when there is less than 1" of rainfall per week

**SITE DESCRIPTION**

The subject property is located at 16100 Frederick Road, Rockville Maryland and is bounded by Grand Champion Drive, Ridgemont Avenue and Frederick Road (Route 355). The closest community is the King Farm Development and proposed King Pontiac Development to the west.

Existing land use is a public park, known as the King Farm Farmstead including two dairy barns, horse barn, Manse, community gardens, hay-drying shed/picnic shelter and several other ancillary buildings and structures.

The site topography gently slopes from Grand Champion Drive to Frederick Road (Route 355). Elevations range from 518' to 485'.

The primary soils types found within the subject property include 2B Glenleg silt loam, 3-8 percent slope and Gaila silt loam, 8-15 percent slope. Soil data is from the USDA Natural Resources Conservation Service - Web Soil Survey.

All significant trees over 12" d.b.h have been identified and included in Significant Tree Summary Sheet.

CERTIFICATION OF QUALIFIED PROFESSIONAL

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1.05.2023
DATE

MICHAEL A. NORTON
MDNR / COMAR 08.19.06.01
QUALIFIED PROFESSIONAL

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE
ROCKVILLE, MARYLAND
Approved 12/1/2023

Key Plan

SCALE: X" = XX'-X"

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE, DEPARTMENT OF RECREATION AND PARKS
KING FARM FARMSTEAD ELECTRICAL INFRASTRUCTURE SERVICE
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

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Date
03-01-2023

Drawing Title
AMENDED FOREST CONSERVATION PLAN

Drawing No.
L-200

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# Forest and Tree Preservation Ordinance Notes

NOVEMBER 2019

## SEQUENCE OF EVENTS

The permittee is responsible for strict adherence to the sequence and details as outlined. During each stage of the project, forestry staff may provide additional direction based on site conditions, unforeseen circumstances, or approved revisions.

### PRE-CONSTRUCTION

1. Permittee shall obtain a Forestry Permit (FTP) for the project and secure copies of the approved Forest Conservation Plan (FCP) for distribution to contractors. The Permittee is responsible for obtaining a Maryland Roadside Tree Permit if applicable: Contact Miss Utility at 1-800 257-7777.

2. The Permittee must coordinate and schedule an onsite preconstruction meeting with the following attendees: Permittee, Construction Superintendent, Maryland LTE/ISA Certified Arborist (if required by Forestry Department), the City Forestry Inspector, City Project Inspector, and City Sediment Control Inspector. The limits of disturbance must be staked and flagged prior to the preconstruction meeting. No land disturbance shall occur prior to this meeting. This includes, but is not limited to, the installation of tree protection fencing, sediment control measures, clearing, grading and tree stress reduction measures. The limits of disturbance will be reviewed, and tree protection and tree care measures will be discussed.

3. No land disturbance shall begin before stress-reduction measures as indicated on the approved FCP, or otherwise directed by the Forestry Inspector have been implemented and approved by Forestry Inspector. Measures not specified on the plan may be required as determined by the Forestry Inspector in consultation with the Permittee's MD LTE/ISA Certified Arborist. Appropriate stress-reduction measures may include, but are not limited to:
   a. Root pruning
   b. Crown reduction or pruning
   c. Watering
   d. Fertilizing
   e. Surface mulching
   f. Vertical mulching
   g. Root aeration matting

4. A professional with the dual credentials of Maryland Department of Natural Resources Licensed Tree Expert (LTE) and International Society of Arboriculture Certified Arborist (ISA CA) must perform all stress reduction measures. Documentation of these qualifications may be required. The measures must be done in accordance with *ANSI Standards for Tree Care Operations* (A300) and other industry best management practices. Implementation of the stress reduction measures must be observed by the Forestry Inspector or written documentation, including photographs must be sent via mail or email to the City Forestry Inspector.

5. Temporary tree protection devices, including signage, shall be installed per the approved Forest Conservation Plan, or as otherwise directed by the Forestry Inspector, and prior to any land disturbance. Tree protection fencing locations must be staked and flagged prior to the pre-construction meeting. The Forestry Inspector, in coordination with the City Sediment Control Inspector, may make field adjustments to increase the survivability of trees and forest shown as saved on the approved plan. The Permittee must contact the Forestry Inspector to schedule a follow up construction inspection after installing all tree protection measures and performing all stress reduction measures. Upon a satisfactory inspection by the Forestry Inspector and Sediment Control Inspector, a Notice to Proceed will be issued and clearing and grading can commence. Temporary tree protection devices may include:
   a. Chain link fence (four feet high)
   b. Super silt fence with wire strung between the support poles (minimum 4 feet high) with high visibility flagging.
   c. 14 gauge 2 inch x 4 inch welded wire fencing supported by steel T-bar posts (minimum 4 feet high) with high visibility flagging.



6. The Permittee and contractor shall maintain the temporary tree protection devices for the duration of the project and the location must not be altered without prior approval of the Forestry Inspector. No equipment, trucks, materials, debris, or any other items may be stored within the tree protection fence areas during the entire construction project. No access beyond the fenced area will be permitted. Tree Protection fencing shall not be removed without prior approval of the Forestry Inspector.

7. Long term tree protection devices/techniques, as shown on the FCP or as directed by the Forestry Inspector may include but are not limited to:
   a. Root aeration systems
   b. Retaining walls
   c. Raised sidewalks
   d. Tunneling of utilities
   e. Pier and panel walls
   f. Porous pavers

### DURING CONSTRUCTION

1. Periodic inspections at the discretion of the Forestry Inspector will occur during the construction project. Corrections and repairs to all tree protection devices and other protective measures, as determined by the Forestry Inspector, must be made within the timeframe established by the Forestry Inspector.
2. The Permittee must immediately notify the Forestry Inspector of any damage to trees, forests, understory, ground cover, and any other undisturbed areas shown on the plan. Remedial actions to the restore these areas will be determined by the Forestry Inspector and the corrective actions must be made within the timeframe established by the Forestry Inspector.
3. Failure to comply with the approved FCP or any directive of the City Forester's office is a violation of the Forest and Tree Preservation Ordinance (FTPO). Pursuant to Section 10.5-34 of the FTPO, a fine in the amount of $1,000 may be imposed for each violation. Each day a violation continues is a separate violation. In addition, a stop work order may be issued until the violation has been abated and the fine has been paid or an appeal has been filed pursuant to Section 10.5-35 of the FTPO. Additional punitive measures as stated under Section 10.5-34 of the FTPO may be imposed.

### POST CONSTRUCTION

1. After construction is completed, the Permittee must request a final inspection in writing with the Forestry Inspector. At the final inspection, the Forestry Inspector may require additional corrective measures, which may include, but is not limited to:
   a. Removal and replacement of dead and dying trees
   b. Pruning of damaged, dead or declining limbs
   c. Surface mulching
   d. Soil aeration
   e. Fertilization
   f. Watering
   g. Wound repair
   h. Clean up of retention areas including trash removal
2. After the final inspection and completion of all corrective measures the Forestry Inspector will request all temporary tree and forest protection devices be removed from the site. Removal of tree protection devices that also operate for erosion and sediment control must be coordinated with both the City Sediment Control Inspector and the Forest Conservation Inspector. No additional grading, sodding, or burial may take place after the tree protection fencing is removed.

### INSTALLATION OF PLANT MATERIAL

1. The Permittee is responsible for obtaining the approved Forest Conservation Plan/Landscape Plan and providing a copy to the Landscape Contractor. The Permittee shall ensure that the Landscape Contractor can secure the plants shown the FCP/Landscape Plan. Plant substitutions are not allowed. It is strongly recommended that plant material be secured from supplier by the project start date.



2. A pre-planting meeting is required before installation of landscaping, afforestation, or reforestation. The applicant must schedule an on-site pre-planting meeting with the City Forestry Inspector. Attendees must include the Permittee, landscape contractor, and Forestry Inspector. Trees and shrubs shall conform to the current edition of the American Standard for Nursery Stock (ANSI Z60.1).

3. Comply with appropriate City Soil Specification:
   I. Soil Specification FOR TREE PLANTING WHERE EXISTING PAVEMENT OR OTHER IMPERVIOUS SURFACES WERE PREVIOUSLY LOCATED OR WHERE EXISTING GREENSPACE HAS BEEN SEVERELY DEGRADED[1]
      1. Site preparation
         a. Demolish existing impervious surface and remove all existing asphalt, concrete, stone and construction materials to expose subsoil free of debris.
         b. Excavate so that final planting bed will provide quality soil to a depth of forty-eight (48) inches, and to a radius of 10' minimum or to new hard edge of planting bed, whichever is less.
         c. Loosen exposed subsoil below 48" by ripping 18" into the sub grade elevation.
         d. Test to ensure that planting bed drains at a rate of at least 1 inch/per hour.
         e. Install imported soil to fill excavated planting bed. Imported soil shall have a texture of LOAM, per the USDA soil classification system and a chemical composition compatible with healthy tree growth. When installing the soil, it should be installed in lifts or layers of < 12 inches (30 cm), tamping or watering (not both) between lifts to minimize potential settling.
      2. Immediately prior to installation of plant material, the soil must be tested and must have a pH range between 5.5 and 7 and a nutrient content which corresponds to an adequate rating, per current industry standards. Amend soil, if necessary, to achieve the current industry standard.
      3. The Forestry Inspector may require additional soil specifications, based on site conditions.
   II. Soil Specification FOR PLANTING WHERE EXISTING GREEN SPACE HAS NOT BEEN PROTECTED FROM CONSTRUCTION IMPACTS BUT IS NOT SEVERELY DEGRADED.
      1. Site Preparation:
         a. Remove all construction debris and top four to six inches of existing soil.
         b. Test remaining existing soil to verify a pH range between 5.5 and 7, and has a nutrient content which corresponds to an adequate rating, per current industry standards.
         c. Apply four (4) inches of mature compost evenly over the entire planting surface. (4" = 12 Cubic Yard/1,000 s.f.). Provide compost supplier information and specifications to the City Forestry Inspector for approval prior to install
         d. Till the compost into the existing soil to a minimum depth of thirty-six (36) inches using the city's soil profile rebuilding specification.
         e. If soil does not meet nutrient standards, mitigate soil chemistry to meet the chemical parameters.
      2. The Forestry Inspector may require additional soil specifications, based on site conditions.
   III. Soil Specification FOR PLANTING WITHIN EXISTING GREEN SPACE AREAS WHICH HAVE BEEN PROTECTED FROM CONSTRUCTION IMPACTS (One of two options, as determined by Forestry Inspector) Refer to approved City of Rockville Detail A-7
      1. Test existing soil to verify it has a pH range between 5.5 and 7, and a nutrient content which corresponds to an adequate rating, per current industry standards. If soil does not meet nutrient standards, one of two options will be performed to mitigate the soil:
         a. Option 1- Till Method- Depth of tilling for planting must be at least twenty-four (24) inches:
            i. Apply four (4) inches of mature compost evenly over the entire planting surface (4" = 12 cubic yards/1,000 s.f.). Provide compost supplier information and specifications to the City Forestry Inspector for approval prior to install.
            ii. Till the compost into the existing soil to a minimum depth of twenty-four (24") inches.
         b. Option 2 — Aeration and Vertical Mulching
            i. Using a 2- 3" Auger, drill a series of holes in the soil to a depth of twenty-four (24) inches.
            ii. Begin at the edge of the hole dug for the root ball and continue drilling at one-foot intervals (maximum), in concentric rings around the tree out to ten (10) feet from the tree.
            iii. Each hole must be refilled with mature compost.
         c. The Forestry Inspector may require additional soil specifications, based on site conditions.

[1] See definitions section #9



   IV. Soil testing of the existing soil may be conducted with PRIOR approval from the City's Forestry Inspector to determine the number and location of the samples. The above requirements may be reduced if soil testing shows the following:
      1. Soil pH is between 5.5 and 7
      2. The top 24" of existing soil contains a minimum of 4-6% organic matter by weight
      3. The soil is free of contaminants
      4. The soil texture is sandy loam or loam
      5. The soil has an infiltration rate not less than 1" per hour
      6. The soil does not contain debris or stones greater than one inch
      7. The soluble salt content is less than 3 dS/m
      8. Consult the University of Maryland Extension website: http://extension.umd.edu/ for a listing of commercial soil testing facilities.
   V. Soil preparation is required for street trees planted within the city's rights-of-way and private street trees, if they are part of the approved plan.

4. The depths and grades shown on plan drawings are final grades after settlement and shrinkage of the organic material. The contractor shall install the soil mix at a higher level to anticipate this reduction of volume. All grades are assumed to be "as measured" to be prior to the addition of any surface compost till layer or mulch or sod.

5. All details of the planting plans regarding plant quality and proper planting will be discussed including but not limited to:
   a. Plant quality.
   b. Proper form for species.
   c. Proper ratio of caliper size/height to container size/root ball size.
   d. Proper pruning cuts if applicable in accordance with current ANSI A300 pruning standards (generally there should be no recent pruning).
   e. No co-dominant stems or multiple trunks (unless approved by FCP or by The Forestry Inspector).
   f. Sound graft union.
   g. Free of girdling roots, or the ability to remove girdling roots without damaging the tree.
   h. Trees shall be healthy, vigorous, insect/disease free, and without cankers/cracks or trunk damage.

6. Proper Installation
   a. Root flare no higher than 3 inches from existing grade.
   b. Exposed root flare (not graft); removing more than several inches of soil to expose the root flare may result in the rejection of the plant material.
   c. Wire baskets/twine/burlap removed from at least the top half of root ball, or as directed by Forestry Inspector.
   d. All burlap or twine removed completely.
   e. No hose and wire; staking and strapping per City planting detail.
   f. Planting Hole a minimum of twice the width of the root ball; could be greater. Planting detail assumes soil has been prepared per the city's specifications (Planting, #3).
   g. Mulched properly, per City planting detail.
   h. Wildlife protection installed, if required; type approved by the Forestry Inspector.

7. Trees not complying with the above requirements may be rejected at the discretion of the City Forestry Inspector.

8. Tree planting will generally not be permitted between the dates of June 1 and September 1, or when the ground is frozen.

9. DEFINITIONS
   a. Topsoil
      i. Soil can be considered topsoil if it originates from an A horizon of a natural soil or is a mineral soil with 4-6%% organic matter content, and a NRCS textural class similar to pre-development conditions A horizon soils for the site, or as specified by the City Forestry Division. The city Forestry Division will specify a LOAM texture in the absence of native conditions listed above. Blended soils shall not be used unless specified by the City Forestry Division. In addition, topsoil shall:
         1. Be friable and well drained
         2. Have a pH between 5.5-7.



   3. Have an organic matter content between 4-6%.
   4. Have low salinity as indicated by a soluble salt content which is less than 3 dS/m
   5. Be free of debris, stone, gravel, trash, large sticks, heavy metals, and other deleterious contaminants, (if screening is used to remove debris, screen size must be ¼ inch or larger).
   6. Have a nutrient profile such that it has an adequate rating, per current industry standards.
   7. Be free of noxious weed seeds

b. Compost
   i. Compost shall be composed of leaves, yard waste, or food waste. Biosolid-based composts shall not be used. A compost sample with analysis shall be submitted for approval to the City Forestry Division before application.
   ii. Stability refers to the rate of biological breakdown, measured by carbon dioxide release. Maturity refers to completeness of the aerobic composting process and suitability (lack of plant toxicity) as a plant growth media, often measured by ammonia release and by plant growth tests. Compost manufacturers that subscribe to the US Composting Council's testing program may document stability as compost testing 7 or below in accordance with TMECC 05.08-B, "Carbon Dioxide Evolution Rate". Maturity (suitability for plant growth) may be documented as compost testing greater than 80% in accordance with TMECC 05.05-A, "Germination and Vigor". Compost is considered mature and stable if it tests at 6.0 or higher on the Solvita Compost Maturity Index Rating, which is a combination of Carbon Dioxide and Ammonia Maturity Tests (test information and equipment available at www.solvita.com).
   iii. Compost shall also be:
      1. Free of weed seeds.
      2. Free of heavy metals or other deleterious contaminants.
      3. Have a soluble salt content which is less than 3 dS/m.

c. Severely Degraded Soil
   i. Soil shall be considered severely degraded if grade was lowered or raised more than 14 inches OR soil was compacted in lifts regardless of the final grade OR was used as a staging area for construction materials, equipment or processes.
   ii.

### POST INSTALLATION

1. The Permittee shall notify the City Forestry Inspector IN WRITING when the planting is complete and request a post planting inspection. The inspection must include the Permittee, landscape contractor and Forestry Inspector. The maintenance and warranty period will not begin until the City Forestry Inspector has accepted ALL plantings.

2. Trees will be inspected for plant quality and proper planting in accordance with City specifications and nursery standards. Once the maintenance period has begun, the applicant is responsible for maintaining plant health in accordance with the signed Warranty and Maintenance Agreement.

3. Routine inspections will be conducted throughout the warranty period and the applicant will be notified in writing when corrective measures are required. Failure to complete the corrective measures by the given date may result in fines being issued, permits revoked, extension of warranty period or other punitive measures.

4. Such maintenance shall include when appropriate, but not necessarily be limited to:
   a. Weekly watering equal to 10 gallons per caliper measure of tree diameter. (ex: 2.5" caliper tree =25 gallons/week.) Documented drenching natural rainfall may substitute for weekly watering.
   b. Control of competing vegetation throughout the maintenance period as necessary.
   c. Fertilizing, as required by soil analysis.
   d. Pruning, mulching, tightening of strapping, resetting of plants to proper grades or upright position.
   e. Furnishing and applying pesticides or other items necessary to thwart damage from insects and disease.
   f. Providing protection measures such as fencing and interpretive signs as necessary, to prevent destruction or degradation of the planting site.
   g. Replacement of dead and dying trees. Survival standards contained in the State Forest Conservation Manual shall be followed for the protection and satisfactory establishment of forest where applicable.



   h. Eradicate, suppress and control non-native and invasive plant species during the maintenance period to the satisfaction of the City Forestry Inspector.
   i. Installing and maintaining devices to protect against wildlife damage.
   j. Removal of staking and strapping after six months, or as directed by the Forestry Inspector.

### NON-NATIVE INVASIVE PLANT CONTROL:

1. The City of Rockville maintains a list of non-native and invasive plants for certain available on the City's website. The State of Maryland maintains a noxious weed list. The Permittee shall submit a Non-Native and Invasive Management Plan to the City Forestry Inspector for review and approval prior to the pre-planting meeting. Details to be included in the management plan are:
   a. Narrative and/or plan stating the location, type and amount of non-native and invasive plants present on the site.
   b. Proposed treatment measures and methods of control by plant type.
   c. Timing and frequency of treatments by plant type.
   d. Plan for seeding and/or re-planting following management/eradication treatment..
   e. Proposed signage type and locations for installing herbicide application notification signs.
   f. Copies of contractor certifications/pesticide licenses.

2. Contractor is responsible for complying with MDE, EPA and other government agency regulations as well as obtaining proper permits from these agencies as applicable. The Forestry inspector must be notified 48 hours in advance prior to commencing any and all treatments.

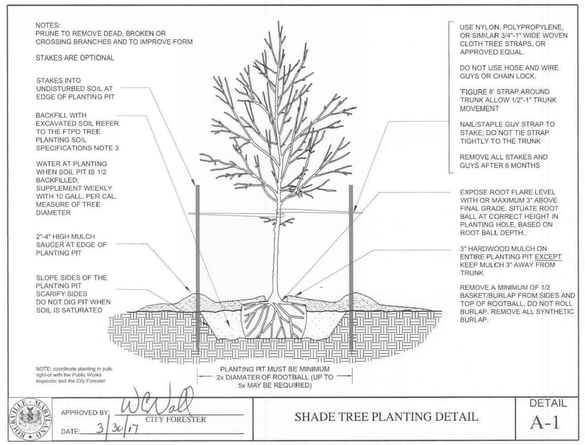
3. The Forestry Inspector will perform periodic inspections of the non-native and invasive treatments throughout the warranty and maintenance period. The applicant may be required to submit proof of treatment.

