

PROPOSAL FORM
BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
TOWSON, MARYLAND

Division of Construction Contracts Administration

ARCHITECT

Gannett Fleming Transystems
300 Sterling Parkway; Suite 200
Mechanicsburg, Pennsylvania 17050
Phone: 717-991-9421
Joshua A. Silbaugh



Contract Number 22166 GX0
Property Management Project
Gwynn Oak Park Pavilion & Parking Expansion –
6010 Gwynn Oak Avenue, Gwynn Oak, Maryland 21207
Gwynn Oak – District 2c4
Workday Number
PROJ-123070882

CONTRACT BASED ON SEPTEMBER 2023
STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS
AND STANDARD DETAILS FOR CONSTRUCTION

Bidders Information

A pre-bid meeting will be held on Wednesday, June 4, 2025 at 1:00 p.m. EST via WebEx. *Phone-In* (Audio Only) 1-415-655-0001, Meeting Number 2304 526 9895##. *Video Conference* go to <https://signin.webex.com/join> Meeting Number 2304 526 9895, **Password: WaySPJYU327**, for Webex link go to: www.baltimorecountymd.gov/departments/public-works/engineering/contracts/current-solicitations

Baltimore County First Source Hiring Agreement **see pages 306-307**. State Prevailing Wage Requirements and Wage Rates **see pages 306-313A**

(Contract Disclosure): “*Wage rates that are in effect as of the contract solicitation date will be the wage rates through the duration of the project*”

MBE/WBE Requirements & Forms **see pages 314-328**

THIS PROPOSAL FORM INCLUDES AND INCORPORATES ALL DOCUMENTS AND INFORMATION REFLECTED, LISTED, AND/OR REFERENCED IN THIS TABLE OF CONTENTS, AND ALL SUCH DOCUMENTS AND INFORMATION ARE PART OF AND INCORPORATED INTO THE CONTRACT DOCUMENTS.

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SECTION I

INFORMATION FOR BIDDERS

ELECTRONIC SUBMITTAL PROCESS

To be considered, Bids (Section IV – Proposal) shall be received by the bid closing date and time to the following email address dpwbid@baltimorecountymd.gov. The contract number and company name should be referenced in the Subject Line of the email. Bids may not be submitted by any other means. Bids that are mailed or otherwise delivered to the Purchasing Division (including emails which indicate links to locations where the bid may be downloaded) and/or emails sent to any other Baltimore County email address will not be accepted.

Late Bids will not be considered. Bidders are strongly encouraged not to wait until the last minute to submit bids. The time stated on the auto-receipt (described below) will be definitive of the time of receipt. Bids received after the deadline will not be accepted. Bidders are advised that the County cannot receive email attachments greater in size than twenty-five (25) megabytes and this size limitation may be further reduced by requirements of the Bidder's email provider which are beyond the control of the County. Bidder should consider separating any large bid attachment into multiple parts and emailing each part separately. In such case, Bidder will note that each email is *1 of 2, 2 of 2*, etc. Multiple part bids will not be considered unless all parts are received by the bid closing date and time.

After submitting a Bid to dpwbid@baltimorecountymd.gov, and upon successful receipt by the County thereof, Bidder will receive an auto-receipt email. This receipt is proof that the bid has been received by the Division of Construction Contracts Administration and should be retained for Bidder's records. In the case of a bid submitted in multiple parts as described above, an auto-receipt email will be generated for each part. The County has no obligation to consider any Bid for which an auto-receipt was not generated.

As with any system, power outages or technology problems may arise that are outside of the County's control and could affect your submission. The County will not be held accountable for such issues that may delay the transmission of any Bid.

NOTE: Electronic copy of the Bid Bond will be accepted at bid opening. The apparent low bidder is required to submit the original Bid Bond within ten (10) days after the bid opening to the Division of Construction Contracts Administration, 111 West Chesapeake Avenue, Room 300B, Towson, Maryland 21204.

INSTRUCTIONS AND SPECIFICATIONS

Refer to the enclosed proposal sheets for quantities to be bid upon. All proposals submitted on the attached form must give the price in clear figures for each item of the proposed work and be signed by the bidder with his name and address. Bidders must not change any item in the proposal for which a price has been stipulated by the County. Any change will cause rejection of the proposal.

NOTE: STATEMENT UNDER OATH FORM TO ACCOMPANY BID as per Baltimore County Purchasing Act 65-98, Section 15-94 and 15-95 which requires that the enclosed affidavit (see Proposal Affidavit pages in Section IV) be completed and submitted as part of the sealed bid.

Proposals made on any other than the attached form will not be considered. All papers included in, bound thereto, or attached to the Proposal Form are necessary parts thereof and shall not be detached, separated, or altered in their intent.

Changes in the phraseology of the proposal, additions, or limiting provisions will render the proposal informal or void and may cause its rejection.

All right is hereby reserved by the Purchasing Agent to reject any or all proposals and to waive formalities and technicalities as the interest of the County may require.

No successful bidder may withdraw his bid within NINETY (90) days after the opening thereof.

The successful bidder will be required to be bonded to Baltimore County, Maryland to the sum of One Hundred per Cent (100%) of the amount of his proposal or proposals according to the form of bond hereto attached for projects in excess of \$25,000.00.

This Proposal must be accompanied by a Bid Bond in an amount of 5% of the bid, the exact amount to be determined by the difference between the low bid and the next lowest bid if two or more bids are received, or 5% of the bid if one bid is received. This guarantees payment of the amount thus determined in case of a default in any matter specified as required before award or in any matter resulting in failure to execute and deliver an Agreement, together with Payment and Performance Bonds, after award. The Bid Bond must be in the form accompanying the Proposal executed by a Surety licensed in the State of Maryland. The Surety must be currently rated "B" or better by the A. M. Best Company, and the bid must be in an amount less than, or equal to, the underwriting limitation contained in Department of Treasury Circular 570 as amended at the time of the underwriting.

All work to be performed under this contract shall be done under strict compliance with Baltimore County Department of Public Works and Transportation September 2023 Standard Specifications for Construction and Materials and Standard Details for Construction and any and all proposed revisions thereto as of the date of advertisement and copies of which are available on the County's website at www.baltimorecountymd.gov/departments/public-works/standards, and all of which are made a part hereof and incorporated herein (collectively, the "Specifications").

If the bidder to whom an award is made shall fail to execute the contract and bond hereto attached and as herein provided, the award may be annulled and the contract awarded to the lowest responsible bidder who has consented to a time extension, and such bidder shall fulfill every stipulation embraced herein as if he were the original party to whom the award was made, or the Purchasing Agent may reject all of the bids as the interest of the County may require.

The Bid Bond of the three lowest bidders is deemed to be effective until the execution and delivery of the Contract Agreement, together with Payment and Performance Bonds for projects in excess of \$25,000.00 or until rejection of all bids, whereupon Surety is deemed relieved of all further obligations under the bid bonds provided.

Bidders must examine the drawings and specifications carefully and must make a personal examination of the location and nature of the proposed work. In case doubt shall arise as to the meaning or intent of anything shown on the drawings or comprised in the specification, inquiry shall be made of the Director of Public Works and Transportation at least five (5) days prior to the date of

bid opening. The submission of the Proposal shall indicate that the bidder thoroughly understands the drawings and the terms of the Specifications.

To better ensure fair competition and to permit a determination of the lowest bidder, unresponsive bids or bids obviously unbalanced may be rejected by the Purchasing Agent.

Bidders are required to fill out the total price column and total their proposals so that the result of the bidding, barring possible arithmetical errors, will be known at once. Any errors in computations will be corrected by the Engineer when the proposals are canvassed. Where the unit price and the total price are at variance, the unit price will prevail.

Bidders must be prepared to complete the work within the time stated in the proposal.

NOTE: ONLY CONTRACTORS FORMALLY PRE-QUALIFIED WITHIN THE ADVERTISED WORK CLASSIFICATION BY THE DIRECTOR OF PUBLIC WORKS AND TRANSPORTATION OF BALTIMORE COUNTY 10 CALENDAR DAYS PRIOR TO BID OPENING WILL BE ELIGIBLE TO SUBMIT BIDS.

Contracts for work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices. Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract. Successful bidders must be prepared to comply in all respects with the Contract Provisions regarding nondiscrimination.

Baltimore County has adopted a Minority Business Enterprise (MBE) program and Women's Business Enterprise (WBE) Program. The percentage of participation applies to the contract amount awarded to the Contractor. Qualified minority subcontractors are those certified as being a Minority Business Enterprise by the following:

1. Maryland Department of Transportation Certification Committee (MDOT)
2. City of Baltimore, Minority Business Certification Council

Projects funded by the Federal Highway Administration are limited to the certification listed under #1 (MDOT).