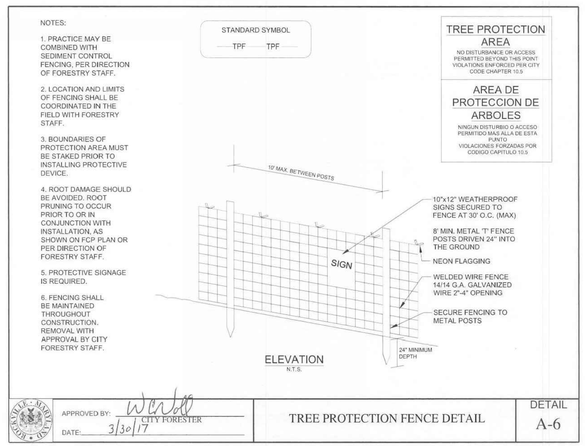
## CERTIFICATION OF QUALIFIED PROFESSIONAL

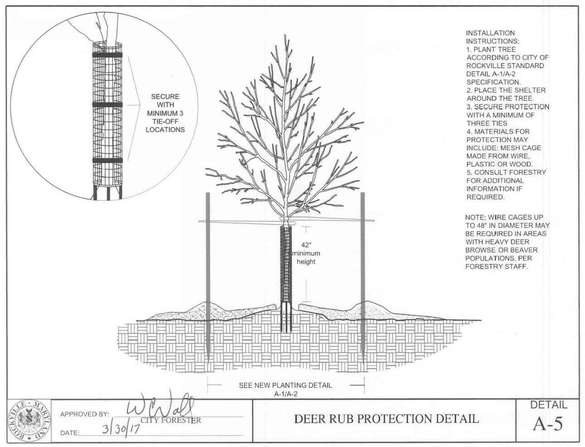
I HEREBY CERTIFY THAT THE PLAN SHOWN HEREON HAS BEEN PREPARED IN ACCORDANCE WITH MARYLAND STATE, AND THE CITY OF ROCKVILLE FOREST CONSERVATION LAWS.

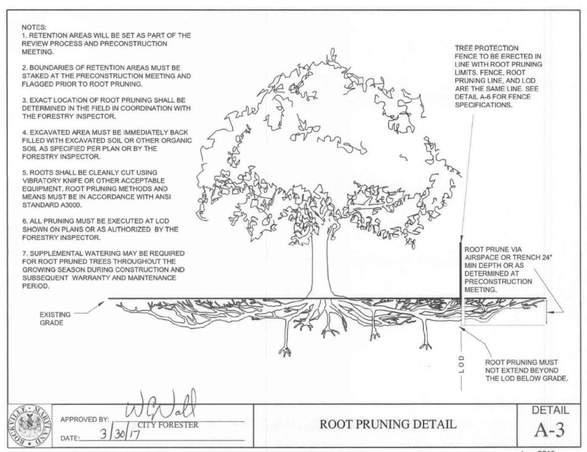
1.05.2023
DATE

MICHAEL A. NORTON
MDNR / COMAR 08.19.06.01
QUALIFIED PROFESSIONAL






**Key Plan**

SCALE: X" = XX'-X"

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name

CITY OF ROCKVILLE, DEPARTMENT OF RECREATION AND PARKS

KING FARM FARMSTEAD ELECTRICAL INFRASTRUCTURE SERVICE

16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS
CLARK | AZAR & ASSOCIATES
20440 Century Blvd, Suite 220
Germantown, MD. 20874
T(301) 528-2010
www.clarkazar.com
A Woman Owned Small Business

Seal

Phase
100% Submission

Project No.
2019.331.006

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 31168, EXPIRATION DATE 1/12/2023.

Date
03-01-2023

Drawing Title

AMENDED FOREST CONSERVATION PLAN

Drawing No.

L-300

K:\ALD PROJECTS\22-038\DRAWINGS\22-038 FFCP.dwg 1/5/2023 8:53 AM

## GENERAL ELECTRICAL NOTES

1. PROVIDE LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, DELEGATED DESIGN AND INCIDENTALS NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM.
2. PERFORM WORK AS REQUIRED BY APPLICABLE CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION.
3. MATERIAL AND EQUIPMENT SHALL BE LISTED AND LABELED BY NATIONALLY RECOGNIZED TESTING LABORATORIES FOR INTENDED SERVICE.
4. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
5. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET SHALL BE COMPLETE, CURRENT, AND AVAILABLE UPON REQUEST.
6. SUBMIT FOR APPROVAL, SHOP DRAWINGS FOR EQUIPMENT AND MATERIALS USED ON PROJECT. OBTAIN APPROVAL BY ENGINEER PRIOR TO PURCHASE OF EQUIPMENT AND MATERIALS.
7. REPAIR OR REPLACE DAMAGE TO FACILITIES AND EQUIPMENT AT NO ADDITIONAL EXPENSE TO OWNER.
8. PATCH AND REPAIR DISTURBED AREAS TO MATCH ADJACENT SURFACES AND FINISHES.
9. PROVIDE TEMPORARY POWER AND LIGHTING FOR OTHER TRADES AS REQUIRED TO COMPLETE PROJECT IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.
10. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. PROVIDE COMPONENTS INDICATED ON RISER DIAGRAMS WHETHER OR NOT INDICATED ON PLANS, AND VICE VERSA.
11. LOCATIONS SHOWN ON PLANS ARE APPROXIMATE AND REQUIRE COORDINATION WITH OTHER TRADES. ROUTING OF CONDUIT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW REQUIRED OFFSETS AND DETAILS. OBTAIN DRAWINGS AND SPECIFICATIONS FROM OTHER TRADES AND COORDINATE WITH OTHER TRADES.
12. COORDINATE ELECTRICAL INSTALLATION WITH FIELD CONDITIONS. LOCATIONS SHOWN ARE DIAGRAMMATIC AND MAY REQUIRE ADJUSTMENT IN FIELD.
13. PERMANENTLY LABEL NEW ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, DEVICE DESIGNATION AND SUPPLY CIRCUIT DESIGNATION.
14. CORE DRILL CONCRETE WALLS AND FLOORS TO PROVIDE OPENINGS FOR CONDUIT INSTALLATION. MAXIMUM CORE DRILL SIZE SHALL BE 5-INCH DIAMETER. SPACE CORE DRILL LOCATIONS A MINIMUM OF 6" FROM EACH OTHER, MEASURED FROM CORE DRILL OPENINGS. PROPERLY SEAL OPENINGS ACCORDING TO LOCATION AND APPLICATION.
15. PROVIDE EACH CIRCUIT WITH A DEDICATED NEUTRAL UNLESS NOTED OTHERWISE.
16. CONDUIT HOMERUNS SHOWN ON DRAWINGS WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. DO NOT INSTALL MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A SINGLE RACEWAY UNLESS INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
17. PROVIDE FIRESTOPPING FOR ELECTRICAL PENETRATIONS IN FIRE RATED ASSEMBLIES.
18. INSTALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE. INSTALL RACEWAYS TIGHT TO STRUCTURAL CEILING AND AS HIGH AS POSSIBLE WITHIN CEILING SPACES TO MAINTAIN MAXIMUM AMOUNT OF CLEAR SPACE BELOW RACEWAY.
19. INSTALL RACEWAYS CONCEALED IN BUILDING FINISHES FOR ALL EXTERIOR MOUNTED DEVICES. DO NOT ROUTE EXPOSED ON BUILDING EXTERIOR.
20. INSTALL RACEWAYS CONCEALED IN WALLS, UNDER FLOORS, ABOVE CEILINGS, ETC., EXCEPT AS FOLLOWS:
    A. WHERE SUSPENDED CEILINGS ARE NOT PROVIDED.
    B. IN VERTICAL SHAFTS, ELECTRICAL CLOSETS, ETC., MECHANICAL AND ELECTRICAL EQUIPMENT SPACES WHERE CONCEALMENT IS NOT PRACTICAL.
    C. AT SURFACE-MOUNT PANELBOARDS IN OTHERWISE FINISHED SPACES LIMITED TO VERTICAL RUNS ABOVE AND BELOW PANEL.
    D. WHERE REQUIRED FOR EQUIPMENT CONNECTIONS.
    E. WHERE SPECIFICALLY INDICATED ON DRAWINGS.
24. WHERE SUBMITTED EQUIPMENT REQUIRES REVISION TO OVERCURRENT PROTECTION, CONDUIT, AND WIRING, COORDINATE AND MAKE CHANGE TO PROVIDE A COMPLETE INSTALLATION IN ACCORDANCE WITH APPLICABLE CODES.
25. PROVIDE NECESSARY SUPPORTING STRUT CHANNEL AND ALL MISCELLANEOUS HARDWARE FOR MOUNTING ELECTRICAL EQUIPMENT. MAINTAIN NEC WORKING CLEARANCES. COORDINATE EXACT LOCATION IN FIELD. DO NOT MOUNT ON EQUIPMENT ACCESS PANELS OR IN EQUIPMENT MANUFACTURER'S RECOMMENDED MAINTENANCE CLEARANCES.

## GENERAL ELECTRICAL DEMOLITION/RENOVATION NOTES

1. THE FACILITY WILL NOT REMAIN OCCUPIED DURING RENOVATIONS.
2. MINIMIZE OUTAGES. COORDINATE OUTAGES WITH OWNER.
3. AFTER DEMOLITION VERIFY AND SUPPORT REMAINING CABLES, WIRES, AND CONDUIT IN ACCORDANCE WITH THE APPLICABLE VERSION OF THE NEC. DISCONNECT, MAKE SAFE AND REMOVE ABANDONED AND TEMPORARY WIRE WITHIN SPACE.
4. EXISTING CONDITIONS REFLECT GENERAL OBSERVATIONS AND ARE NOT INTENDED TO INDICATE DETAILS OR DIMENSIONS. NO ATTEMPT HAS BEEN MADE TO SHOW ALL ELECTRICAL EQUIPMENT. VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK. NOTIFY ENGINEER IN WRITING IF CONDITIONS ARE DISCOVERED THAT PREVENT EXECUTION OF WORK.
5. PROTECT REMAINING ELECTRICAL SYSTEMS AND COMPONENTS FROM DAMAGE. REMOVE PROTECTIVE MATERIALS UPON COMPLETION OF WORK.
6. IN AREAS NOTED TO REMOVE ELECTRICAL WORK, REMOVE CONDUITS AND ASSOCIATED SUPPORTS BACK TO POINT OF CONCEALMENT AND REMOVE WIRING BACK TO REMAINING ACTIVE DEVICES OR SOURCE.
7. UPDATE PANELBOARD DIRECTORIES TO INCLUDE MODIFICATIONS BY THIS PROJECT. TRACE CIRCUITS TO IDENTIFY UNLABELED LOADS.
8. REPAIR DISTURBED AREAS TO MATCH EXISTING CONDITIONS.
9. PROVIDE BLANK COVER PLATES FOR DEVICES REMOVED WHEN A REPLACEMENT DEVICE IS NOT INDICATED.
10. MAINTAIN CONTINUITY OF CIRCUITS AND FEEDERS REMAINING AFTER DEMOLITION IN PANELS INDICATED TO BE DEMOLISHED OR REPLACED. EXTEND EXISTING CIRCUITS AND FEEDERS REMAINING AFTER DEMOLITION TO NEW PANELS. CIRCUIT BREAKER, CONDUIT, AND WIRE SHALL MATCH EXISTING TYPES AND SIZES.

## PEPCO NOTES

PEPCO to be notified 2 weeks before the setting of any poles, pouring of any concrete and/or the back-filling of any trench to make arrangements for the inspection and approval of your on-site service connection structural equipment.

FOR LOCATION OF UTILITIES CALL 24 HOURS A DAY 1-800-257-7777 48 HOURS IN ADVANCE OF ANY WORK IN THIS VICINITY

Customer is responsible for design and construction of structural facilities on private property, including water-proofing of structures. PEPCO review and approval required on design and construction.

Customer to obtain all permits/permissions required by others on private property. All materials used are to confirm to Pepco Specifications.
All ground wire to be stranded tinned copper.

The minimum horizontal and vertical separation between foreign structures and conduit shall be as follows:
Telephone Conduit - 3" concrete or 12" earth.
Gas and Oil Mains - 12" earth.
Gas Pipes 16" or larger requires 18" of earth.
WSSC Water and Sewer - 5' horizontal and 1' vertical (crossing).
Storm Drains - 5' out to out horizontal and 6" vertical (crossing).

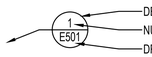
**PEPCO WORK ORDER NUMBER: 17822971**
**PEPCO CONTACT:**
**BENET TRIBBLE**
**BTRIBBLE@PEPCO.COM**
**410-294-1110**

TOP OF PEPCO DUCTS TO HAVE 36" MINIMUM, 42" MAXIMUM, COVER FROM EXISTING OR PROPOSED PROFILE GRADE, WHICHEVER IS LOWER.

Customer to provide PEPCO a minimum 10 ft. wide access drive -- minimum H20 loading -- for the installation and maintenance of PEPCO's transformer.

## ELECTRICAL CONVENTIONS

### REFERENCE




DETAIL DESIGNATION
NUMBER DENOTES SECTION IDENTIFICATION
DRAWING NUMBER WHERE DETAIL IS LOCATED

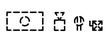
1 — SPECIAL NOTE (APPLIES WHERE INDICATED ON THE DRAWING)

A — CONDUIT REFERENCE (APPLIES WHERE INDICATED ON THE DRAWING)

### PRESENTATION

ELECTRICAL EQUIPMENT DESIGNATED BY SOLID HEAVY LINEWEIGHT INDICATES NEW WORK TO BE PROVIDED.

ELECTRICAL EQUIPMENT DESIGNATED BY SOLID LIGHT LINEWEIGHT INDICATES EXISTING EQUIPMENT TO REMAIN, UNLESS OTHERWISE INDICATED.



ELECTRICAL EQUIPMENT DESIGNATED BY DASHED HEAVY LINEWEIGHT REPRESENTS EXISTING EQUIPMENT TO BE REMOVED AND DISPOSED, UNLESS INDICATED TO BE REMOUNTED, RELOCATED, OR TURNED OVER TO OWNER.

## ELECTRICAL LEGEND

| SYMBOL | DESCRIPTION | MOUNTING HEIGHT |
|---|---|---|
| $_{S_T}$ | DIGITAL TIMER LIGHT SWITCH | 46" |
| (SIMPLEX) (DUPLEX) (QUAD) | RECEPTACLE - NEMA CONFIGURATION 5-20R, SHADING INDICATES CONNECTED TO EMERGENCY/STANDBY POWER CIRCUIT<br>SUBSCRIPTS:<br>GFI: WITH 5mA GROUND FAULT INTERRUPTER<br>WP: WEATHER-RESISTANT RECEPTACLE WITH WEATHERPROOF WHILE-IN-USE COVER | 18" |
| | PANELBOARD, SURFACE AND FLUSH MOUNTED | 78" TO TOP |
| | SAFETY SWITCH | 60" TO TOP |
| | GROUNDING SYSTEM - GROUND ROD | - - |
| | GROUNDING SYSTEM - GROUND ROD TEST WELL IN HANDHOLE | - - |
| | GROUNDING SYSTEM - GROUND CONNECTION | - - |
| | MOLDED CASE CIRCUIT BREAKER (600V AND BELOW) | - - |
| | FIXED CURRENT TRANSFORMER WITH TURN RATIO | - - |
| | CURRENT LIMITING FUSE (600V AND BELOW) | - - |
| | DISCONNECT SWITCH (600V AND BELOW) | - - |
| KW | KILOWATT METER (KWH = KILOWATT HOURS) | - - |
| | TRANSFORMER | - - |
| | GROUNDING SYSTEM WYE GROUNDED NEUTRAL WINDING | - - |
| | DELTA WINDING | - - |

## ELECTRICAL ABBREVIATIONS

| | |
|---|---|
| A | AMPERE |
| ADA | AMERICANS WITH DISABILITIES ACT |
| AF | AMPERE FRAME, AMPERE FUSE |
| AFCI | ARC FAULT CIRCUIT INTERRUPTER |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AIC | AMPERE INTERRUPTING CAPACITY |
| AL | ALUMINUM |
| ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| ASYM | ASYMMETRICAL |
| AT | AMPERE TRIP |
| AUX | AUXILIARY |
| AWG | AMERICAN WIRE GAUGE |
| BFG | BELOW FINISHED GRADE |
| BOD | BASIS OF DESIGN |
| C | CONDUIT |
| CB | CIRCUIT BREAKER |
| CKT | CIRCUIT |
| CT | CURRENT TRANSFORMER |
| CU | COPPER |
| CX | CONNECT TO EXISTING |
| DS | DISCONNECT SWITCH |
| DWG | DRAWING |
| ECB | ENCLOSED CIRCUIT BREAKER |
| EGC | EQUIPMENT GROUNDING CONDUCTOR |
| EMT | ELECTRICAL METALLIC TUBING |
| ENCL | ENCLOSURE |
| ENT | ELECTRICAL NONMETALLIC TUBING |
| EQUIP | EQUIPMENT |
| ETR | EXISTING TO REMAIN |
| EX | EXISTING |
| F | FUSED, FUSIBLE, FAHRENHEIT |
| FDR | FEEDER |
| FLA | FULL LOAD AMPERAGE |
| FMC | FLEXIBLE METAL CONDUIT |
| FSS | FUSED SAFETY SWITCH |
| FT | FEET |
| G | GROUND |
| GB | GROUND BAR |
| GEC | GROUNDING ELECTRODE CONDUCTOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GFEP | GROUND FAULT EQUIPMENT PROTECTOR |
| GFI | GROUND FAULT INTERRUPTER |
| GND | GROUND |
| GRC | GALVANIZED RIGID STEEL |
| GW | GROUND WIRE |
| HD | HEAVY DUTY |
| HDPE | HIGH-DENSITY POLYETHYLENE |
| HZ | HERTZ |
| IBC | INTERNATIONAL BUILDING CODE |
| ICCB | INSULATED CASE CIRCUIT BREAKER |
| IEBC | INTERNATIONAL EXISTING BUILDING CODE |
| IEEE | INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS |
| IG | ISOLATED GROUND |
| IMC | INTERMEDIATE METALLIC CONDUIT |
| IN | INCH |
| K | ONE THOUSAND, KELVIN |
| KAIC | THOUSAND AMPERE INTERRUPTING CAPACITY |
| KCMIL | THOUSAND CIRCULAR MILS |
| KV | KILOVOLTS |
| KVA | KILOVOLT-AMPERES |
| KW | KILOWATTS |
| LC | LOAD CENTER |
| LF | LINEAR FEET |
| LFMC | LIQUID TIGHT FLEXIBLE METALLIC CONDUIT |
| LFNC | LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT |
| LS | LIMIT SWITCH, LONG TIME-SHORT TIME |
| LSBJ | LOAD SIDE BONDING JUMPER |
| LSI | LONG TIME-SHORT TIME-INSTANTANEOUS |
| LSIG | LONG TIME-SHORT TIME-INSTANTANEOUS GROUND FAULT |
| LV | LOW VOLTAGE |
| MAX | MAXIMUM |
| MBJ | MAIN BONDING JUMPER |
| MC | METAL CLAD, METER CENTER |
| MCA | MINIMUM CIRCUIT AMPACITY |
| MCB | MAIN CIRCUIT BREAKER |
| MCCB | MOLDED CASE CIRCUIT BREAKER |
| MDP | MAIN DISTRIBUTION PANEL |
| MGB | MAIN GROUND BAR |
| MH | MANHOLE, METAL HALIDE, MOUNTING HEIGHT |
| MIN | MINIMUM |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVERCURRENT PROTECTION |
| MSGB | MAIN SERVICE GROUND BAR |
| MTD | MOUNTED |
| MV | MEDIUM VOLTAGE |
| N | NEUTRAL |
| NC | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NECA | NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION |
| NEMA | NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| NF | NON-FUSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NFSS | NON-FUSED SAFETY SWITCH |
| NM | NON-METALLIC |
| NO | NORMALLY OPEN |
| NTS | NOT TO SCALE |
| OCP | OVERCURRENT PROTECTION |
| OH | OVERHEAD |
| OHE | OVERHEAD ELECTRIC |
| OSHA | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION |
| P | POLE(1P, 2P, 3P) |
| PEPCO | POTOMAC ELECTRIC POWER COMPANY |
| PF | POWER FACTOR |
| PH | PHASE |
| PT | POTENTIAL TRANSFORMER |
| PVC | POLYVINYL CHLORIDE |
| QTY | QUANTITY |
| R | RACEWAY |
| REC | RECEPTACLE |
| RGS | RIGID GALVANIZED STEEL |
| RM | ROOM |
| RMS | ROOT MEAN SQUARE |
| RNC | RIGID NONMETALLIC CONDUIT |
| RX | REMOVE EXISTING |
| SBJ | SYSTEM BONDING JUMPER |
| SCTE | SOCIETY OF CABLE TELECOMMUNICATIONS ENGINEERS |
| SE | SERVICE ENTRANCE |
| SF | SQUARE FEET |
| SN | SOLID NEUTRAL |
| SPD | SURGE PROTECTION DEVICE |
| SS | SAFETY SWITCH |
| SSBJ | SUPPLY SIDE BONDING JUMPER |
| ST | SINGLE-THROW |
| SW | SWITCH |
| SYM | SYMMETRICAL |
| T | TRANSFORMER |
| TA | TRIP AMPERES |
| THD | TOTAL HARMONIC DISTORTION |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSION |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| UGE | UNDERGROUND ELECTRIC |
| UL | UNDERWRITERS LABORATORY |
| UON | UNLESS OTHERWISE NOTED |
| V | VOLTS |
| VA | VOLT-AMPERES |
| VFD | VARIABLE FREQUENCY DRIVE |
| VRF | VARIABLE REFRIGERANT FLOW |
| VSD | VARIABLE SPEED DRIVE |
| W | WIRE, WATTS |
| W/ | WITH |
| WP | WEATHERPROOF |
| WR | WEATHER RESISTANT |
| XFMR | TRANSFORMER |
| Y | WYE |



Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE SERVICE DESIGN
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
HENRY ADAMS
Consulting Engineers
MECHANICAL ELECTRICAL & PLUMBING ENGINEERS

Seal


Phase
100% SUBMISSION

Project No.
2019.331.006

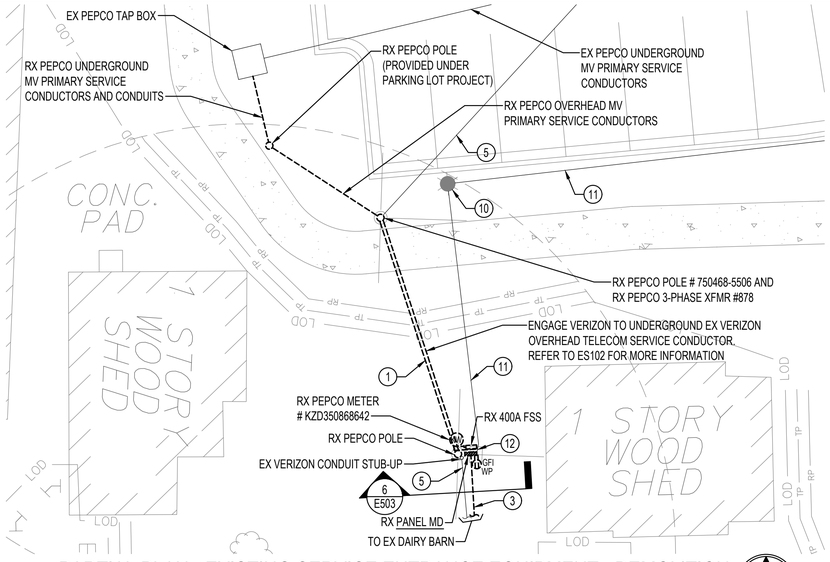
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER: 40505, EXPIRATION DATE: 6/9/2023.

Date
2023-03-01

Drawing Title
ELECTRICAL COVER SHEET

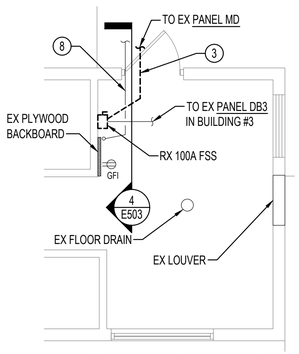
Drawing No.
E001

5/18/2022 15:52:47




## PARTIAL PLAN - EXISTING SERVICE ENTRANCE EQUIPMENT - DEMOLITION

2 ES101 1" = 10'-0"




## DAIRY BARN - PARTIAL FIRST FLOOR PLAN - POWER - EXISTING CONDITIONS

3 ES101 1/4" = 1'-0"

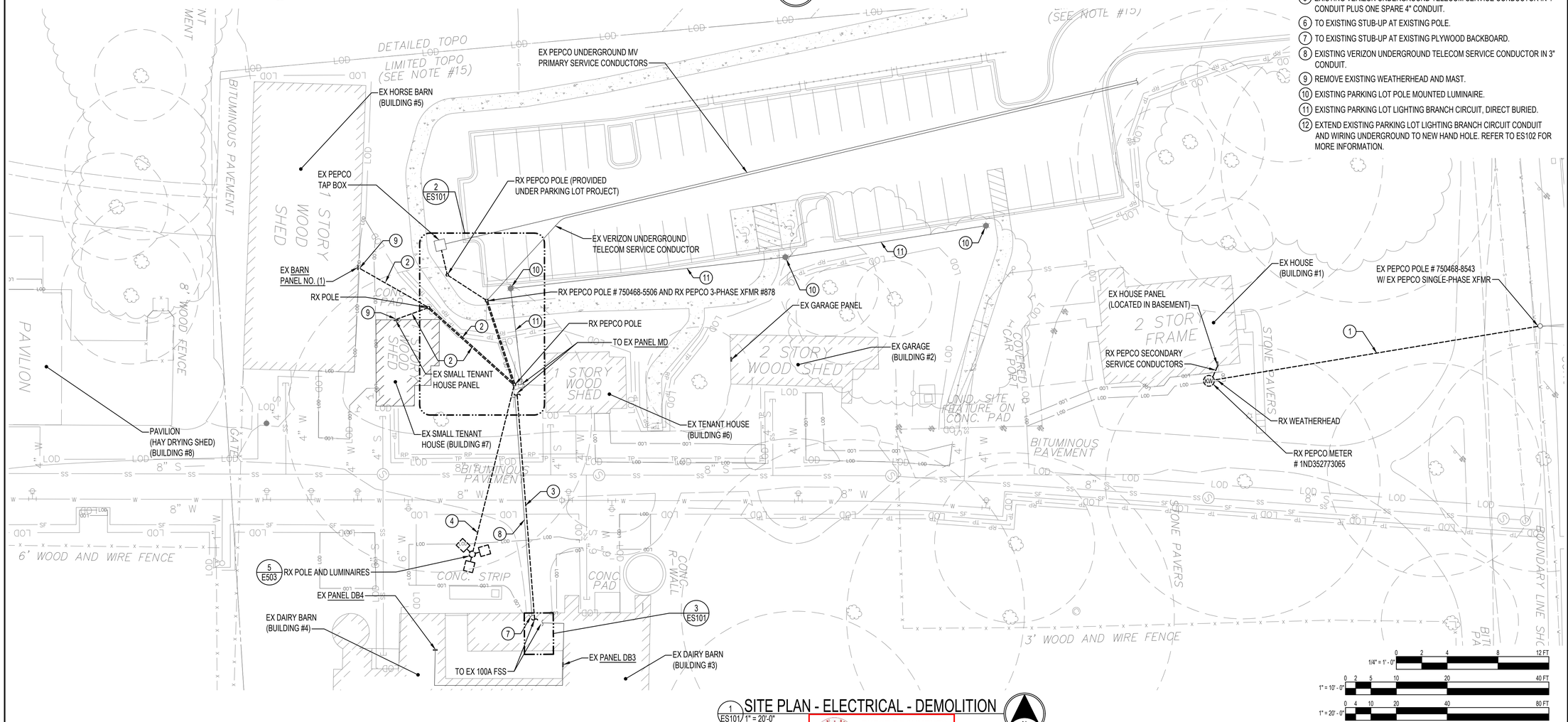
**PEPCO WORK ORDER NUMBER: 17822971**
**PEPCO CONTACT:**
**BENET TRIBBLE**
**BTRIBBLE@PEPCO.COM**
**410-294-1110**

DRAWING NOTES: (APPLICABLE TO THIS SHEET ONLY)

1. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN BY DASHED HEAVY LINEWEIGHT (– – –) INDICATE EXISTING ITEMS TO BE REMOVED. ELECTRICAL ITEMS SHOWN BY SOLID LIGHT LINEWEIGHT (——) INDICATE EXISTING ITEMS TO REMAIN.
2. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT WRITTEN DIRECTION BEFORE PROCEEDING WITH THE WORK.
3. AT THE TIME OF THIS DESIGN, THE PARKING LOT LIGHTING HAS NOT YET BEEN INSTALLED. THE PARKING LOT LIGHTING IS SCHEDULED TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF THIS PROJECT. COORDINATE WITH THE EXISTING CONDITIONS ASSOCIATED WITH THIS WORK AS NECESSARY.
4. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF UTILITIES.
5. ENGAGE AND COORDINATE WITH PEPCO FOR WORK ASSOCIATED WITH PEPCO-OWNED ITEMS. COSTS ASSOCIATED WITH PEPCO WILL BE PAID DIRECTLY BY THE CITY OF ROCKVILLE.

SPECIAL NOTES: (APPLICABLE TO THIS SHEET ONLY)

(1) REMOVE EXISTING PEPCO OVERHEAD LOW VOLTAGE SECONDARY SERVICE CONDUCTORS.
(2) REMOVE EXISTING OVERHEAD LOW VOLTAGE FEEDER.
(3) REMOVE EXISTING UNDERGROUND FEEDER CONDUCTORS. RETAIN EXISTING DIRECT BURIED CONDUIT FOR REUSE TO EXTEND EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT TO NEW SOURCE. REFER TO ES102 FOR MORE INFORMATION.
(4) REMOVE EXISTING OVERHEAD LOW VOLTAGE BRANCH CIRCUIT.
(5) EXISTING VERIZON UNDERGROUND TELECOM SERVICE CONDUCTOR IN 4" CONDUIT PLUS ONE SPARE 4" CONDUIT.
(6) TO EXISTING STUB-UP AT EXISTING POLE.
(7) TO EXISTING STUB-UP AT EXISTING PLYWOOD BACKBOARD.
(8) EXISTING VERIZON UNDERGROUND TELECOM SERVICE CONDUCTOR IN 3" CONDUIT.
(9) REMOVE EXISTING WEATHERHEAD AND MAST.
(10) EXISTING PARKING LOT POLE MOUNTED LUMINAIRE.
(11) EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT, DIRECT BURIED.
(12) EXTEND EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT CONDUIT AND WIRING UNDERGROUND TO NEW HAND HOLE. REFER TO ES102 FOR MORE INFORMATION.




## SITE PLAN - ELECTRICAL - DEMOLITION

1 ES101 1" = 20'-0"



1/4" = 1'-0" | 0 2 4 8 12 FT
1" = 10'-0" | 0 2 5 10 20 40 FT
1" = 20'-0" | 0 4 10 20 40 80 FT

Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF
RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE
SERVICE DESIGN
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS
HENRY ADAMS
Consulting Engineers
MECHANICAL ELECTRICAL & PLUMBING ENGINEERS

Seal
STATE OF MARYLAND
TRAVIS I POLITE
40505
PROFESSIONAL ENGINEER
5/11/23

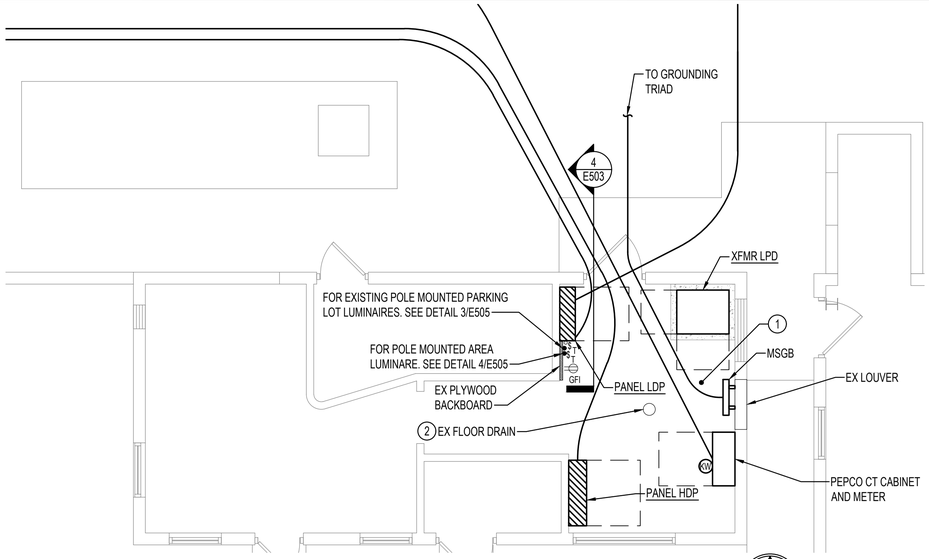
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 40505, EXPIRATION DATE 6/5/2023.

Phase
100% SUBMISSION
Project No.
2019.331.006
Date
2023-03-01

Drawing Title
SITE PLAN - ELECTRICAL - DEMOLITION

Drawing No.
ES101

5/18/2022 15:52:47




2 ES102 DAIRY BARN - PARTIAL FIRST FLOOR PLAN - POWER - NEW WORK
1/4" = 1'-0"

CONDUIT REFERENCE: (APPLICABLE TO THIS SHEET ONLY)

- (A) (2) 4"C - EMPTY CONDUITS WITH PULLSTRINGS, CONCRETE ENCASED (PEPCO UG MV PRIMARY - CONDUCTORS BY PEPCO)
- (B) (4) 4"C - EMPTY CONDUITS WITH PULLSTRINGS, CONCRETE ENCASED (PEPCO UG LV SECONDARY - CONDUCTORS BY PEPCO)
- (C) (2) 3"C - EMPTY CONDUITS WITH PULLSTRINGS, DIRECT BURIED (HORSE BARN)
- (D) (2) 3-1/2"C - 2 SETS OF [4#500+#3(0GW], DIRECT BURIED (HOUSE)
- (E) 3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
- (F) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
- (G) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (SMALL TENANT HOUSE)
- (H) 2"C - 4#2/0+#4GW, DIRECT BURIED (PAVILION)
- (J) 1"C - 2#12+#12GW, DIRECT BURIED (POLE MOUNTED AREA LUMINAIRE)
- (K) (2) 3-1/2"C - 2 SETS OF [4#500+#3(0GW], DIRECT BURIED (HOUSE)
  3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
  2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
- (L) (2) 3-1/2"C - 2 SETS OF [4#500+#3(0GW], DIRECT BURIED (HOUSE)
  3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
  2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
  1"C - 2#12+#12GW, DIRECT BURIED (POLE LIGHTS)
- (M) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (SMALL TENANT HOUSE)
  2"C - 4#2/0+#4GW, DIRECT BURIED (PAVILION)
- (N) 3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (VERIZON)
- (P) EXISTING 2"C - 2#10+#10GW, DIRECT BURIED, PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT (PARKING LOT LIGHTING)

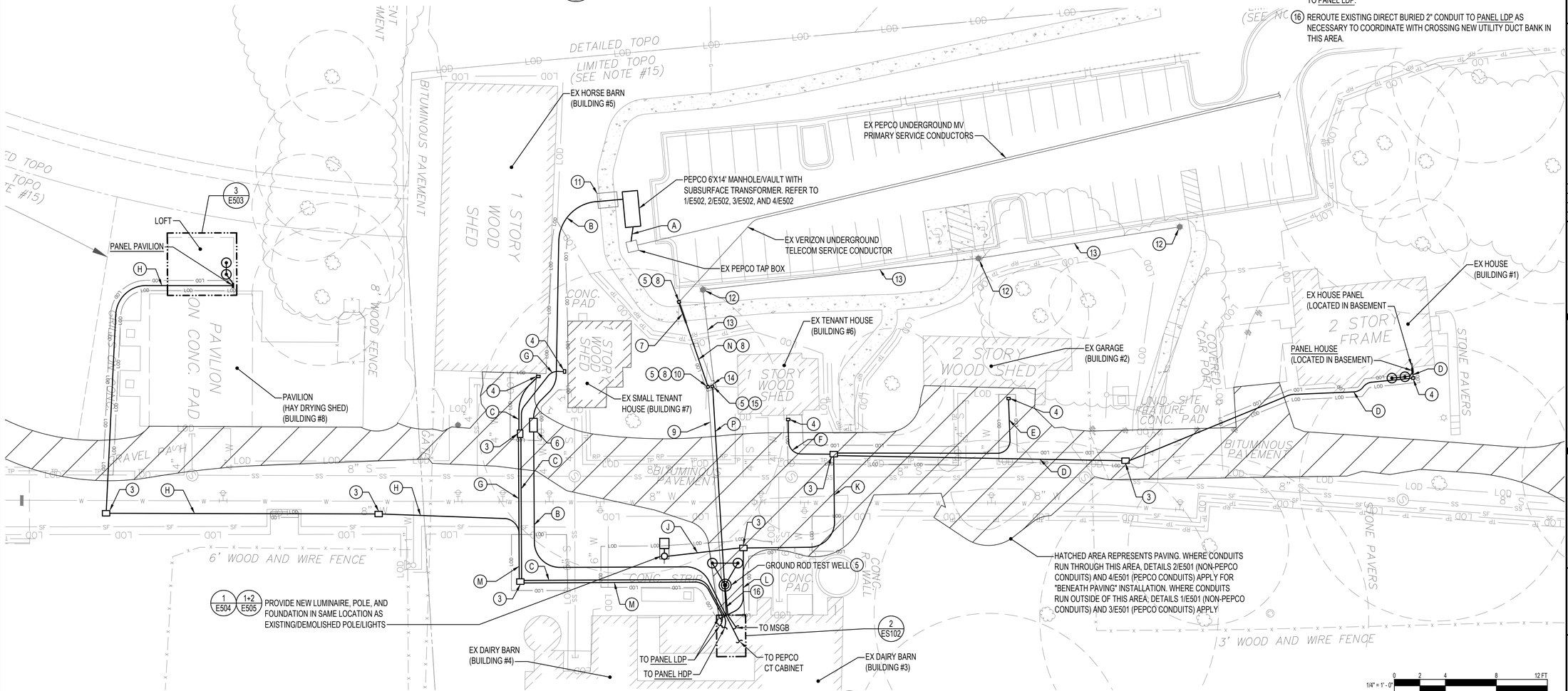
**PEPCO WORK ORDER NUMBER: 17822971**
**PEPCO CONTACT:**
**BENET TRIBBLE**
**BTRIBBLE@PEPCO.COM**
**410-294-1110**

DRAWING NOTES: (APPLICABLE TO THIS SHEET ONLY)

1. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN BY SOLID HEAVY LINEWEIGHT (——) INDICATE NEW WORK TO BE PROVIDED. ELECTRICAL ITEMS SHOWN BY SOLID LIGHT LINEWEIGHT (——) INDICATE EXISTING ITEMS TO REMAIN.
2. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT WRITTEN DIRECTION BEFORE PROCEEDING WITH THE WORK.
3. AT THE TIME OF THIS DESIGN, THE PARKING LOT LIGHTING HAS NOT YET BEEN INSTALLED. THE PARKING LOT LIGHTING IS SCHEDULED TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF THIS PROJECT. COORDINATE WITH THE EXISTING CONDITIONS ASSOCIATED WITH THIS WORK AS NECESSARY.
4. CONDUIT ROUTES SHOWN ARE BELOW GRADE UNLESS OTHERWISE NOTED.
3. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF UTILITIES.
4. ENGAGE AND COORDINATE WITH PEPCO FOR WORK ASSOCIATED WITH PEPCO-OWNED ITEMS. COSTS ASSOCIATED WITH PEPCO WILL BE PAID DIRECTLY BY THE CITY OF ROCKVILLE.
5. REFER TO DUCT BANK DETAILS ON DRAWING E501.
6. REFER TO ONE-LINE DIAGRAM ON DRAWING E602 FOR FEEDER INFORMATION.