More detailed information regarding the County's MBE/WBE Program can be obtained from the County MBE Office, telephone (410) 887-3407. See Executive Order dated December 6, 2022. MBE/WBE Participation Summary and Forms A, B, C, D and E enclosed in this proposal booklet.

NOTE: If you do not complete and submit the enclosed forms with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer **NON-RESPONSIVE** and accordingly the **COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.**

The County reserves the right to require the low bidder to produce evidence indicating that the company's financial condition is equal to, or better than, that enjoyed by the company at the time of prequalification. This additional information may be in the form of a financial statement or other evidence satisfactory to the Office of Budget and Finance.

Bidders' attention is directed to the requirement that a permit must be obtained from the Baltimore County Bureau of Highways and Bureau of Traffic Engineering prior to cutting any County

road for the purpose of obtaining sub-surface soils information, and permission must be obtained from the State Highways Administration prior to making any openings in a State road.

Under no circumstances shall a bidder enter upon any property outside a County or State road for the purpose of securing sub-surface soils information until permission is received from the property owner. The fact that the County has obtained a utility easement does not give the bidder the right to enter upon the property.

Prevailing index price of asphalt cement/ton \$640.00.

INCLEMENT WEATHER POLICY: If Baltimore County General Government Offices are open or open with liberal leave the day the bids are due, the bids are due as stated in the bid documents (date and time). **ONLY** when the Baltimore County General Government Offices are **OFFICIALLY CLOSED** the day the bids are due, the bid date will be postponed and an Addendum will be issued the next business (or next day buildings are officially open) day the county offices are open with the new bid date and time.

BID TABULATIONS: All bid tabulations will be confidential until after final award, at which time the total bid amounts for all bidders, as well as the complete bid tabulations for the top three (3) bidders, can be inspected by others when requested in writing pursuant to the Maryland Public Information Act.

ALTERNATIVE SOURCES OF CONTRACT BONDS: In the event your company is unable to qualify for bonding through a traditional commercial surety company, you may qualify for the required bonds through the State of Maryland, Department of Commerce (DOC). The **Maryland Small Business Development Financing Authority (MSBDFA, pronounced Mis-Bid-Fa)**, an agency of DOC, operates a Surety Bond Program designed to assist small businesses, based in Maryland, that are unable to obtain adequate bonding on reasonable terms in the commercial marketplace. MSBDFA provides bid, payment and performance bonds for contracts funded by government agencies, regulated utilities and private entities. The penal sums of the bonds are limited to the aggregate amount of \$2,500,000 and companies may pre-qualify for multiple bonds within pre-approved terms and conditions. MSBDFA also provides lines of credit, term loans and loan guarantees to help qualified businesses purchase equipment and real property, make improvements to leased property, refinance existing debt and assist them with their working capital needs. For more information on how to apply, you may contact: Meridian Management Group, Inc. (MMG), (the Program's Manager), 826 E. Baltimore Street, Baltimore, Maryland 21202, Telephone: (410) 333-4270. Or visit their website at www.mmcapitalgroup.com for information, applications and a checklist of required documents and reports that must accompany the application.

S E C T I O N I I

SPECIAL PROVISIONS

MAINTENANCE BOND

Per the Baltimore County Department of Public Works and Transportation September 2023 Standard Specifications for Construction and Materials, Section GP – 4.10 (C) states, the contractor is required to post a maintenance bond in the amount of five (5) percent of the total cost of the contract or withhold five (5) percent retainage for two (2) years from the date of Final Acceptance.

BALTIMORE COUNTY, MARYLAND

BOND NO. _____

CONTRACT NO. _____

MAINTENANCE BOND

THIS MAINTENANCE BOND is entered into on this _____ day of _____, 20____, by and between _____, as principal ("Principal") and _____, a business entity that is authorized to transact business in the State of Maryland and is organized and existing under the laws of the State of _____, as surety ("Surety"), are held and firmly bound unto Baltimore County, Maryland, a body corporate and politic of the State of Maryland ("County"), as Obligee.

WHEREAS, the above-named Principal has entered into a written contract known as Contract Number _____ dated _____, 20____ with Obligee for _____ (the "Agreement"), the terms of which are hereby incorporated by reference; and

WHEREAS, Principal has completed construction under the Agreement; and

WHEREAS, the Agreement includes a warranty on the quality of the Work performed that runs for a period of two (2) years from the date of the County's final acceptance and that runs for two (2) additional years beyond the repair date if any repair is done during the warranty period; and

WHEREAS, Principal is required to cause this instrument to be executed and delivered to Obligee as security for maintenance during the warranty period in an amount equal to 5% of the total value of the Contract.