SPECIAL NOTES: (APPLICABLE TO THIS SHEET ONLY)

1. CUT AND TRENCH EXISTING CONCRETE FLOOR IN THIS AREA AS NECESSARY TO ACCOMMODATE INSTALLATION OF PROPOSED CONDUITS. PATCH AND REPAIR FLOOR AFTER COMPLETION OF CONDUIT INSTALLATION.
2. PROVIDE SUPPORT AND PROTECT EXISTING FLOOR DRAIN AND ASSOCIATED PIPES WITHIN EXISTING FLOOR SLAB. COORDINATE WITH EXISTING DRAIN AND PIPES AS NECESSARY.
3. TYPE A HANDHOLE. SEE DETAIL 7/E501.
4. TYPE B HANDHOLE. SEE DETAIL 7/E501.
5. TYPE C HANDHOLE. SEE DETAIL 7/E501.
6. PEPCO SPLICE BOX. SEE 1/E503 AND 2/E503.
7. UTILIZE EXISTING SLEEVE(S) PROVIDED BY PARKING LOT PROJECT TO INSTALL CONDUIT INDICATED UNDERNEATH EXISTING SIDEWALK.
8. ENGAGE AND COORDINATE WITH VERIZON TO UNDERGROUND THE EXISTING VERIZON OVERHEAD TELECOM SERVICE CONDUCTOR.
9. EXISTING VERIZON UNDERGROUND TELECOM SERVICE CONDUCTOR IN 3" CONDUIT.
10. LOCATE HANDHOLE ON TOP OF EXISTING VERIZON CONDUIT STUB-UP AND CUT STUB-UP DOWN TO DIMENSION SHOWN IN HANDHOLE DETAIL 7/E501.
11. CUT AND REMOVE COMPLETE SECTIONS OF SIDEWALK AT JOINTS TO FACILITATE THE INSTALLATION OF CONCRETE ENCASED DUCT BANK BELOW. REPAIR AND RESTORE SIDEWALK TO ORIGINAL CONDITION UPON COMPLETION OF DUCT BANK WORK. REFER TO CIVIL DRAWINGS.
12. EXISTING POLE MOUNTED PARKING LOT LUMINAIRE.
13. EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT, DIRECT BURIED.
14. REMOVE ABOVE-GRADE PORTION OF EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT CONDUIT, AND EXTEND EXISTING DIRECT BURIED CONDUIT BELOW GRADE TO NEW HAND HOLE.
15. LOCATE HANDHOLE ON TOP OF EXISTING 2" FEEDER CONDUIT STUB-UP (TO DAIRY BARN) AND CUT STUB-UP DOWN TO DIMENSION SHOWN IN HANDHOLE DETAIL 7/E501. SEE DETAIL 6/E503 FOR MORE INFORMATION. EXTEND EXISTING PARKING LOT LIGHTING BRANCH CIRCUIT CONDUCTORS TO PANEL LDP.
16. REROUTE EXISTING DIRECT BURIED 2" CONDUIT TO PANEL LDP AS NECESSARY TO COORDINATE WITH CROSSING NEW UTILITY DUCT BANK IN THIS AREA.




1 ES102 SITE PLAN - ELECTRICAL - NEW WORK
1" = 20'-0"

1/4" = 1'-0" 0 2 4 8 12 FT
1" = 20'-0" 0 4 10 20 40 80 FT

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE

Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE SERVICE DESIGN
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
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MECHANICAL ELECTRICAL & PLUMBING ENGINEERS

Seal
STATE OF MARYLAND TRAVIS W. POPE 40505 PROFESSIONAL ENGINEER 5/11/23

Phase
100% SUBMISSION

Project No.
2019.331.006

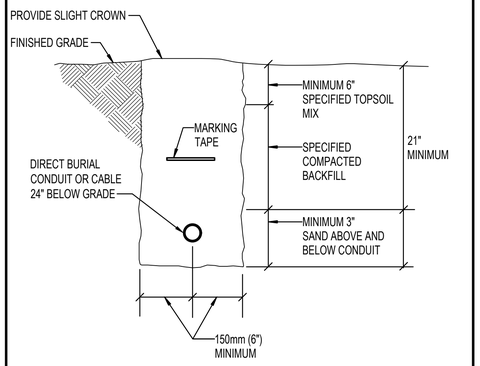
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY, THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 40505, EXPIRATION DATE 6/5/2023.

Date
2023-03-01

Drawing Title
SITE PLAN - ELECTRICAL - NEW WORK

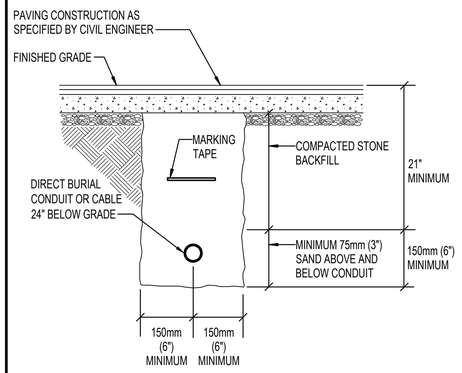
Drawing No.
ES102

5/10/2022 15:52:47



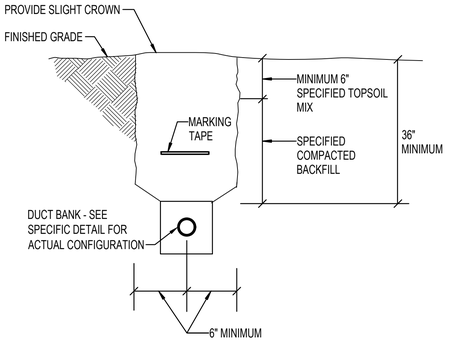

NON-PEPCO DIRECT BURIAL CONDUIT AND CABLE

1 E501 NTS



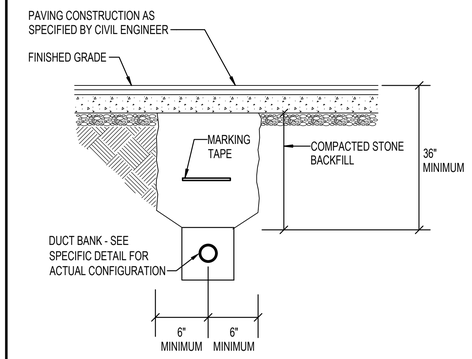

NON-PEPCO DIRECT BURIAL CONDUIT BENEATH PAVING

2 E501 NTS



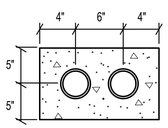

PEPCO PRIMARY AND SECONDARY CONCRETE ENCASED CONDUIT

3 E501 NTS




PEPCO PRIMARY AND SECONDARY CONCRETE ENCASED CONDUIT BENEATH PAVING

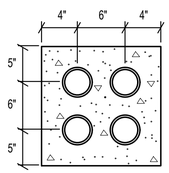
4 E501 NTS




2 WAY

PEPCO PRIMARY UNDERGROUND DUCT BANK

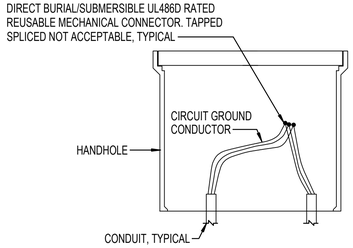
5 E501 NTS

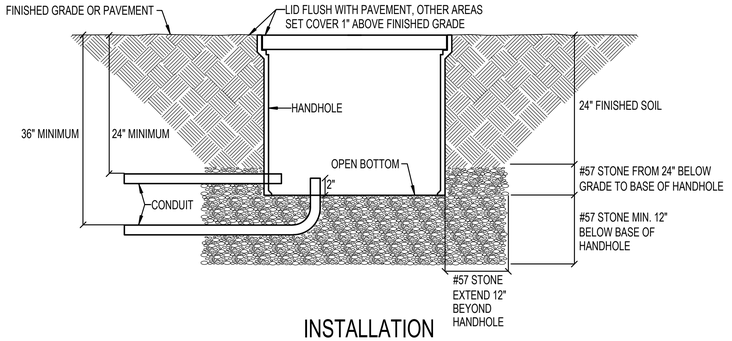



4 WAY

PEPCO SECONDARY UNDERGROUND DUCT BANK

6 E501 NTS



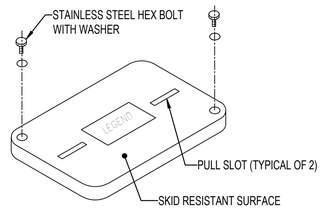

## INSTALLATION

NOTES: (APPLICABLE TO HANDHOLE DETAIL ONLY)

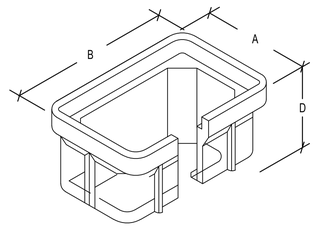
BASIS OF DESIGN: QUAZITE PG STYLE UNLESS OTHERWISE NOTED, OR APPROVED EQUAL.

2. FIELD-CUT OPENING FOR SIDE-ENTRY CONDUITS ACCORDING TO ENCLOSURE MANUFACTURER'S WRITTEN INSTRUCTIONS. SIDE ENTRY CONDUITS ONLY ALLOWED IF CONDUIT IS MINIMUM 36" BELOW GRADE.
3. MODIFY AS REQUIRED FOR RACEWAY LAYOUTS
4. COORDINATE DEPTH OF HANDHOLES WITH CONDITIONS IN FIELD. PROVIDE BOX EXTENSION AS REQUIRED TO MATCH DEPTHS OF DUCTS.
5. COLOR OF ENCLOSURE, BOX AND COVER:
   LIGHT GREEN FOR APPLICATIONS IN GRASS
   LIGHT GRAY FOR APPLICATIONS IN CONCRETE
   DARK GRAY FOR APPLICATIONS IN MACADAM
   RED FOR APPLICATIONS IN RED BRICK PAVERS
   COORDINATE WITH ARCHITECT FOR OTHER APPLICATIONS
6. COVER LEGEND: MOLDED LETTERING AS INDICATED FOR EACH SERVICE:
   "ELECTRIC"
   "COMMUNICATION"
   "GROUND"
7. MINIMUM ANSI SCTE TIER RATING: 22

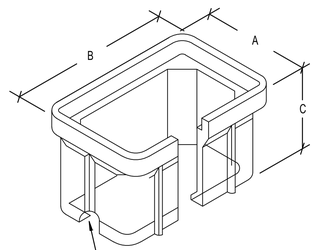
## HANDHOLE WIRING/GROUNDING




## COVER




## EXTENSION




## BASE

**HANDHOLE SCHEDULE**

| DESIGNATION | NOMINAL BOX DIMENSIONS A | B | C | EXTENSION D | NOTES |
|---|---|---|---|---|---|
| A | 24 | 36 | 24 | - | PG STYLE |
| B | 11 | 18 | 18 | - | PG STYLE |
| C | 12 | 12 | 12 | - | PC STYLE |

7 E501 HANDHOLE INSTALLATION NTS

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE

Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE SERVICE DESIGN
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Seal

STATE OF MARYLAND · DENNIS J. POLITA · 40505 · PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 40505, EXPIRATION DATE 4/6/2023.

5/11/23

Phase
100% SUBMISSION

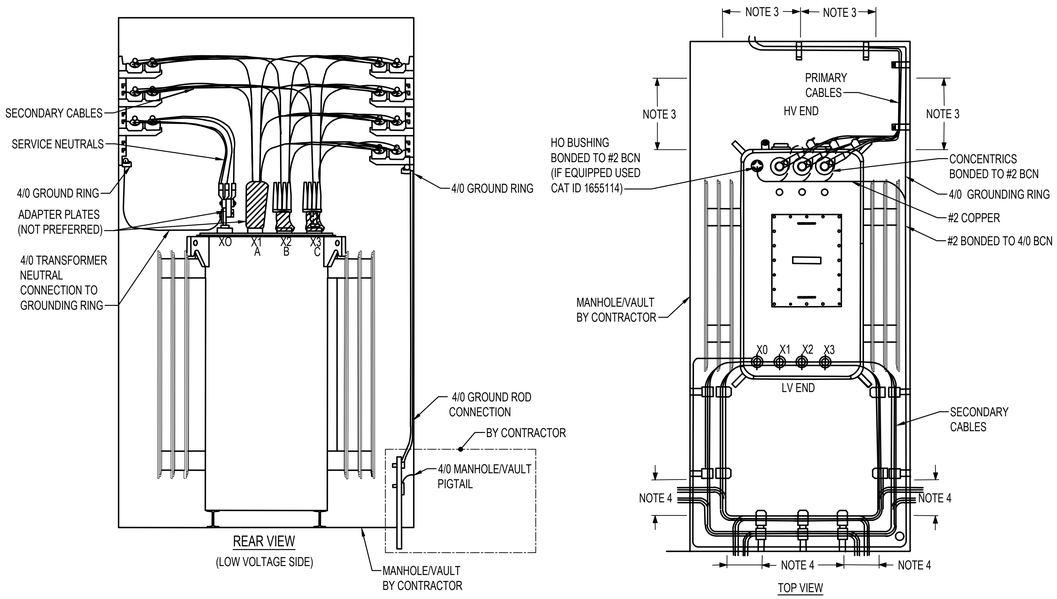
Project No.
2019.331.006

Date
2023-03-01

Drawing Title
ELECTRICAL DETAILS

Drawing No.
E501

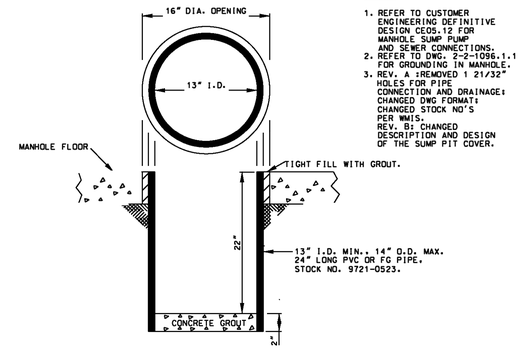
5/18/2022 15:52:47




NOTES: (APPLICABLE TO THIS DETAIL ONLY)
1. ALL ITEMS SHOWN IN THIS DETAIL ARE BY PEPCO UNLESS OTHERWISE NOTED AS "BY CONTRACTOR".
2. THE STANDARD MANHOLE/VAULT FOR THIS CONSTRUCTION IS A 6'X14'X10' WITH A COMPLETELY REMOVABLE ROOF. SEE STANDARD UG-6425 FOR MORE INFORMATION.
3. THE PRIMARY DUCT BANK SHALL ENTER THE MANHOLE/VAULT NEAR THE PRIMARY END OF THE TRANSFORMER. THE DUCTS SHALL BE BETWEEN 12-36" OFF THE CORNER OF THE WALL. THE HEIGHT OF THE DUCTS SHOULD BE 92" FROM THE FLOOR OF THE MANHOLE/VAULT. THEY SHALL ALSO BE BETWEEN 18-30" BELOW THE ROOF OF THE MANHOLE/VAULT.
4. THE SECONDARY DUCT BANK SHALL ENTER THE MANHOLE/VAULT NEAR THE LV END OF THE TRANSFORMER. THE DUCTS SHALL BE BETWEEN 12-24" OFF THE CORNER OF THE WALL. THEY SHALL BE BETWEEN 8-48" FROM THE FLOOR OF THE MANHOLE/VAULT.
5. DUCTS OF ANY TYPE SHALL NEVER BE INSTALLED IN THE CENTER OF THE LONG WALLS.
6. CONNECT THE MANHOLE/VAULT REBAR PIGTAIL TO THE GROUND ROD WITH 4/0 BARE TINNED COPPER. CONNECT THE GROUND ROD WITH 4/0 COPPER TO THE MANHOLE/VAULT GROUNDING RING.

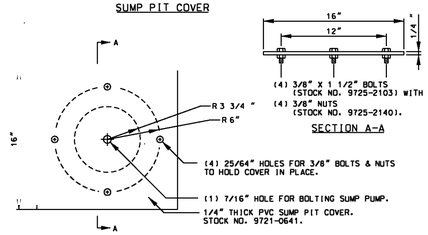
1 E502 NTS
## PEPCO 3PH SUBSURFACE TRANSFORMER INSTALLATION 4KV AND 15KV
FROM PEPCO DETAIL # UG-1323

2-2-1060.1.1



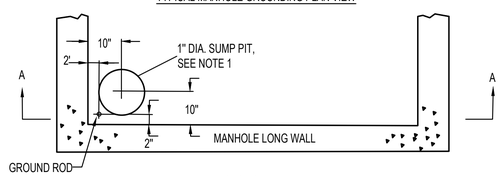

NOTES:
1. REFER TO CUSTOMER ENGINEERING DEFINITIVE DESIGN CE05.12 FOR MANHOLE SUMP PUMP AND SEWER CONNECTIONS.
2. REFER TO DWG. 2-2-1096.1.1 FOR GROUNDING IN MANHOLE.
3. REV. A :REMOVED 1 21/32" HOLES FOR PIPE CONNECTION AND DRAINAGE: CHANGED DWG FORMAT: CHANGED STOCK NO'S PER WMS. REV. B: CHANGED DESCRIPTION AND DESIGN OF THE SUMP PIT COVER.

SUMP PIT COVER

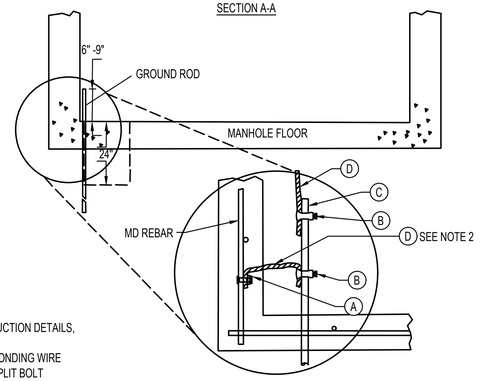



2 E502 NTS
## PEPCO SUMP PIT FOR STANDARD MANHOLE/VAULT

TYPICAL MANHOLE GROUNDING PLAN VIEW




SECTION A-A



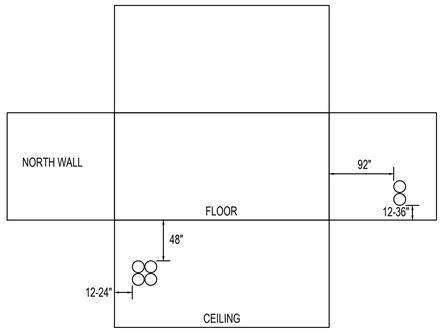

COMPATIBLE UNIT BREAKDOWN

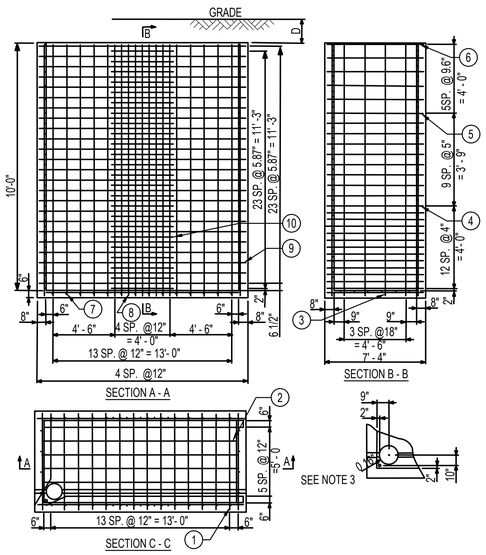
NOTES: (APPLICABLE TO THIS DETAIL ONLY)
1. PEPCO TYPICAL: FOR SUMP PIT CONSTRUCTION DETAILS, SEE DRAWING UG-4350 (1-1-1060).
2. THE 2' LONG 4/0 TINNED BARE COPPER BONDING WIRE CONNECTS THE REBAR BY USING A 4/0 SPLIT BOLT CONNECTOR CAT ID 1651280. CONNECT THE 4/0 TINNED BARE COPPER BONDING WIRE TO REBAR BEFORE POURING THE MANHOLE.
3. CONNECT 4/0 TINNED BARE COPPER GROUND WIRE TO GROUND ROD BY A 5/8" GROUND ROD CLAMP CAT ID 1650832.
4. IN PRE-CASTING MANHOLE, CONNECT THE 4/0 TINNED BARE COPPER TO THE REBARS. (PEPCO: IN THE POCKET ON THE WALL NEAR THE SUMP PIT).
5. ALL DRIVEN GROUNDS MUST HAVE A MEASURED RESISTANCE OF 25 OHMS FOR LESS.

| ITEM (#) | DESCRIPTION | CAT ID | UNIT | QTY GRD/MH |
|---|---|---|---|---|
| A | CONN SPLIT BOLT SERVICE 3/0STR RUN&TAP | 1651280 | EA | 1 |
| B | CLAMP GRD-ROD BRNZ HD .625 | 1650832 | EA | 2 |
| C | ROD GRD CUWELD .625X8 | 1650831 | EA | 1 |
| D | COPPER, GROUND, WIRE, CU, 19 STRD, SD, 4/0 | 1650187 | FT | 32 |

3 E502 NTS
## PEPCO GROUNDING FOR DISTRIBUTION MANHOLE/VAULT
FROM PEPCO DETAIL # UG-4355

6' - 0" X 14' - 0" MANHOLE (CAST IN PLACE)



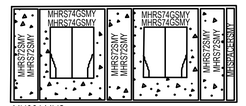




| MANHOLE WALLS REINFORCING SCHEDULE (ALL WALLS ARE 8" THICK) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ROD NO. (#) | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| DEPTH | 10'-0" DC | | | | | | | |
| QUANTITY | 8 | - | 12 | 12 | 28 | 10 | 28 | - |
| SIZE | #4 | - | #5 | #4 | #5 | #4 | #6 | - |
| C/C | 18" | - | 9" | 12" | 12" | 12" | 9" | - |
| LENGTH | 10'-3" | - | 7' | 7' | 10'-3" | 10'-3" | 15' | - |

GENERAL NOTES: (APPLICABLE TO THIS DETAIL ONLY)
1. THE DISTANCE OF THE SHEETING TO INNER WALL OF MANHOLE IS 1 1/2" ALL AROUND.
2. FORMERLY DRAWING NO. 0333.