NOW, THEREFORE, the Principal and Surety are held and firmly bound unto the Obligee in the sum of \$ _____ Dollars (\$ _____), lawful money of the United States of America, for the payment of which sum of money the Principal and Surety do bind themselves and their personal representatives, legal representatives, successors, and assigns, jointly and severally, firmly by this maintenance bond.

The conditions of this bond are as follows:

1. The Principal shall, for a period of two (2) years from and after the date of completion and acceptance of same by Obligee, replace all defects arising in the Work, whether resulting from defective materials, equipment, design furnished or workmanship. After such period, this obligation shall be null and void; otherwise it shall remain in full force and effect.

2. In the event of a default on the part of the Principal that may be the subject of a claim under this bond, Oblige shall mail, by certified mail, to Surety at the address listed below, a written statement that a claim is being made under the bond and, with substantial accuracy, the amount of the claim. Surety shall have no obligation to Oblige under this bond until the notice of claim is mailed.
3. When the Oblige has satisfied the condition of Paragraph 2 that a notice of claim be mailed, the Surety shall promptly and at the Surety's expense send an answer to Oblige within 30 days after the date of the claim. The answer shall state the amounts that are undisputed and the basis for challenging any amounts that are disputed. The answer shall be accompanied by payment (or arrangements for immediate payment) of any undisputed amounts.
4. Surety expressly waives any right to receive notice of extensions of time or alterations or modifications to the Agreement that may be granted by Oblige and agreed upon by Principal, and any such extensions, alterations, or modifications shall not affect the obligation of the Surety under this bond.
5. This bond is a specialty governed by the twelve-year statute of limitations period set forth in the Annotated Code of Maryland Courts and Judicial Proceedings §5-102.

WITNESS OR ATTEST:

(Principal – Contractor Name)

By: _____

Type Name: _____

Type Title: _____

Date: _____

(Surety)

By: _____

Type Name: _____

Type Title: _____

Type Address: _____

Date: _____

The Contract shall be done in strict compliance with the Baltimore County Department of Public Works and Transportation September 2023 "Standard Specifications for Construction and Materials" and "Standard Details for Construction", and any and all revisions thereto as of the date of the fully executed Contract, including but not limited to the General Conditions Building Projects, as applicable, and all of which are made a part hereof and incorporated herein (collectively, the "**Specifications**"). Copies of which are available on the County's website at www.baltimorecountymd.gov/departments/public-works/standards. **IN ADDITION, THE CONTRACTOR UNDERSTANDS AND AGREES THAT THE FOLLOWING SECTIONS OF THE SPECIFICATIONS (GP-1.03 AND GP-5-15) SHALL BE STRICKEN AND THE FOLLOWING SHALL BE INSERTED IN AND INCORPORATED INTO THE CONTRACT IN LIEU THEREOF:**

GP-1.03 ORGANIZATIONAL DEFINITIONS

Administration - Baltimore County.

Administrator - The Director of the Office of Budget and Finance, Baltimore County.

Baltimore County - Baltimore County, Maryland: a body corporate and politic.

Department - The word "Department" shall mean the Office of Budget and Finance of Baltimore County.

Engineer - One of the following engineering executives:

Director of Office of Budget and Finance
Chief, Property Management Division of the Office of Budget and Finance

Any delegation of the Engineer's authority must be authorized in writing by any one of the above listed officials, and such delegation of authority will pertain only to the specific contract and/or contracts shown by the authorization. The title of the specific official will appear in those cases within these specifications where the word "Engineer" as defined herein is not sufficiently specific.

Inspector - The authorized representative of the procurement officer assigned to make detailed inspection of any or all portions of the work, or materials therefor.

Procurement Officer - See Engineer.

GP-5.15 DISPUTES

(a) Except as otherwise may be provided by applicable law or regulation, all disputes arising under or as a result of a breach of this Contract that are not disposed of by mutual agreement shall be resolved in accordance with this General Provision.

(b) As used herein, "claim" means a: written demand or assertion by one of the parties seeking, as a legal right, the payment of money, adjustment or interpretation of Contract terms, or other relief, arising under or relating to this Contract.

A voucher, invoice, or request for payment that is not in dispute when submitted is not a claim under this General Provision. However, if the submission subsequently is not acted upon in a reasonable time, or is disputed either as to liability or amount, it may be converted to a claim for the purpose of this General Provision.

- (c) When a claim cannot be resolved by mutual agreement, the Contractor shall submit a written request for decision to the Department's Chief of the Property Management Division for his decision in consultation with the County Office of Law. The Contractor's written request shall set forth all the facts surrounding the controversy, including, but not limited to, those items listed in GP-5.14(b). Any claim by the County shall be decided in like manner.
- (d) The Contractor, at the discretion of the Engineer, may be afforded an opportunity to be heard and to offer evidence in support of his claim. Pending resolution of a claim, the Contractor shall proceed diligently with the performance of the Contract.
- (e) The Department's Chief of the Property Management Division shall decide any and all claims. The decision by the Department's Chief of the Property Management Division shall be issued within ninety (90) Days on matters of less than fifty thousand dollars (\$50,000) and within one hundred eighty (180) Days on matters of fifty thousand dollars (\$50,000) or more. The written decision of the Department's Chief of the Property Management Division shall be final and binding unless appealed in writing to the Director of the Department within thirty (30) Days of the Chief's written opinion to the parties. If the Chief's decision is timely appealed in writing to the Director of the Department, the Director of the Department, serving as referee, will review the written appeal submitted to assure all reasonable attempts were made to resolve the appeal.
- (f) The Director shall issue his/her decision in writing within ninety (90) Days. The Director's decision shall be final and conclusive unless a written appeal is mailed or otherwise filed with the County Administrative Officer within thirty (30) Days of the Director's written decision.
- (g) When the County Administrative Officer is satisfied all efforts at the Department level were made to resolve the dispute, a claim shall be resolved as follows:

 - (1) Subject to, and without in any way enlarging or limiting the other provisions of the Contract, the parties to any Agreement which adopts or incorporates by reference these Standard Specifications, appoint the County Administrative Officer as an administrative hearing officer pursuant to Article 25A, "Chartered Counties of Maryland", of the Annotated Code of Maryland.
 - (2) The parties further grant the County Administrative Officer the right to delegate this responsibility and authority in writing to a County official who is a registered professional engineer, independent of the Department of Public Works and Transportation's Division of Construction Contracts Administration, or to any other County official.
 - (3) For disputes involving ten thousand dollars (\$10,000) or more the decision of the administrative hearing officer shall be final and binding on both parties, subject only to such appeals on the record as provided by Article 25A. For disputes involving less than ten thousand dollars (\$10,000), the decision of the administrative hearing officer shall be final and binding on both parties.

GENERAL CONDITIONS

BUILDING PROJECTS



**Revised September 1, 2024,
in compliance with September 2023
Standard Specifications for Construction and Materials**

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BUILDING PROJECTS**

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GENERAL CONDITIONS DESIGN BUILD BUILDING PROJECTS

I. SPECIFICATIONS

Article 1 Applicable Specifications

All work performed under this Contract shall be done under strict compliance with the *Specifications* bound herewith, and with the *Baltimore County Standard Specifications for Construction and Materials* and the *Standard Details for Construction* dated September 2023 and subsequent addenda thereto, so far as the same may be applicable, copies of which are available on the County's website at www.baltimorecountymd.gov/departments/public-works/standards. These General Conditions are in addition to the aforementioned Specifications. Should there be any conflict with the aforementioned manuals, the *General Conditions* take preference.

II. DEFINITIONS

Article 2 Definitions

- A. *Architect and/or Engineer* shall mean the registered Architect and/or Engineer commissioned by the County to prepare the plans and contract documents.
- B. *Engineer* in these General Conditions and in the Construction Specifications in some instances refers to authorized representatives of the Office of Budget and Finance, Property Management.
- C. *Subcontractor*, as employed herein, includes only those having a direct contract with the Contractor. It includes one who furnished material worked to a special design according to the Plans and Specifications for the "work." It excludes one who merely furnished material not so worked.
- D. *Written Notice* shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered to or sent by registered mail to the last business address known to him who gives the notice.
- E. *Repair* means to restore after injury, deterioration, or wear; to mend, to renovate, by such means as appropriate, and to supply such materials and labor as necessary to render the item to be repaired sound, solid, true, plumb, square, even, smooth, and fully serviceable. Upon completion of such repair it must be, unless otherwise stated, rendered to such condition as to present a first-class finished work, or in instances where the repaired item serves as a base for additional finish, the repaired work must be such as to permit a first-class finish, to be applied without extra cost to the County. When the word "repair" is used in connection with machinery or mechanical equipment, it shall mean, in addition to the above, rendering the equipment completely serviceable and efficient, ready for the normal use for which it was originally intended.