NOTES: (APPLICABLE TO THIS DETAIL ONLY)
1. D=
   FLUSH SIDEWALK = 6" MINIMUM
   FLUSH ROADWAY = 9" MINIMUM
   RECESSED SIDEWALK = 18" MINIMUM
   RECESSED ROADWAY = 21" MINIMUM
2. SP. = SPACES
   NUMBERS IN CIRCLE INDICATE RODS IN STEEL SCHEDULE.
3. INSTALL SUMP PIT AND GROUND ROD ON LOW VOLTAGE END OF MANHOLE. PER DRAWINGS 1060 (UG - 4350) AND 1096 (UG - 4355) FOR TRANSFORMER MANHOLES.
4. WHEN INSTALLING MANHOLES END TO END OR SIDE BY SIDE A MINIMUM OF 1' IS REQUIRED INSIDE WALL TO INSIDE WALL OF THE ABUTTING MANHOLES. 1' IS THE THICKNESS FOR A COMMON WALL.

MANHOLE ROOF




MH06144VS
MH061 4VPS (SEE NOTE)

NOTE:
1. WHEN ENGINEERING ASSEMBLIES MH0614VPS. MH0614PS OR MH0614SFPS ARE REQUIRED THE SIDEWALK SLABS ARE REPLACED WITH PAVER PANS OF THE CORRESPONDING CONSTRUCTION.

4 E502 NTS
## PEPCO CAST IN PLACE MANHOLE/VAULT
FROM PEPCO DETAIL # UG-6425



Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE SERVICE DESIGN
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA
ENGINEERS, ARCHITECTS, & SURVEYORS
HENRY ADAMS
Consulting Engineers
MECHANICAL ELECTRICAL & PLUMBING ENGINEERS

Seal


Phase
100% SUBMISSION

Project No.
2019.331.006

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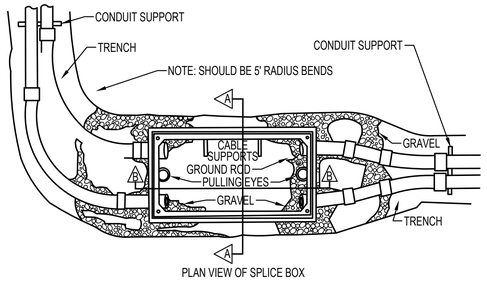
Date
2023-03-01

Drawing Title
ELECTRICAL DETAILS

Drawing No.
E502

5/18/2022 15:52:47

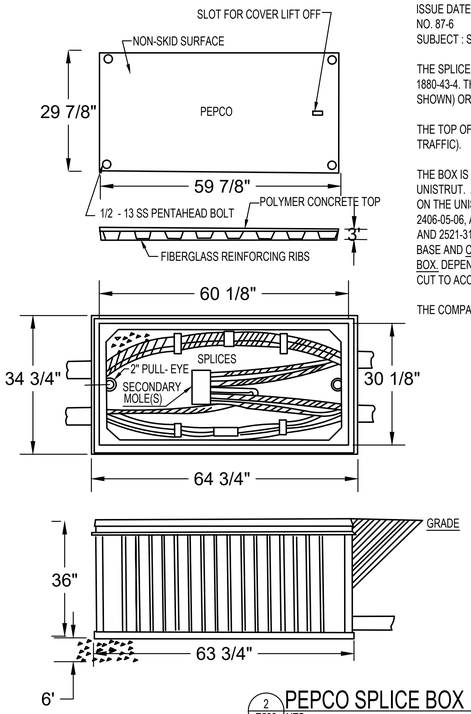



NOTES:

A. 90 DEGREE BENDS SHOULD BE MINIMUM OF 5 FOOT RADIUS UNLESS SPECIFIED OTHERWISE
B. TOP OF SPLICE BOX SHOULD MATCH FINISHED GRADE. BOX DOES NOT HAVE TO BE PERFECTLY LEVEL.
C. SPLICE BOX IS NOT FOR ROADWAY USE.
D. DO NOT INSTALL OVER TOP OF EXISTING DUCT LINE.

DESIGN NO. CE. 03. 06
TITLE : SPLICE BOX
ITEMS COVERED : INSTALLATION OF SPLICE BOX AND DIMENSION

1 E503 PEPCO SPLICE BOX DIAGRAM
NTS




ISSUE DATE: NOVEMBER 30, 1987
NO. 87-6
SUBJECT : SPLICE BOX ASSEMBLY

THE SPLICE BOX SHOWN ON THE LEFT IS NOW PURCHASED UNDER STOCK NO. 1880-43-4. THE BOX CAN BE USED IN EITHER PRIMARY (WITH 3 OR 6 SPLICES AS SHOWN) OR SECONDARY APPLICATIONS WITH SECONDARY MOLES.

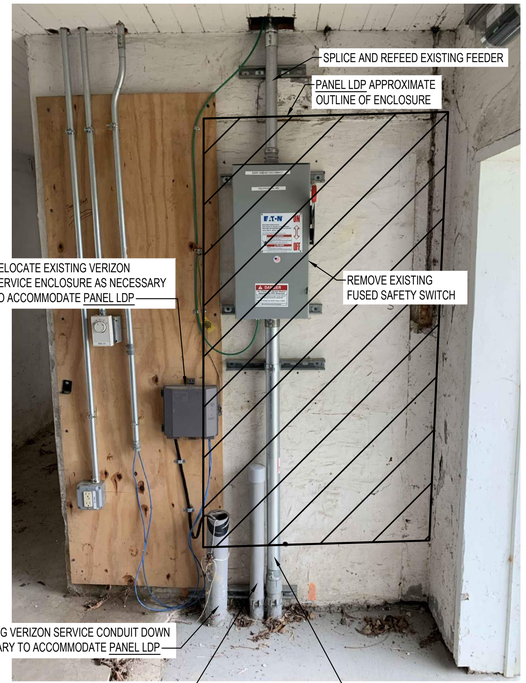
THE TOP OF THE BOX IS DESIGNED TO HANDLE H-10 LOADING (INCIDENTAL TRAFFIC).

THE BOX IS PURCHASED WITH THREE PULLING EYES AND FOUR PIECES OF UNISTRUT. A 4" FIBERGLASS HOOK, STOCK NO. 1203-02-5 , CAN BE MOUNTED ON THE UNISTRUT. AS SHOWN BY USING A 1/2"X1-5/8" SPRING NUT STOCK NO. 2406-05-06, AND A 1/2"-13X1-1/2" SILICON BRONZE BOLT AND WASHER, 2521-11-0 AND 2521-31-8, RESPECTIVELY. THE BOX SHALL BE INSTALLED ON A 6" GRAVEL BASE AND CONDUITS SHALL ENTER AND EXIT THRU THE SHORT SIDES OF THE BOX. DEPENDING ON THE RELATIVE LOCATION OF THE DUCT, HOLES SHALL BE CUT TO ACCOMMODATE THE APPROPRIATE DUCT SIZE.

THE COMPATIBLE UNIT FOR THE BOX IS SBMU.

2 E503 PEPCO SPLICE BOX
NTS


3 E503 PAVILION PANEL INSTALLATION DETAIL
NTS




4 E503 DAIRY BARN ELEVATION
NTS

NOTE: REMOVE EXISTING CUSTOMER-OWNED POLE AND LIGHTS.

5 E503 EXISTING POLE LIGHTS
NTS


6 E503 EXISTING PANEL MD ELEVATION
NTS



Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

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CITY OF ROCKVILLE
DEPARTMENT OF
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STATE OF MARYLAND
THOMAS J. POLLOCK
40505
PROFESSIONAL ENGINEER
5/11/23

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Drawing No.
E503

5/18/2022 15:52:47

NLS LIGHTING

# CALIFORNIA 1

SITE + ARCHITECTURAL LIGHTING

The beautiful and simple California Series LED Pedestrian Luminaires depict not only the California lifestyle, but the architecture of California as well. This ornamental piece is a delightful sight to see and a great model to illuminate any urban, rural, retail, or park, or campus setting.

The different caps and shades depict different California styles and a touch of California's historic Spanish mission era. The California Series is the perfect selection to combine both design and efficiency in light performance. Designed, tooled, manufactured and assembled in the USA.

* Using Architectural Arm 4 (AA4)

Top Mount.
NLS requires arm tenon length and inside diameter.

**STAR POWER OPTICAL SYSTEM**

The Star Power reflector is an excellent system which provides great value and performance.

**LED WATTAGE CHART**

| | 32L | 48L | 64L |
|---|---|---|---|
| 350 milliamps | - | 51w | 66w |
| 530 milliamps | - | 80w | 102w |
| 700 milliamps | 71w | 104w | 137w |
| 1050 milliamps | 106w | 156w | 205w |

Project Name: Type:

| Cat# | Top | Shade | Light Dist. | # of LEDs | Milliamps | Kelvin | Volts | Mounting | Color | Options |
|---|---|---|---|---|---|---|---|---|---|---|
| California 1 20' Diameter (CAL-1) | Top 1 (TP1)<br>Top 2 (TP2)<br>Top 3 (TP3) | Shade 1 (S1)<br>Shade 2 (S2)<br>Shade 4 (S4)<br>Shade 5 (S5)<br>Shade 6 (S6)<br>Shade 7 (S7)<br>Shade 8 (S8) | Type 2 (T2)<br>Type 3 (T3)<br>Type 4 (T4)<br>Type 5 (T5) | 32 (32L)<br>48 (48L)<br>64 (64L) | 350 ❶<br>530 (53) ❶<br>700 (7)<br>1050 (1) | 2700K, 80 CRI (27K8) ❷ ❸<br>3000K, 70 CRI (30K7) ❸<br>3000K, 80 CRI (30K8) ❸ ❹<br>3500K, 80 CRI (35K8) ❸<br>4000K, 70 CRI (40K7)<br>4000K, 80 CRI (40K8) ❸<br>5000K, 70 CRI (50K7)<br>5000K, 80 CRI (50K8) ❸ | 120-277 (UNV)<br>347-480 (HV) | Arm Mount (AM) ❸<br>Wall Mount (WM) | Bronze Textured (BRZ)<br>White Textured (WHT)<br>Smooth White Gloss (SWT)<br>Silver (SVR)<br>Black Textured (BLK)<br>Smooth Black Gloss (SBK)<br>Graphite Textured (GPH)<br>Grey Textured (GRY)<br>Custom (CS) | House Side Shield (HSS)<br>Bird Spikes (BS)<br>Photocell (PC) ❸<br>Nema 7-Pin Receptacle (PE7) ❸<br>Photocell + Receptacle (PCR) ❸<br>Receptacle + Shorting Cap (PER) ❸<br>FSP-211 with Motion Sensor (FSP-X) ❸<br>*8' and Below (FSP-20) ❸<br>*9-20' Heights (FSP-40) ❸<br>*21-40' Heights<br>Frosted Lens (FL) ❸ |

Notes:
❶ 48L-64L Only
❷ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
❸ For Arm Mount, please select an Architectural Arm (AA) separately.
❹ Universal Voltage 120-277
❺ Only compatible with Arm Mount Arch Arms: 2, 3, 7-11, 13-18
❻ 48L option only, using IK-10 rated Silicone Optics
❼ 3000K or warmer must be selected to meet International Dark-Sky Association certification.

REV. 05.26.22

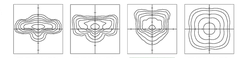
1

## PRODUCT SPECIFICATIONS

**HOUSING**
Heavy Duty Marine Grade Cast and Spun Aluminum with 7 shade options and 3 cap options

**ELECTRICAL**
- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver by Philips Advance
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- All internal wiring UL certified for 600 VAC and 105°C
- Lumileds Luxeon MX LED's
- CRI 70, 80 or 90
- Color temperatures: 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KA supplies as standard.

**OPTICS**
Star Power T2, T3, T4 and T5
- IES Types



TYPE II (T2) TYPE III (T3) TYPE IV (T4) TYPE V (T5)

**FINISH**
5 mils Powder Coat

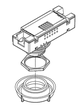
**WARRANTY**
Standard Warranty is 5 years for Driver and LEDs

**LISTINGS**
UL 1598 Listed
IDA Dark Sky Approved

**OPTIONS**
- **BIRD SPIKES (BS)**—offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations..
- **MARINE GRADE FINISH (MGF)**—A multi-step process creating protective finishing coat against harsh environments.
  - Chemically washed in a 5 stage cleaning system.
  - Pre-baked
  - Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer.
  - 1-2 feet inside pole coverage top and bottom.
  - Oven Baked.
  - Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- **SHIELDS (HSS)**—House Side Shield (HSS) is designed for full property line cut-off.

**CONTROLS**
- **FSP-211 (FSP-X)**—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, reprogrammable in the field.
- **NEMA 7-PIN RECEPTACLE (PE7)**—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect. All Receptacle options are Architectural Arm Mounted. Architectural Arms 2, 3, 7-11, 13-18.

**FSP-211**



ida DARK-SKY ASSOCIATION · c UL us LISTED

NLS LIGHTING
701 Kingshill Place, Carson, CA 90746
**Call Us Today** (310) 341-2037
**nlslighting.com**

2

## PRODUCT SPECIFICATIONS

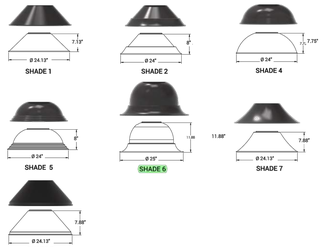
TOPS

**TOP 1** Smooth


**TOP 2** Alum. Rings


**TOP 3**


SHADES




| PART NUMBER | T2 LUMENS | LM/W | T3 LUMENS | LM/W | T4 LUMENS | LM/W | T5 LUMENS | LM/W | Watts |
|---|---|---|---|---|---|---|---|---|---|
| CAL-1-32L-7-30K7 | 7242 | 102 | 7313 | 103 | 7384 | 104 | 7100 | 100 | 71 |
| CAL-1-32L-7-40K7 | 7526 | 106 | 7597 | 107 | 7597 | 107 | 7313 | 103 | 71 |
| CAL-1-32L-7-50K7 | 7952 | 112 | 7881 | 111 | 7952 | 112 | 7526 | 106 | 71 |
| CAL-1-32L-1-30K7 | 10812 | 102 | 10918 | 103 | 11024 | 104 | 10605 | 100 | 106 |
| CAL-1-32L-1-40K7 | 11236 | 106 | 11342 | 107 | 11342 | 107 | 10918 | 103 | 106 |
| CAL-1-32L-1-50K7 | 11872 | 112 | 11766 | 111 | 11872 | 112 | 11236 | 106 | 106 |
| CAL-1-48L-35-30K7 | 5202 | 102 | 5304 | 104 | 5406 | 106 | 5151 | 101 | 51 |
| CAL-1-48L-35-40K7 | 5406 | 106 | 5508 | 108 | 5661 | 111 | 5355 | 105 | 51 |
| CAL-1-48L-35-50K7 | 5610 | 110 | 5712 | 112 | 5865 | 115 | 5457 | 107 | 51 |
| CAL-1-48L-53-30K7 | 8160 | 102 | 8320 | 104 | 8480 | 106 | 8080 | 101 | 80 |
| CAL-1-48L-53-40K7 | 8480 | 106 | 8640 | 108 | 8880 | 111 | 8400 | 105 | 80 |
| CAL-1-48L-53-50K7 | 8800 | 110 | 8960 | 112 | 9200 | 115 | 8560 | 107 | 80 |
| CAL-1-48L-7-30K7 | 10608 | 102 | 10816 | 104 | 11024 | 106 | 10504 | 101 | 104 |
| CAL-1-48L-7-40K7 | 11024 | 106 | 11232 | 108 | 11544 | 111 | 10920 | 105 | 104 |
| CAL-1-48L-7-50K7 | 11440 | 110 | 11648 | 112 | 11960 | 115 | 11128 | 107 | 104 |
| CAL-1-48L-1-30K7 | 15912 | 102 | 16224 | 104 | 16536 | 106 | 15756 | 101 | 156 |
| CAL-1-48L-1-40K7 | 16536 | 106 | 16848 | 108 | 17316 | 111 | 16380 | 105 | 156 |
| CAL-1-48L-1-50K7 | 17160 | 110 | 17472 | 112 | 17940 | 115 | 16692 | 107 | 156 |
| CAL-1-64L-35-30K7 | 6732 | 102 | 6864 | 104 | 6996 | 106 | 6666 | 101 | 66 |
| CAL-1-64L-35-40K7 | 6996 | 106 | 7128 | 108 | 7326 | 111 | 6930 | 105 | 66 |
| CAL-1-64L-35-50K7 | 7260 | 110 | 7392 | 112 | 7590 | 115 | 7062 | 107 | 66 |
| CAL-1-64L-53-30K7 | 10404 | 102 | 10608 | 104 | 10812 | 106 | 10302 | 101 | 102 |
| CAL-1-64L-53-40K7 | 10812 | 106 | 11016 | 108 | 11322 | 111 | 10710 | 105 | 102 |
| CAL-1-64L-53-50K7 | 11220 | 110 | 11424 | 112 | 11730 | 115 | 10914 | 107 | 102 |
| CAL-1-64L-7-30K7 | 13974 | 102 | 14248 | 104 | 14522 | 106 | 13837 | 101 | 137 |
| CAL-1-64L-7-40K7 | 14522 | 106 | 14796 | 108 | 15207 | 111 | 14385 | 105 | 137 |
| CAL-1-64L-7-50K7 | 15070 | 110 | 15344 | 112 | 15755 | 115 | 14659 | 107 | 137 |
| CAL-1-64L-1-30K7 | 20910 | 102 | 21320 | 104 | 21730 | 106 | 20705 | 101 | 205 |
| CAL-1-64L-1-40K7 | 21730 | 106 | 22140 | 108 | 22755 | 111 | 21525 | 105 | 205 |
| CAL-1-64L-1-50K7 | 22550 | 110 | 22960 | 112 | 23575 | 115 | 21935 | 107 | 205 |

3000k or warmer must be selected to meet International Dark-Sky Association certification.

**Lumen Maintenance Data**

| Ambient Temperature | Drive Current | L90 Hours* | L70 Hours** | 30,000 Hours* | 50,000 Hours* | 60,00 Hours* | 100,000 Hours** |
|---|---|---|---|---|---|---|---|
| 25°C | Up to 700mA | 58,000 | 173,000 | 95.7% | 91.6% | 89.6% | 82.1% |
| | 1050mA | 48,000 | 143,000 | 94.3% | 89.5% | 87.2% | 78.5% |

*Reported extrapolations per IESNA TM-21 **Projected extrapolations per IESNA TM-21

| EPA | CAL-1 |
|---|---|
| Single | 1.4 |

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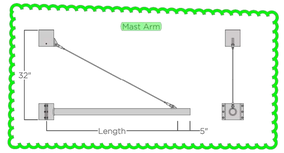
**nlslighting.com**

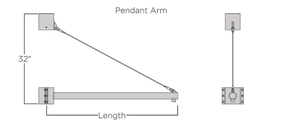
3

**Balto** Aluminum Pole Clamp Fixture Mounting Arm — structura

FIXTURE TYPE: _____
PROJECT NAME: _____

Luminaire by others.




**SPECIFICATIONS:**

**CONSTRUCTION**: Constructed using a multipart system of 6061-T6 aluminum weldments connected with a stainless steel hardware. The arm is comprised of a back and arm that are clamped around the pole together with stainless steel hardware. The top slips over the top of the pole. The arm and top are connected using a stainless steel tie rod.