- F. Some parts of the "Construction Specifications," bound herewith are of the abbreviated or "streamlined" type and includes incomplete sentences. Omissions of words or phrases such as "the Contractor shall", "in conformity therewith", "shall be", "as noted on the drawings", "according to the plans", "a", "an", "the", and "all" are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the drawings. Words "shall be" or "shall" will be supplied by inference when colon (:) is used within sentences or phrases.

Article 3 Time Limits

The proposal shall indicate whether the contract limit is based on Working Days or Calendar Days. If this is not indicated in the Proposal, then the time limits will be based on Calendar Days.

Article 4 Sunday, Night and Holiday Work

If Sunday, night or holiday work is necessary due to an emergency or is permitted by the Engineer, the Contractor shall secure and pay for any and all permits required in connection with this work.

III. CONTRACT DOCUMENTS AND SHOP DRAWINGS

Article 5 Contract Documents

A. Clarification

It is assumed that the Contractor has obtained clarification of all questions which may have arisen as to intent of the contract documents, or assumed, or actual conflict between two or more items in the Contract Documents as required in "Instructions to Bidders." Should the Contractor have failed to obtain such clarification as required by the "Instructions to Bidders," then the Engineer may direct the work to proceed by any method indicated, specified or required by the Contract Documents in the interest of maintaining the best construction practice. Such direction by the Engineer shall not constitute a claim for extra by the Contractor.

B. Jargon

Work described in words that have a well-known technical or trade meaning shall be held to refer to such recognized standard use.

C. Drawings

The Contractor shall do no work without proper drawings and instructions. Drawings are, in general, drawn to scale; however, symbols are used to indicate materials and structural and mechanical requirements. When symbols are used, the drawings are, of necessity, diagrammatic, as it is not possible to indicate all connections, fittings, fastenings, etc., which are included as a part of the work. Diagrammatic indication of mechanical piping, ducts, and conduit within the buildings is subject to adjustment in order to obtain proper grading, passage over, under or past obstructions, to avoid exposure in finished rooms and unsightly and obstructing conditions. The Contractor shall coordinate these adjustments.

1. Copies no longer Furnished

The County will no longer furnish the Contractor any copies of the Drawings and Specifications. Additional copies may be obtained by the Contractor downloading drawings and specifications from the Baltimore County Solicitation Web Page.

2. Copies of the Work

The Contractor shall keep in the office on the job a complete set of all drawings, specifications, shop drawings, schedules, etc., in good order and available to the Engineer and representatives of the County.

3. Ownership

All documents as furnished by the County remain the property of the County. They must not be used on other work but shall be returned to the County upon completion of the work.

D. Large Scale Detail Drawings

The Architect shall furnish, when necessary, additional instructions in the form of large scale developments of the drawings used for bidding, or to amplify Construction Specifications for the proper execution of the work. These shall be true developments of the bidding documents and reasonably inferable there from. The work shall be executed in conformity herewith. [See Article 6, Paragraph A.3.(c)]

E. Dimensions

The Contractor shall carefully check all dimensions prior to execution of the particular work affected. Whenever inaccuracies or discrepancies are found, the Contractor shall consult the Engineer prior to any construction or demolition. Should any dimensions be missing, the Engineer will be consulted and supply them prior to execution of the work. Dimensions for items to be fitted into constructed conditions at the job will be taken at the job and will be the responsibility of the Contractor. The obvious intent of the documents or obvious requirements dictated by conditions existing or being constructed supersedes dimensions or notes which may be in conflict herewith.

Whenever a stock size manufactured item or piece of equipment is specified by its nominal size, it is the responsibility of the Contractor to determine the actual space requirements for setting or entrance to the setting space. No extra will be allowed by reason of work requiring adjustment in order to accommodate the particular item of equipment.

Whenever new work, building, addition or portions thereof are not accurately located by plan dimensions, the Engineer will supply exact position prior to execution of the work.

Article 6 Shop Drawings

A. Shop Drawings (those prepared by the Contractor or Vendor of Material)

The Contractor shall submit for the Architect's approval, at such times as agreed (see Article 8), shop drawings (to include setting drawings and schedules) as required for the work of the various trades. These drawings shall be prepared in conformity with the best practice and standards for the trade concerned. Due regard shall be given to speed and economy of fabrication and erection.