**FINISHES AND MATERIALS**: All aluminum parts are polyester powder coat painted to AAMA-2604 standards. Care and Maintenance

**ELECTRICAL**: Electrical raceway through mounting tube to wire chase inside the pole.

**HARDWARE**: All luminaire hardware is stainless steel.

**FIXTURE MOUNTING**: Arm is made for 2 3/8" slip fit fixtures. Pendant mounting thread size to be specified. Avaiable with single fixture mounting or double fixture mounting at 180°.

**ORDERING GUIDE:** EXAMPLE: BALTO-SNG-MAST-48-C5-RND

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| BALTO | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1 | **Series** | 3 | **Fixture** | 5 | **Metal Finish** |
| BALTO | Balto | MAST | Mast Arm | C* | See color options on finishes technical sheet |
| 2 | **Arm** | PEN | Pendant | C* pit black | Custom Color |
| SNG | Single | 4 | **Length** | 6 | **Mounting** |
| DBL | Double | 24 | 24" | RND | Round Pole |
| | | 36 | 36" | SQR | Square Pole |
| | | 48 | 48" | | |

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1 E504 PROPOSED POLE LIGHT - LUMINAIRE AND ARM
NTS

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE
Reviewed by: [illegible]

**Key Plan**

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
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KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE
SERVICE DESIGN
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Seal

STATE OF MARYLAND · JOSEPH A. PIO · 40505 · PROFESSIONAL ENGINEER · 5/11/23

Phase
100% SUBMISSION

Project No.
2019.331.006

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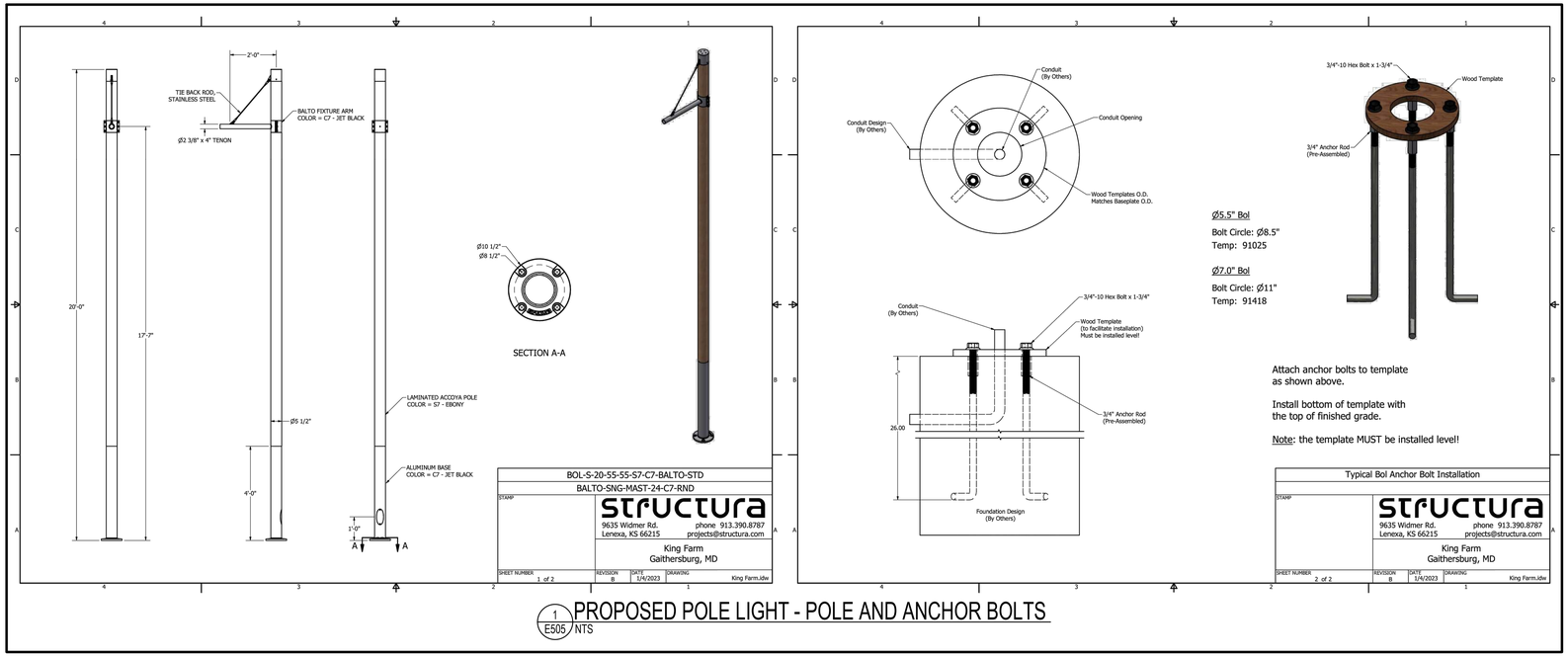
Date
2023-03-01

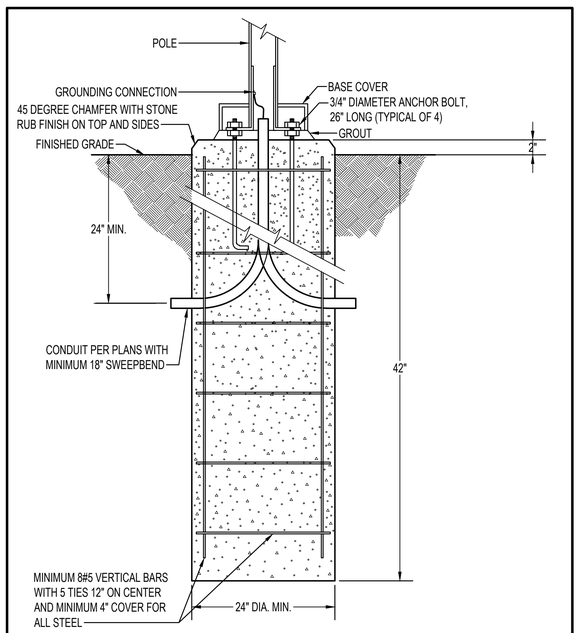
Drawing Title
ELECTRICAL DETAILS

Drawing No.
E504

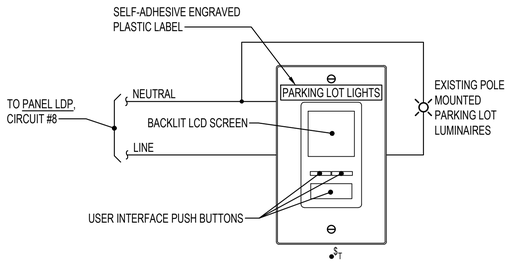
5/18/2022 15:52:47




1 E505 PROPOSED POLE LIGHT - POLE AND ANCHOR BOLTS
NTS

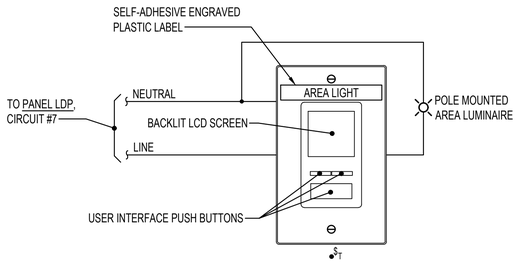



2 E505 SITE LIGHTING POLE BASE
NTS



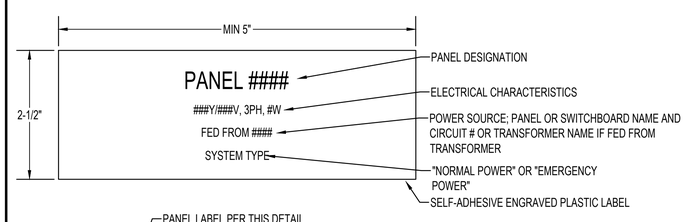

NOTE: GROUND WIRE NOT SHOWN, HOWEVER PROVIDE EQUIPMENT GROUNDING CONDUCTOR WITH ALL CIRCUIT WIRING PER NEC.

3 E505 DIGITAL TIMER LIGHT SWITCH FOR EXISTING POLE MOUNTED PARKING LOT LUMINAIRES
NTS




NOTE: GROUND WIRE NOT SHOWN, HOWEVER PROVIDE EQUIPMENT GROUNDING CONDUCTOR WITH ALL CIRCUIT WIRING PER NEC.

4 E505 DIGITAL TIMER LIGHT SWITCH FOR POLE MOUNTED AREA LUMINAIRE
NTS




GENERAL NOTES:

A. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH LABELS.

B. CENTER ALL TEXT HORIZONTALLY.

C. MODIFY TEXT AS REQUIRED.

D. PANELBOARDS CONNECTED TO NORMAL POWER SYSTEMS SHALL HAVE BLACK LETTERS ON WHITE BACKGROUND.

E. PANELBOARDS CONNECTED TO EMERGENCY POWER SYSTEMS SHALL HAVE WHITE LETTERS ON RED BACKGROUND.

5 E505 PANELBOARD LABELS
NTS



**Key Plan**

| No. | Revision | Date |
|---|---|---|
| | | |

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Date
2023-03-01

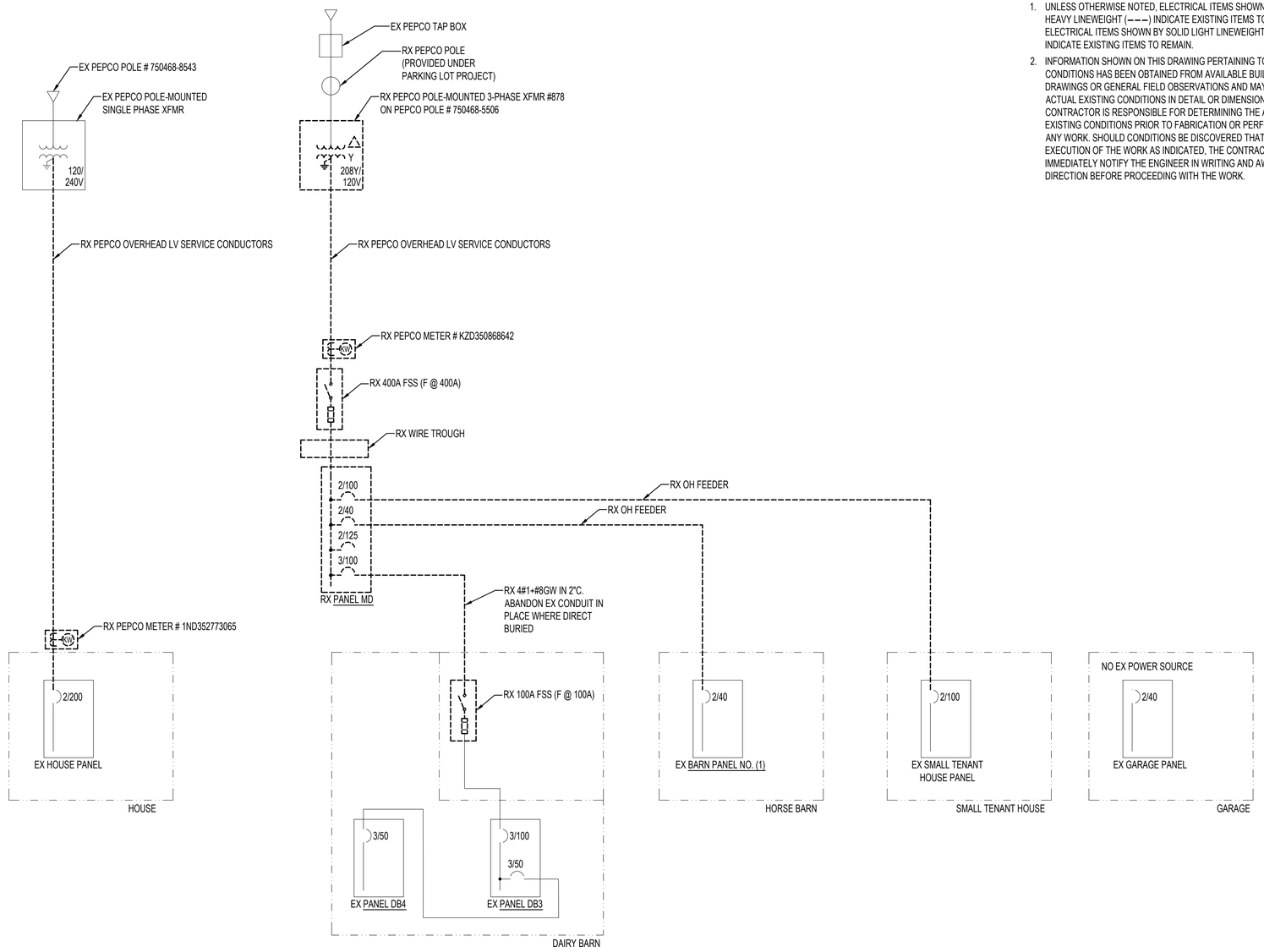
Drawing Title
ELECTRICAL DETAILS

Drawing No.
E505

5/10/2022 15:52:47

DRAWING NOTES: (APPLICABLE TO THIS SHEET ONLY)

1. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN BY DASHED HEAVY LINEWEIGHT (– – –) INDICATE EXISTING ITEMS TO BE REMOVED. ELECTRICAL ITEMS SHOWN BY SOLID LIGHT LINEWEIGHT (——) INDICATE EXISTING ITEMS TO REMAIN.
2. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT WRITTEN DIRECTION BEFORE PROCEEDING WITH THE WORK.




1 E601 POWER ONE-LINE DIAGRAM - DEMOLITION
NO SCALE

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE
Approved
ROCKVILLE, MARYLAND

Key Plan

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|---|---|---|
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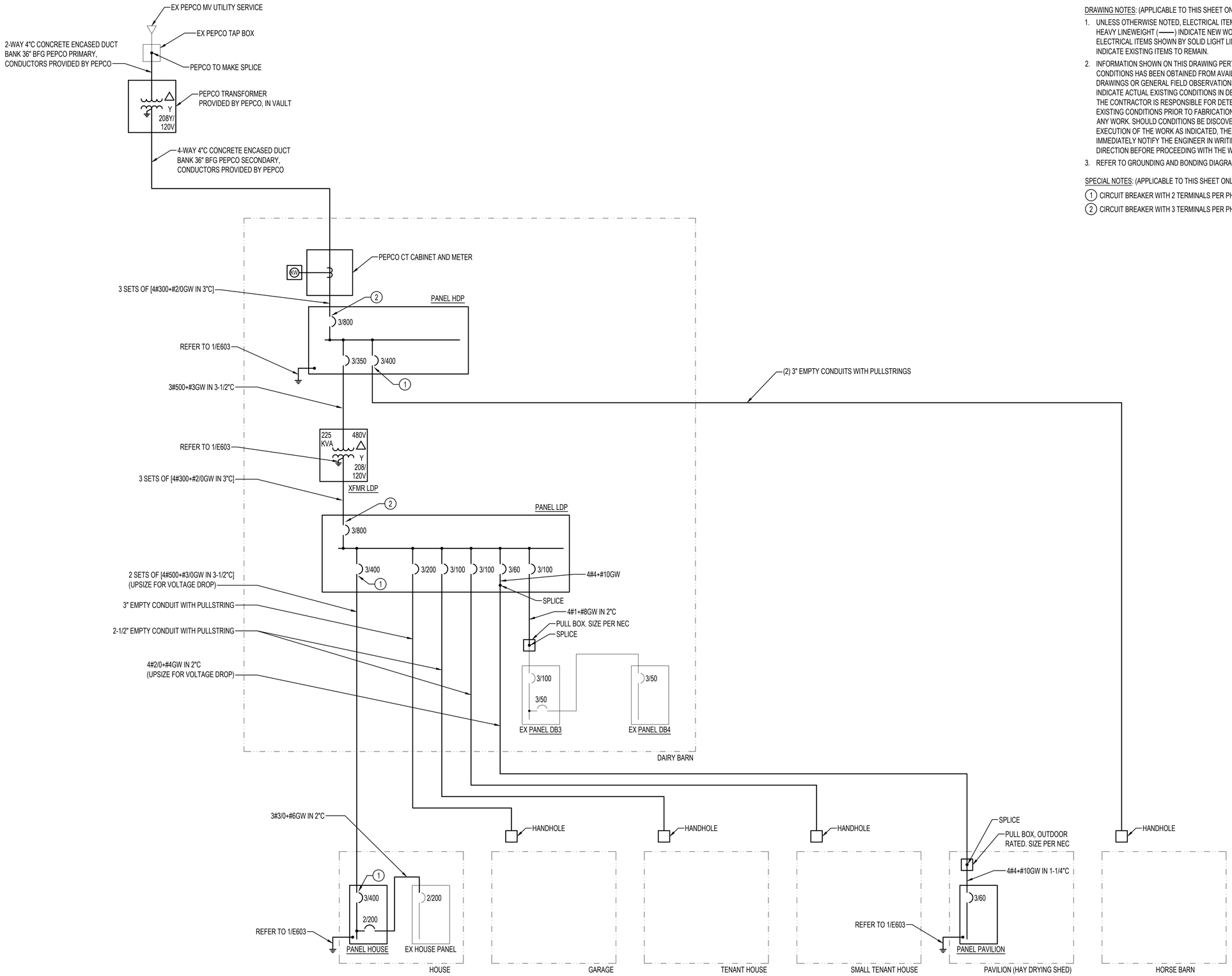
Date
2023-03-01

Drawing Title
ELECTRICAL POWER ONE-LINE DIAGRAMS

Drawing No.
E601

5/18/2022 15:52:47




1 E602 POWER ONE-LINE DIAGRAM - NEW WORK
NO SCALE

DRAWING NOTES: (APPLICABLE TO THIS SHEET ONLY)

1. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN BY SOLID HEAVY LINEWEIGHT (——) INDICATE NEW WORK TO BE PROVIDED. ELECTRICAL ITEMS SHOWN BY SOLID LIGHT LINEWEIGHT (——) INDICATE EXISTING ITEMS TO REMAIN.
2. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT WRITTEN DIRECTION BEFORE PROCEEDING WITH THE WORK.
3. REFER TO GROUNDING AND BONDING DIAGRAM ON DRAWING E603.

SPECIAL NOTES: (APPLICABLE TO THIS SHEET ONLY)

(1) CIRCUIT BREAKER WITH 2 TERMINALS PER PHASE.
(2) CIRCUIT BREAKER WITH 3 TERMINALS PER PHASE.



Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
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Date
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Drawing Title
ELECTRICAL POWER ONE-LINE DIAGRAMS

Drawing No.
E602

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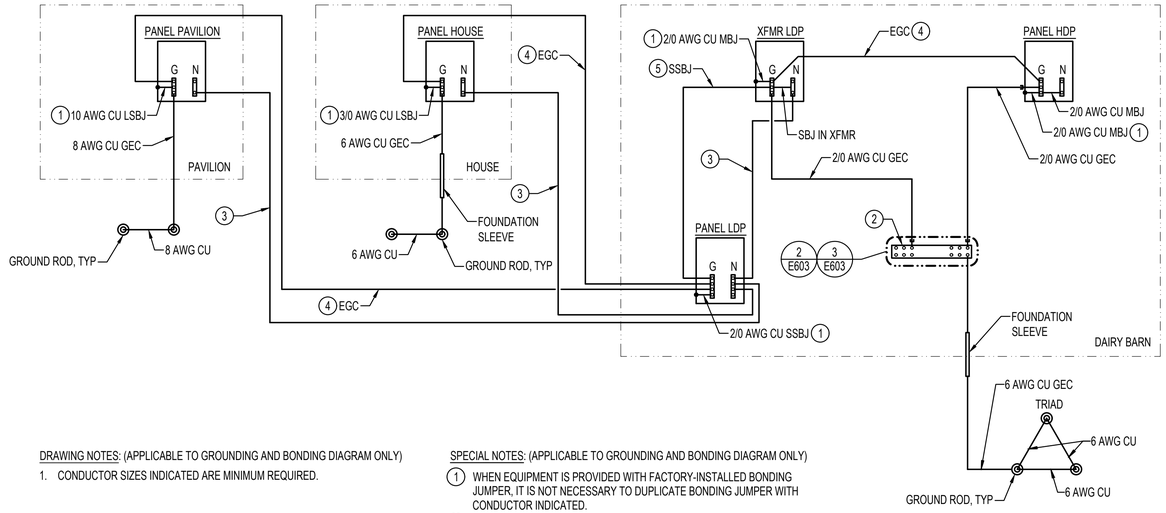



DRAWING NOTES: (APPLICABLE TO GROUNDING AND BONDING DIAGRAM ONLY)

1. CONDUCTOR SIZES INDICATED ARE MINIMUM REQUIRED.

SPECIAL NOTES: (APPLICABLE TO GROUNDING AND BONDING DIAGRAM ONLY)

(1) WHEN EQUIPMENT IS PROVIDED WITH FACTORY-INSTALLED BONDING JUMPER, IT IS NOT NECESSARY TO DUPLICATE BONDING JUMPER WITH CONDUCTOR INDICATED.