1. Items to be Detailed

Shop details shall be supplied for all items which are specially fabricated for the work or when the assembly of several items is required of a working unit. Shop drawings are required for all reinforcing and structural steel, specially made or cut masonry units, miscellaneous metal work, specially made flashings or roofing and sheet metal work, specially made millwork, special rough hardware and all heating, ventilating, plumbing and electrical requiring special fabrication or detailed connections, including ducts.

2. Submissions

Shop drawings, brochures and catalog cut submissions shall consist of sufficient copies to provide for the retention by the Architect and County of five (5) copies total plus such additional copies as the Contractor may require. Drawings shall not exceed 24 in. x 36 in. in size.

3. Examination and Approval

The Contractor shall review all shop drawings, brochures and catalog cuts provided by the subcontractors and vendors prior to submitting them to the Architect. The Architect shall examine shop drawings with reasonable promptness, noting desired corrections, or granting approval.

a. Field Dimensions and Conditions

The Architect is not responsible for the checking of dimensions or existing conditions in the field. This is the sole responsibility of the Contractor.

b. Resubmission

When the Architect's notations or corrections are extensive, then the Contractor shall resubmit the drawings with changes made on the drawings.

c. Contractor's Responsibility

Unless the Contractor has in writing, notified the Architect to the contrary, at the time of submission, it will be assumed that the drawings are in conformity with the Contract Documents and do not involve any change in the Contract price or any change which will alter the space within the structure or alter the manner of operation from that contemplated in the Contract Documents.

d. Architect's Notations

Should the Contractor consider any change or notation received in compliance with paragraph (c) above as increasing the cost of the work from that contemplated in the Contract Documents, then the Contractor shall desist from further action relative to the item he/she questions and shall notify the Engineer, in writing, within five (5) days of the additional cost involved. No work shall be executed until the entire matter is cleared or a Change Order issued, or the Contractor is ordered by the Engineer to proceed under the provisions of the County's Standard Specifications. Failure of the Contractor to serve written notice, as above required, shall constitute a waiver of any claim in relation thereto.

(1) Similarly, should the Architect's notation or change involve less work than is covered by the Contract Documents, the Contractor shall allow the County the credit resulting from the change.

(2) Should the Contractor consider that any notation or change made by the Architect under provisions of this paragraph, paragraph (c), above, as involving a complete change in the subcontractor's relation or the substitution of a material different from that on which the Contract was based, then the Contractor shall act as herein stated or as in paragraph (c) above.

4. Project Completion

At the completion of the project, the Contractor shall submit a list of shop drawings for the entire project. This list shall contain the following information: title, description, specialty (Architectural, Structural, Mechanical, etc.), decision (no exceptions taken, approved, approved as noted, etc.).

Article 7 Separate Contracts

A. The County reserves the right to let other contracts in connection with paving and utilities adjoining this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

- B. If any part of the Contractor's work depends for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for such proper execution and results. Failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the work, except as to the defects which may develop in the other contractor's work after the execution of the work.
- C. To ensure the proper execution of his/her subsequent work, the Contractor shall verify work already in place and shall at once report to the Engineer any discrepancy between the executed work and the drawings.

IV. PAYMENTS

Article 8 Payments

- A. Under this Contract payments will be made monthly on the valuation of work accomplished and on account of materials delivered on the site, for incorporation in the work, which are suitably stored.
- B. At the first of each month, the Contractor shall submit to the Engineer an application for payment on a form provided by the Engineer. Prior to application for first payment, the Contractor shall submit to the Engineer a schedule of values for the various parts of the work, including quantities, aggregating to the total sum of the Contract. This shall be so divided as to facilitate payment to subcontractors in accordance with Article 28, Paragraph C.1. The form of this submission shall be such as the Contractor or Engineer have agreed upon, and, if required, shall be supported by such evidence as to its correctness as the engineer may direct. This schedule, when approved by the Engineer, shall be used as a basis for approval of payment unless it is found to be in error. In applying for payment, the Contractor shall submit a statement based upon the schedule, itemized in such form and supported by such evidence as the Engineer may require, showing the Contractor's right to the payment claimed. If required, the Contractor shall show receipts and other vouchers for the payments for materials and labor including payments to subcontractors, as required by Article 28.
- C. Materials Purchased Under Allowance

The Engineer will provide schedules for all materials to be purchased from specified allowance.