(2) MAIN SERVICE GROUND BAR: 4"X24"X1/4" THICK, COPPER, PRE-DRILLED/TAPPED. MOUNT ON ISOLATORS.

(3) REFER TO ELECTRICAL POWER ONE-LINE DIAGRAM ON DRAWING E602 FOR NEUTRAL CONDUCTOR SIZE.

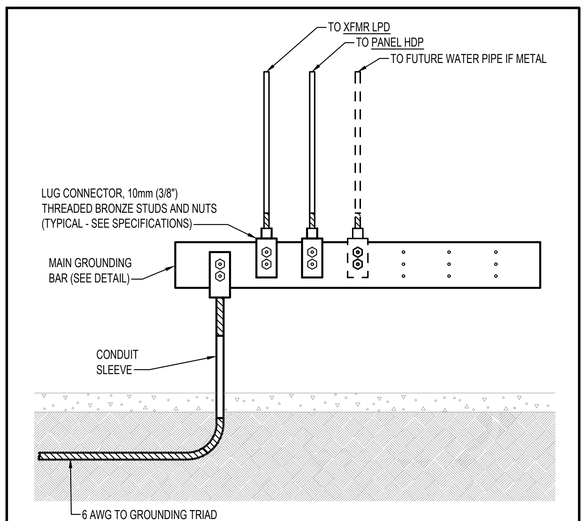
(4) REFER TO ELECTRICAL POWER ONE-LINE DIAGRAM ON DRAWING E602 FOR EQUIPMENT GROUNDING CONDUCTOR SIZE.

(5) REFER TO ELECTRICAL POWER ONE-LINE DIAGRAM ON DRAWING E602 FOR SUPPLY SIDE BONDING JUMPER SIZE.

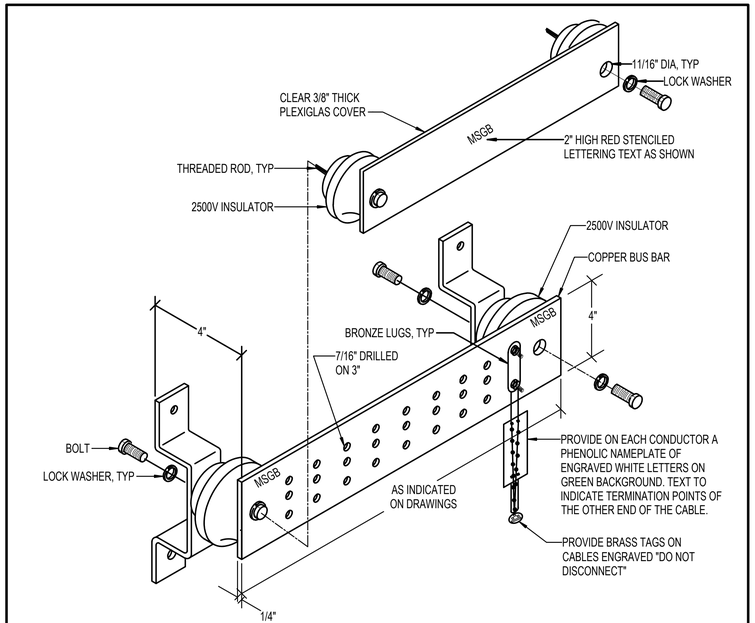
## 1/E603 GROUNDING AND BONDING DIAGRAM
N.T.S.

## GROUNDING AND BONDING DIAGRAM ABBREVIATIONS

| | | | |
|---|---|---|---|
| AWG | AMERICAN WIRE GAUGE | MBJ | MAIN BONDING JUMPER |
| CU | COPPER | N | NEUTRAL |
| EGC | EQUIPMENT GROUNDING CONDUCTOR | SBJ | SYSTEM BONDING JUMPER |
| G | GROUND | SSBJ | SUPPLY SIDE BONDING JUMPER |
| GEC | GROUNDING ELECTRODE CONDUCTOR | TYP | TYPICAL |
| LSBJ | LOAD SIDE BONDING JUMPER | XFMR | TRANSFORMER |




## 2/E603 MAIN GROUNDING BAR
N.T.S.




NOTES: (APPLY TO THIS DETAIL ONLY)

1. BUS BARS OVER 3' IN LENGTH REQUIRE ONE ADDITIONAL INSULATOR SUPPORT EVERY 3'.
2. MOUNT AT HEIGHT SCHEDULED.
3. PROVIDE METAL BACKING BEHIND SHEETROCK WALLS.
4. USE 3/8" DIAMETER EXPANSION BOLTS FOR MASONRY WALLS. USE 3/8" DIAMETER SPRING-WING TOGGLE BOLT FOR DRYWALL.

## 3/E603 MAIN GROUNDING BAR INSTALLATION
N.T.S.



Key Plan

| No. | Revision | Date |
|---|---|---|
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Phase
100% SUBMISSION

Project No.
2019.331.006

Date
2023-03-01

Drawing Title
ELECTRICAL
GROUNDING DIAGRAMS

Drawing No.
E603

5/18/2022 15:52:47

## DISTRIBUTION PANEL HDP

BUS AMPACITY: 800A
MAIN TYPE: 800A MCB
SERVICE: 480Y/277 VOLTS, 3 PHASE, 4 WIRE
MIN. RATING: 42K AIC RMS SYMMETRICAL AMPS

MOUNTING: SURFACE
SECTIONS: 1
ENCLOSURE: NEMA 1
LOCATION: DAIRY BARN ELECTRICAL RM

| CKT | LOAD DESCRIPTION | OVERCURRENT PROTECTION TYPE | P | FRAME | TA | AUX | KVA | NOTE |
|---|---|---|---|---|---|---|---|---|
| 1 | XFMR LDP | MCCB | 3 | 400 | 350 | - | 0.44 | - |
| 2 | HORSE BARN (FUTURE) | MCCB | 3 | 400 | 400 | - | - | - |
| 3 | SPACE | - | 3 | 400 | - | - | - | - |
| 4 | SPACE | - | 3 | 225 | - | - | - | - |
| 5 | SPACE | - | 3 | 225 | - | - | - | - |

AUXILIARIES
a AFCI BREAKER
b GFCI BREAKER (5mA)
c GFEP BREAKER (30mA)
d SHUNT TRIP BREAKER
e HANDLE PADLOCK
f HANDLE CLAMP
g RED CB HANDLE

| | |
|---|---|
| TOTAL CONNECTED LOAD | 0.44 |
| TOTAL DEMAND LOAD | 0.44 |
| DEMAND AMPS | 0.5 |

| | |
|---|---|
| X | GROUND BUS |
| X | SERVICE ENTRANCE LABEL |
| X | INTEGRAL SPD/T VSS |
| | 200% NEUTRAL BUS & LUGS |
| | ISOLATED GROUND BUS |
| | SPLIT BUS |
| | FEED THRU LUGS |
| | SUB FEED LUGS |

**LOAD SUMMARY NOTES**
NOTE 1: FIRST 10KVA AT 100% AND REMAINDER AT 50%.
NOTE 2: HEATING AND COOLING CYCLES ARE EQUAL, THEREFORE HEATING CYCLE IS USED.
NOTE 3: DEMAND FACTOR FROM NEC TABLE FOR KITCHEN EQUIPMENT OTHER THAN DWELLING UNIT.
NOTE 4: DEMAND FACTOR FROM NEC TABLE FOR ELEVATORS.

**LOAD SUMMARY (KVA)**

| LOAD TYPE | CONNECTED | DF | DEMAND |
|---|---|---|---|
| LIGHTING | 0.44 | 100% | 0.44 |
| RECEPTACLE (SEE NOTE 1) | 0.00 | -- | 0.00 |
| EQUIPMENT: CONTINUOUS | 0.00 | 100% | 0.00 |
| EQUIPMENT: NON-CONTINUOUS | 0.00 | 100% | 0.00 |
| MOTOR | 0.00 | 100% | 0.00 |
| COOLING (SEE NOTE 2) | 0.00 | 0% | 0.00 |
| HEATING (SEE NOTE 2) | 0.00 | 100% | 0.00 |
| STANDBY | 0.00 | 0% | 0.00 |
| OTHER | 0.00 | 100% | 0.00 |
| KITCHEN (SEE NOTE 3) | 0.00 | 100% | 0.00 |
| ELEVATOR (SEE NOTE 4) | 0.00 | 100% | 0.00 |

## DISTRIBUTION PANEL LDP

BUS AMPACITY: 800A
MAIN TYPE: 800A MCB
SERVICE: 208Y/120 VOLTS, 3 PHASE, 4 WIRE
MIN. RATING: 22K AIC RMS SYMMETRICAL AMPS

MOUNTING: SURFACE
SECTIONS: 1
ENCLOSURE: NEMA 1
LOCATION: DAIRY BARN ELECTRICAL RM

| CKT | LOAD DESCRIPTION | OVERCURRENT PROTECTION TYPE | P | FRAME | TA | AUX | KVA | NOTE |
|---|---|---|---|---|---|---|---|---|
| 1 | HOUSE | MCCB | 3 | 400 | 400 | - | - | - |
| 2 | GARAGE (FUTURE) | MCCB | 3 | 225 | 200 | - | - | - |
| 3 | TENANT HOUSE (FUTURE) | MCCB | 3 | 100 | 100 | - | - | - |
| 4 | SMALL TENANT HOUSE (FUTURE) | MCCB | 3 | 100 | 100 | - | - | - |
| 5 | PAVILION | MCCB | 3 | 100 | 60 | - | - | - |
| 6 | DAIRY BARN FSS → PANEL DB3 → PANEL DB4 | MCCB | 3 | 100 | 100 | - | - | - |
| 7 | POLE MOUNTED AREA LIGHT | MCCB | 1 | 100 | 20 | - | 0.11 | - |
| 8 | PARKING LOT LIGHTS | MCCB | 1 | 100 | 20 | - | 0.33 | - |
| 9 | SPARE | - | 1 | 100 | 20 | - | - | - |
| 10 | SPACE | - | 3 | 400 | - | - | - | - |
| 11 | SPACE | - | 3 | 225 | - | - | - | - |

AUXILIARIES
a AFCI BREAKER
b GFCI BREAKER (5mA)
c GFEP BREAKER (30mA)
d SHUNT TRIP BREAKER
e HANDLE PADLOCK
f HANDLE CLAMP
g RED CB HANDLE

| | |
|---|---|
| TOTAL CONNECTED LOAD | 0.44 |
| TOTAL DEMAND LOAD | 0.44 |
| DEMAND AMPS | 1.2 |

| | |
|---|---|
| X | GROUND BUS |
| | SERVICE ENTRANCE LABEL |
| | INTEGRAL SPD/T VSS |
| | 200% NEUTRAL BUS & LUGS |
| | ISOLATED GROUND BUS |
| | SPLIT BUS |
| | FEED THRU LUGS |
| | SUB FEED LUGS |

**LOAD SUMMARY NOTES**
NOTE 1: FIRST 10KVA AT 100% AND REMAINDER AT 50%.
NOTE 2: HEATING AND COOLING CYCLES ARE EQUAL, THEREFORE HEATING CYCLE IS USED.
NOTE 3: DEMAND FACTOR FROM NEC TABLE FOR KITCHEN EQUIPMENT OTHER THAN DWELLING UNIT.
NOTE 4: DEMAND FACTOR FROM NEC TABLE FOR ELEVATORS.

**LOAD SUMMARY (KVA)**

| LOAD TYPE | CONNECTED | DF | DEMAND |
|---|---|---|---|
| LIGHTING | 0.44 | 100% | 0.44 |
| RECEPTACLE (SEE NOTE 1) | 0.00 | -- | 0.00 |
| EQUIPMENT: CONTINUOUS | 0.00 | 100% | 0.00 |
| EQUIPMENT: NON-CONTINUOUS | 0.00 | 100% | 0.00 |
| MOTOR | 0.00 | 100% | 0.00 |
| COOLING (SEE NOTE 2) | 0.00 | 0% | 0.00 |
| HEATING (SEE NOTE 2) | 0.00 | 100% | 0.00 |
| STANDBY | 0.00 | 0% | 0.00 |
| OTHER | 0.00 | 100% | 0.00 |
| KITCHEN (SEE NOTE 3) | 0.00 | 100% | 0.00 |
| ELEVATOR (SEE NOTE 4) | 0.00 | 100% | 0.00 |

## RX PANELBOARD MD

MANUFACTURER: GE
TYPE: POWER MARK PLUS LOAD CENTER

BUS AMPACITY: 400A
MAIN TYPE: MLO
SERVICE: 208Y/120 VOLTS, 3 PHASE, 4 WIRE
MIN. RATING: ?K AIC RMS SYMMETRICAL AMPS

MOUNTING: SURFACE
SECTIONS: 1
ENCLOSURE: NEMA 3R
LOCATION: EXTERIOR

| CKT | LOAD DESCRIPTION | NOTE | CKT BREAKER P | TA | AUX | KVA PER PHASE PHASE A | | PHASE B | | PHASE C | | CKT BREAKER AUX | TA | P | NOTE | LOAD DESCRIPTION | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EX: SPACE | - | 1 | - | - | - | - | | | | | - | - | 1 | - | EX: SPACE | 2 |
| 3 | EX: SPACE | - | 1 | - | - | | | - | - | | | - | - | 1 | - | EX: SPACE | 4 |
| 5 | EX: SPACE | - | 1 | - | - | | | | | - | - | - | - | 1 | - | EX: SPACE | 6 |
| 7 | EX: SPACE | - | 1 | - | - | - | - | | | | | - | - | 1 | - | EX: SPACE | 8 |
| 9 | EX: SMALL TENANT HOUSE | - | 2 | 100 | - | | | - | - | | | - | - | 1 | - | EX: SPACE | 10 |
| 11 | { } | - | - | - | - | | | | | - | - | - | - | 1 | - | EX: SPACE | 12 |
| 13 | EX: OUT SIDE LIGHTS | - | 1 | 20 | - | - | - | | | | | - | - | 1 | - | EX: SPACE | 14 |
| 15 | EX: HORSE BARN | - | 2 | 40 | - | | | - | - | | | - | 20 | 1 | - | EX: (NOT LABELED) | 16 |
| 17 | { } | - | - | - | - | | | | | - | - | - | 20 | 1 | - | EX: (NOT LABELED) | 18 |
| 19 | - | - | 2 | 125 | - | - | - | | | | | - | 100 | 3 | - | EX: DAIRY BARN | 20 |
| 21 | { } | - | - | - | - | | | - | - | | | - | - | - | - | { } | 22 |
| 23 | EX: (NOT LABELED) | - | 1 | 20 | - | | | | | - | - | - | - | - | - | { } | 24 |
| | | | | | | - | - | - | - | - | - | | | | | | |
| | | | | | | - | | - | | - | | | | | | | |
| | | | | | | -A | | -A | | -A | | | | | | | |

AUXILIARIES
a AFCI BREAKER
b GFCI BREAKER (5mA)
c GFEP BREAKER (30mA)
d SHUNT TRIP BREAKER
e HANDLE PADLOCK
f HANDLE CLAMP
g RED CB HANDLE

| | |
|---|---|
| TOTAL CONNECTED LOAD | 0.00 |
| TOTAL DEMAND LOAD | 0.00 |
| DEMAND AMPS | 0.0 |

| | |
|---|---|
| X | GROUND BUS |
| | SERVICE ENTRANCE LABEL |
| | INTEGRAL SPD/T VSS |
| | 200% NEUTRAL BUS & LUGS |
| | ISOLATED GROUND BUS |
| | SPLIT BUS |
| | FEED THRU LUGS |
| | SUB FEED LUGS |

**LOAD SUMMARY NOTES**
NOTE 1: FIRST 10KVA AT 100% AND REMAINDER AT 50%.
NOTE 2: HEATING AND COOLING CYCLES ARE EQUAL, THEREFORE HEATING CYCLE IS USED.
NOTE 3: DEMAND FACTOR FROM NEC TABLE FOR KITCHEN EQUIPMENT OTHER THAN DWELLING UNIT.
NOTE 4: DEMAND FACTOR FROM NEC TABLE FOR ELEVATORS.

**LOAD SUMMARY (KVA)**

| LOAD TYPE | CONNECTED | DF | DEMAND |
|---|---|---|---|
| LIGHTING | 0.00 | 100% | 0.00 |
| RECEPTACLE (SEE NOTE 1) | 0.00 | -- | 0.00 |
| EQUIPMENT: CONTINUOUS | 0.00 | 100% | 0.00 |
| EQUIPMENT: NON-CONTINUOUS | 0.00 | 100% | 0.00 |
| MOTOR | 0.00 | 100% | 0.00 |
| COOLING (SEE NOTE 2) | 0.00 | 0% | 0.00 |
| HEATING (SEE NOTE 2) | 0.00 | 100% | 0.00 |
| STANDBY | 0.00 | 0% | 0.00 |
| OTHER | 0.00 | 100% | 0.00 |
| KITCHEN (SEE NOTE 3) | 0.00 | 100% | 0.00 |
| ELEVATOR (SEE NOTE 4) | 0.00 | 100% | 0.00 |

## PANELBOARD HOUSE

BUS AMPACITY: 400A
MAIN TYPE: 400A MCB
SERVICE: 208Y/120 VOLTS, 3 PHASE, 4 WIRE
MIN. RATING: 10K AIC RMS SYMMETRICAL AMPS

MOUNTING: SURFACE
SECTIONS: 1
ENCLOSURE: NEMA 1
LOCATION: HOUSE - BASEMENT

| CKT | LOAD DESCRIPTION | NOTE | CKT BREAKER P | TA | AUX | KVA PER PHASE PHASE A | | PHASE B | | PHASE C | | CKT BREAKER AUX | TA | P | NOTE | LOAD DESCRIPTION | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 2 |
| 3 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 4 |
| 5 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 6 |
| 7 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 8 |
| 9 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 10 |
| 11 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 12 |
| 13 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 14 |
| 15 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 16 |
| 17 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 18 |
| 19 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 20 |
| 21 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 22 |
| 23 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 24 |
| 25 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 26 |
| 27 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 28 |
| 29 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 30 |
| 31 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 32 |
| 33 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 34 |
| 35 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 36 |
| 37 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 38 |
| 39 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 40 |
| 41 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 42 |
| SUB FEED BREAKER | EXISTING HOUSE PANEL | - | 2 | 200 | - | - | - | | | | | - | - | - | - | - | . |
| | | | | | | | | - | - | | | | | | | | |
| | | | | | | | | | | - | - | | | | | | |
| | | | | | | - | - | - | - | - | - | | | | | | |
| | | | | | | - | | - | | - | | | | | | | |
| | | | | | | -A | | -A | | -A | | | | | | | |

AUXILIARIES
a AFCI BREAKER
b GFCI BREAKER (5mA)
c GFEP BREAKER (30mA)
d SHUNT TRIP BREAKER
e HANDLE PADLOCK
f HANDLE CLAMP
g RED CB HANDLE

| | |
|---|---|
| TOTAL CONNECTED LOAD | 0.00 |
| TOTAL DEMAND LOAD | 0.00 |
| DEMAND AMPS | 0.0 |

| | |
|---|---|
| X | GROUND BUS |
| | SERVICE ENTRANCE LABEL |
| | INTEGRAL SPD/T VSS |
| | 200% NEUTRAL BUS & LUGS |
| | ISOLATED GROUND BUS |
| | SPLIT BUS |
| | FEED THRU LUGS |
| | SUB FEED LUGS |

**LOAD SUMMARY NOTES**
NOTE 1: FIRST 10KVA AT 100% AND REMAINDER AT 50%.
NOTE 2: HEATING AND COOLING CYCLES ARE EQUAL, THEREFORE HEATING CYCLE IS USED.
NOTE 3: DEMAND FACTOR FROM NEC TABLE FOR KITCHEN EQUIPMENT OTHER THAN DWELLING UNIT.
NOTE 4: DEMAND FACTOR FROM NEC TABLE FOR ELEVATORS.

**LOAD SUMMARY (KVA)**

| LOAD TYPE | CONNECTED | DF | DEMAND |
|---|---|---|---|
| LIGHTING | 0.00 | 100% | 0.00 |
| RECEPTACLE (SEE NOTE 1) | 0.00 | -- | 0.00 |
| EQUIPMENT: CONTINUOUS | 0.00 | 100% | 0.00 |
| EQUIPMENT: NON-CONTINUOUS | 0.00 | 100% | 0.00 |
| MOTOR | 0.00 | 100% | 0.00 |
| COOLING (SEE NOTE 2) | 0.00 | 0% | 0.00 |
| HEATING (SEE NOTE 2) | 0.00 | 100% | 0.00 |
| STANDBY | 0.00 | 0% | 0.00 |
| OTHER | 0.00 | 100% | 0.00 |
| KITCHEN (SEE NOTE 3) | 0.00 | 100% | 0.00 |
| ELEVATOR (SEE NOTE 4) | 0.00 | 100% | 0.00 |

## PANELBOARD PAVILION

BUS AMPACITY: 100A
MAIN TYPE: 60A MCB
SERVICE: 208Y/120 VOLTS, 3 PHASE, 4 WIRE
MIN. RATING: 10K AIC RMS SYMMETRICAL AMPS

MOUNTING: SURFACE
SECTIONS: 1
ENCLOSURE: NEMA 4X STAINLESS STEEL
LOCATION: PAVILION LOFT

| CKT | LOAD DESCRIPTION | NOTE | CKT BREAKER P | TA | AUX | KVA PER PHASE PHASE A | | PHASE B | | PHASE C | | CKT BREAKER AUX | TA | P | NOTE | LOAD DESCRIPTION | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 2 |
| 3 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 4 |
| 5 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 6 |
| 7 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 8 |
| 9 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 10 |
| 11 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 12 |
| 13 | SPARE | - | 1 | 20 | - | - | - | | | | | - | 20 | 1 | - | SPARE | 14 |
| 15 | SPARE | - | 1 | 20 | - | | | - | - | | | - | 20 | 1 | - | SPARE | 16 |
| 17 | SPARE | - | 1 | 20 | - | | | | | - | - | - | 20 | 1 | - | SPARE | 18 |
| | | | | | | - | - | - | - | - | - | | | | | | |
| | | | | | | - | | - | | - | | | | | | | |
| | | | | | | -A | | -A | | -A | | | | | | | |

AUXILIARIES
a AFCI BREAKER
b GFCI BREAKER (5mA)
c GFEP BREAKER (30mA)
d SHUNT TRIP BREAKER
e HANDLE PADLOCK
f HANDLE CLAMP
g RED CB HANDLE

| | |
|---|---|
| TOTAL CONNECTED LOAD | 0.00 |
| TOTAL DEMAND LOAD | 0.00 |
| DEMAND AMPS | 0.0 |

| | |
|---|---|
| X | GROUND BUS |
| | SERVICE ENTRANCE LABEL |
| | INTEGRAL SPD/T VSS |
| | 200% NEUTRAL BUS & LUGS |
| | ISOLATED GROUND BUS |
| | SPLIT BUS |
| | FEED THRU LUGS |
| | SUB FEED LUGS |

**LOAD SUMMARY NOTES**
NOTE 1: FIRST 10KVA AT 100% AND REMAINDER AT 50%.
NOTE 2: HEATING AND COOLING CYCLES ARE EQUAL, THEREFORE HEATING CYCLE IS USED.
NOTE 3: DEMAND FACTOR FROM NEC TABLE FOR KITCHEN EQUIPMENT OTHER THAN DWELLING UNIT.
NOTE 4: DEMAND FACTOR FROM NEC TABLE FOR ELEVATORS.

**LOAD SUMMARY (KVA)**

| LOAD TYPE | CONNECTED | DF | DEMAND |
|---|---|---|---|
| LIGHTING | 0.00 | 100% | 0.00 |
| RECEPTACLE (SEE NOTE 1) | 0.00 | -- | 0.00 |
| EQUIPMENT: CONTINUOUS | 0.00 | 100% | 0.00 |
| EQUIPMENT: NON-CONTINUOUS | 0.00 | 100% | 0.00 |
| MOTOR | 0.00 | 100% | 0.00 |
| COOLING (SEE NOTE 2) | 0.00 | 0% | 0.00 |
| HEATING (SEE NOTE 2) | 0.00 | 100% | 0.00 |
| STANDBY | 0.00 | 0% | 0.00 |
| OTHER | 0.00 | 100% | 0.00 |
| KITCHEN (SEE NOTE 3) | 0.00 | 100% | 0.00 |
| ELEVATOR (SEE NOTE 4) | 0.00 | 100% | 0.00 |

THESE DOCUMENTS HAVE BEEN REVIEWED FOR CODE COMPLIANCE

Key Plan

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name
CITY OF ROCKVILLE
DEPARTMENT OF
RECREATION AND PARKS
KING FARM FARMSTEAD
ELECTRICAL INFRASTRUCTURE
SERVICE DESIGN
16100 FREDERICK ROAD, ROCKVILLE, MARYLAND 20850

DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
HENRY ADAMS
Consulting Engineers
MECHANICAL ELECTRICAL & PLUMBING ENGINEERS

Seal
STATE OF MARYLAND TRAVIS T. POLLARD 40505 PROFESSIONAL ENGINEER 5/11/23

Phase
100% SUBMISSION

Project No.
2019.331.006

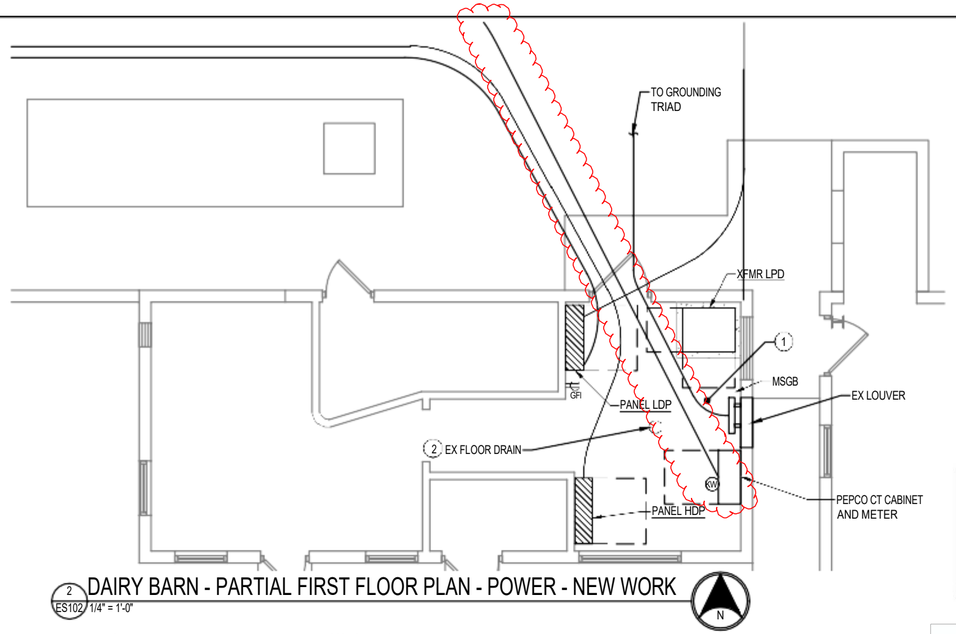
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY, THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 40505, EXPIRATION DATE 6/6/2023.

Date
2023-03-01

Drawing Title
ELECTRICAL SCHEDULES

Drawing No.
E801

5/10/2022 15:52:47




2 DAIRY BARN - PARTIAL FIRST FLOOR PLAN - POWER - NEW WORK
ES102 1/4" = 1'-0"

CONDUIT REFERENCE: (APPLICABLE TO THIS SHEET ONLY)

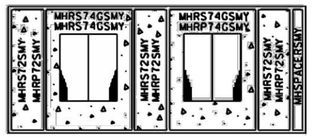
- (A) (2) 4"C - EMPTY CONDUITS WITH PULLSTRINGS, CONCRETE ENCASED (PEPCO UG MV PRIMARY - CONDUCTORS BY PEPCO)
- (B) (4) 4"C - EMPTY CONDUITS WITH PULLSTRINGS, CONCRETE ENCASED (PEPCO UG SECONDARY - CONDUCTORS BY PEPCO)
- (C) (2) 3"C - EMPTY CONDUITS WITH PULLSTRINGS, DIRECT BURIED (HORSE BARN)
- (D) (2) 3"C - 2 SETS OF [4#3/0+#3GW], DIRECT BURIED (HOUSE)
- (E) 3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
- (F) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
- (G) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (SMALL TENANT HOUSE)
- (H) 1-1/2"C - 4#6+#10GW, DIRECT BURIED (PAVILION)
- (J) 1"C - 2#12+#12GW, DIRECT BURIED (POLE LIGHTS)
- (K) (2) 3"C - 2 SETS OF [4#3/0+#3GW], DIRECT BURIED (HOUSE)
  3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
  2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
- (L) (2) 3"C - 2 SETS OF [4#3/0+#3GW], DIRECT BURIED (HOUSE)
  3"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (GARAGE)
  2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (TENANT HOUSE)
  1"C - 2#12+#12GW, DIRECT BURIED (POLE LIGHTS)
- (M) 2-1/2"C - EMPTY CONDUIT WITH PULLSTRING, DIRECT BURIED (SMALL TENANT HOUSE)
  1-1/2"C - 4#6+#10GW, DIRECT BURIED (PAVILION)

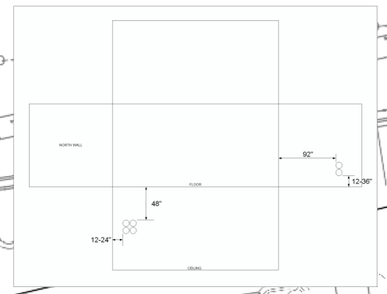
DRAWING NOTES: (APPLICABLE TO THIS SHEET ONLY)

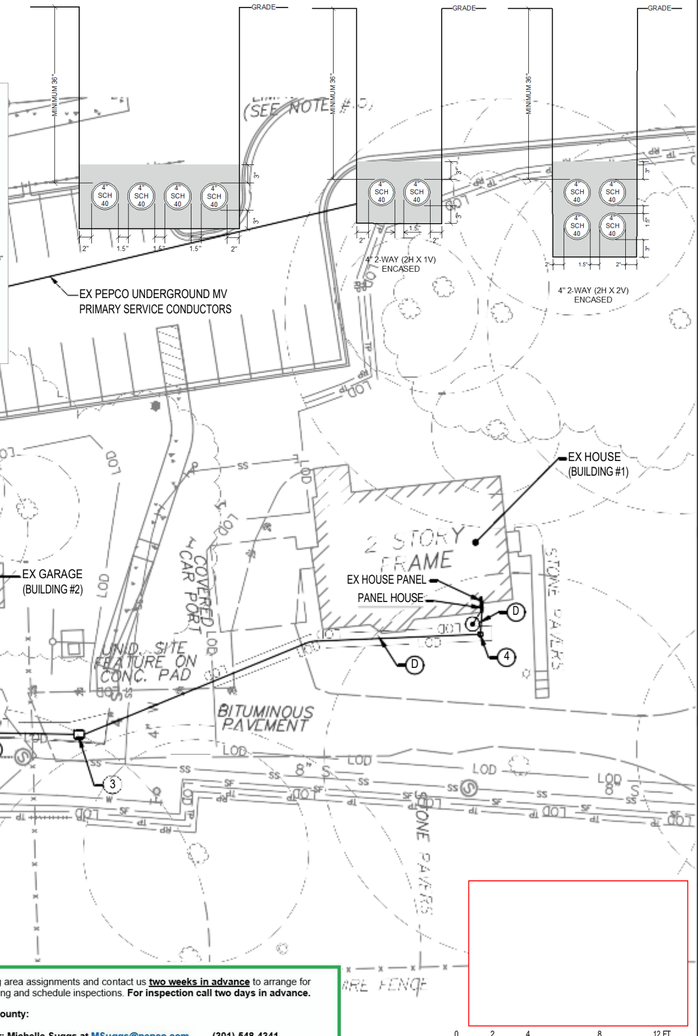
1. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN BY SOLID HEAVY LINEWEIGHT (——) INDICATE NEW WORK TO BE PROVIDED. ELECTRICAL ITEMS SHOWN BY SOLID LIGHT LINEWEIGHT (——) INDICATE EXISTING ITEMS TO REMAIN.
2. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT WRITTEN DIRECTION BEFORE PROCEEDING WITH THE WORK.
3. CONDUIT ROUTES SHOWN ARE BELOW GRADE UNLESS OTHERWISE NOTED.

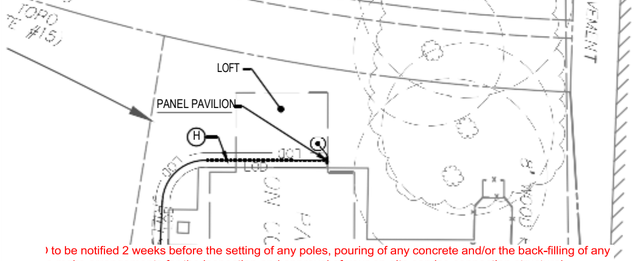
SPECIAL NOTES: (APPLICABLE TO THIS SHEET ONLY)

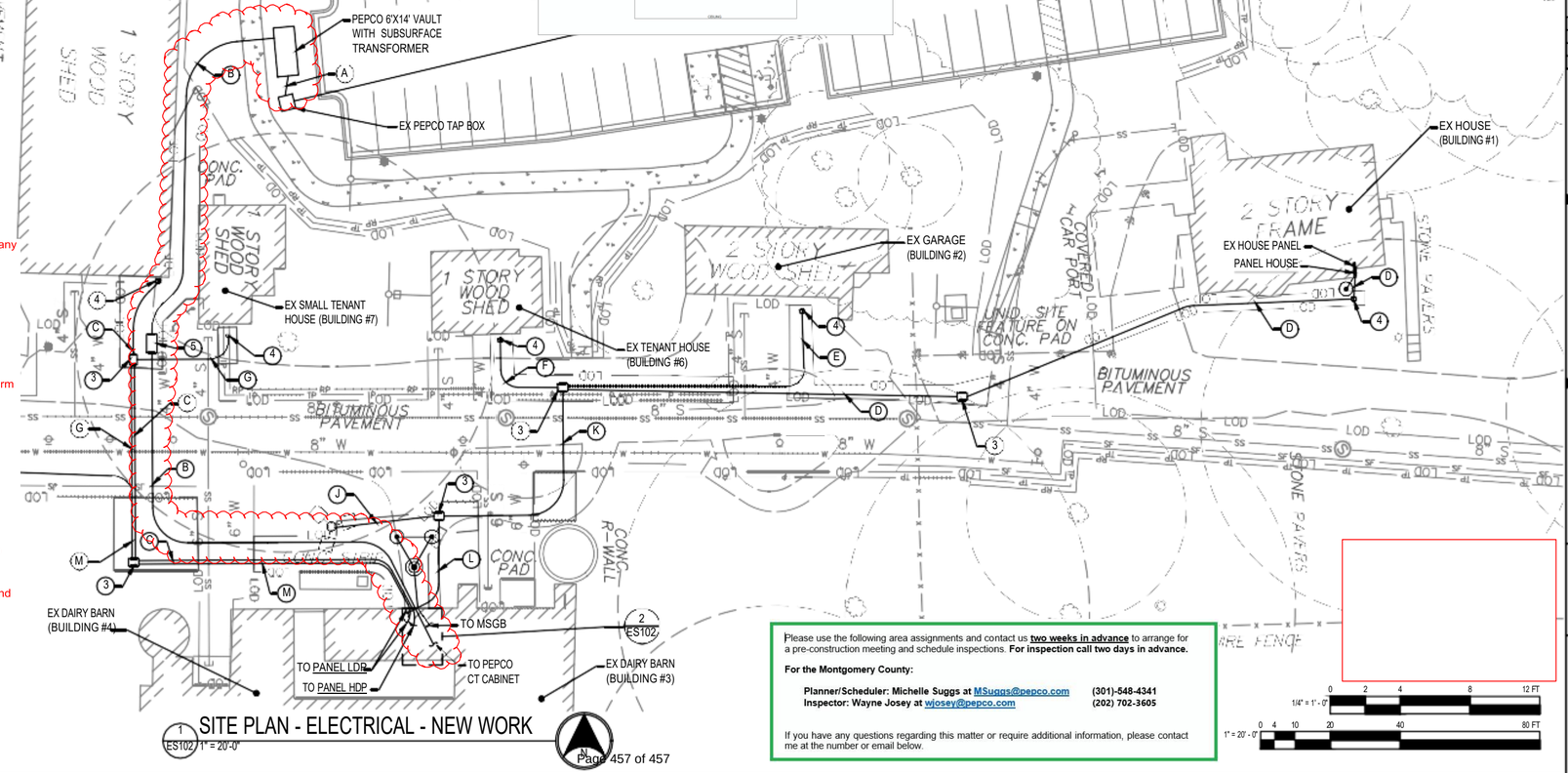
1. CUT AND TRENCH EXISTING FLOOR IN THIS AREA AS NECESSARY TO ACCOMMODATE INSTALLATION OF PROPOSED CONDUITS. PATCH AND REPAIR FLOOR AFTER COMPLETION OF CONDUIT INSTALLATION.
2. PROVIDE SUPPORT AND PROTECT EXISTING FLOOR DRAIN AND ASSOCIATED PIPES WITHIN EXISTING FLOOR SLAB. COORDINATE WITH EXISTING DRAIN AND PIPES AS NECESSARY.
3. TYPE A HANDHOLE.
4. TYPE B HANDHOLE.
5. PEPCO SPLICE BOX, 3' X 5'.




1 SITE PLAN - ELECTRICAL - NEW WORK
ES102 1" = 20'-0"

) to be notified 2 weeks before the setting of any poles, pouring of any concrete and/or the back-filling of any
o make arrangements for the inspection and approval of your on-site service connection structural
ent.

OCATION OF UTILITIES CALL 24 HOURS A DAY 1-800-257-7777 48 HOURS IN ADVANCE OF ANY
IN THIS VICINITY

er is responsible for design and construction of structural facilities on private property, including water-
of structures. PEPCO review and approval required on design and construction.

er to obtain all permits/permissions required by others on private property. All materials used are to confirm
o Specifications.
nd wire to be stranded tinned copper.

imum horizontal and vertical separation between foreign structures and conduit shall be as follows:

one Conduit - 3" concrete or 12" earth.
d Oil Mains - 12" earth.
es 16" or larger requires 18" of earth.
Water and Sewer - 5' horizontal and 1' vertical (crossing).
Drains - 5' out to out horizontal and 6" vertical (crossing).

E PEPCO DUCTS TO HAVE 36" MINIMUM, 42" MAXIMUM, COVER FROM EXISTING OR PROPOSED
E GRADE, WHICHEVER IS LOWER.

er to provide PEPCO a minimum 10 ft. wide access drive -- minimum H20 loading -- for the installation and
ance of PEPCO's transformer.

RINT APPROVED EXCEPT AS NOTED IN RED AND/OR YELLOW
as the requirements of the Potomac Electric Power Co. are concerned. Final approval by inspecting

Please use the following area assignments and contact us **two weeks in advance** to arrange for a pre-construction meeting and schedule inspections. **For inspection call two days in advance.**

**For the Montgomery County:**

**Planner/Scheduler: Michelle Suggs at MSuggs@pepco.com (301)-548-4341**
**Inspector: Wayne Josey at wjosey@pepco.com (202) 702-3605**

If you have any questions regarding this matter or require additional information, please contact me at the number or email below.

0 2 4 8 12 FT
1/4" = 1' - 0"
0 4 10 20 40 80 FT
1" = 20' - 0"

Key Plan

SCALE: X" = XX'-X"

NOT FOR CONSTRUCTION

| No. | Revision | Date |
|---|---|---|
| | | |

Project Name

CITY OF ROCKVILLE

KING FARM ELECTRICAL UPGRADES

ROCKVILLE, MARYLAND

DELTA ENGINEERS, ARCHITECTS, & SURVEYORS
HENRY ADAMS
Consulting Engineers
MECHANICAL | ELECTRICAL & PLUMBING ENGINEERS

Seal

Phase
75% SUBMISSION

Project No.
2019.331.006

Date
2022.09.19

Drawing Title

SITE PLAN - ELECTRICAL - NEW WORK

Drawing No.

ES102