Article 9 Approval of Payments

If the Contractor has made application, as above, the Engineer shall review and approve such payments as is decided to be properly due in accordance with the approved schedule. In approving such partial payments, there shall be retained no more than 10% of the total amount for the first 50% of the contract, after which only 5% of the total amount of the contract may be withheld unless the need is demonstrated for retaining more to protect the public interest.

Article 10 Payment Withheld

- A. The Engineer may withhold, or on account of subsequently discovered evidence, nullify the whole or a part of any payment to such extent as may be necessary to protect the County from loss on account of:
1. Defective work not remedied.
 2. Claims filed, or reasonable evidence indicating probable filing of claims, by parties other than the Contractor.
 3. Failure of the Contractor to make payments properly to subcontractors or for material or labor.
 4. A reasonable doubt that the Contract can be completed for the balance then unpaid.
 5. Damage to another Contractor.
 6. Failure of the Contractor to submit data required within the time limits stated in the Contract Documents.

Upon removal of the above, payment shall be made for the amounts withheld.

Article 11 Changes in Work

- A. The County, without invalidating the Contract, may order changes in the work by altering, adding to or deduction from the work, the Contract sum being adjusted accordingly. Such change shall be executed under these *General Conditions*. Extension of time made necessary thereby shall be adjusted at the time of such Change Order.
- B. The Engineer shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purpose of the project. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless a written order for the Office Budget and Finance, Property Management signed or countersigned by the Director has been received by the Contractor. No claim for addition to the Contract sum shall be valid unless so ordered.
- C. The value of any such extra work or change shall be determined in one or more of the following ways as determined by the Office of Budget and Finance, Property Management.
1. By Estimate and Acceptance of a Lump Sum
 - a. The prime Contractor shall furnish a breakdown of the estimated construction cost. The breakdown shall be of sufficient detail to describe the extra work and related costs for labor, material, overhead and profit.

b. Overhead and Profit

(1) Extra work by Subcontractor:

Subcontractor will be allowed 10% overhead and 10% profit added to the direct labor and material costs. The prime contractor will be allowed to increase the subcontractors total lump sum by 10% to cover his/her administration.

(2) Extra work by Prime Contractor:

The prime contractor will be allowed 10% overhead and 10% profit added to the labor and material costs.

- c. The prime contractor will be allowed 1 % for the bond added to the labor and material costs.
- d. The allowed overhead will include all supervision; no additional allowance will be made for it.

2. By Unit Prices Named in the Contract or Subsequently Agreed Upon

Such unit prices are to include all supervision, overhead, taxes, insurance and profit.

3. By Cost and a Fixed Fee

Added to the cost is a fixed fee portion which is to include supervision, overhead, insurance and profit.

4. By Force Account (Labor and Material Cost plus)

In accordance with the *Baltimore County Specifications for Construction and Materials* Section GP 9.02, the Contractor is allowed to add 65% mark-up.

- D. Should none of the methods stated in Paragraph C. 1, 2, or 3 be determined, the Contractor shall, providing he/she receives an order as defined in Paragraph B, above, proceed with the work on the basis of Paragraph C. 4. Force Account.

The Contractor and Engineer shall keep accurate costs, in such form as the Engineer may direct, for presentation, together with vouchers, to the Office of Budget and Finance Property Management for determination of the value of the work included in each Change Order. Pending determination of the final value, the Engineer may include payments for materials and labor, as stated in Article 8, in monthly vouchers.

Article 12 Claims for Extra Cost

No claim for extra will be granted which includes cost of delays or work stoppage due to strikes, lockouts, fire, avoidable casualties or damage or delay in transportation for which the County or its agents are not responsible. (See also Article 14.)

Article 13 Deductions for Uncorrected Work

If the Engineer and County deem it expedient to correct work injured or done not in accordance with the Contract, an equitable deduction from the Contract price shall be made therefore.

Article 14 Delays and Extension of Time

If no schedule or agreement stating the dates upon which drawings shall be furnished is made (see Article 8), then no claim for delay shall be allowed on account of failure to furnish drawings until two (2) weeks after demand for such drawings, and then not unless such claim is reasonable.

Article 15 Correction of Work After Final Payment

Neither the final certificate nor payment nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials and workmanship. Unless otherwise specified, the Contractor shall remedy any defects and pay for any damage to other work resulting there from that appears within the guarantee period. The County shall give notice of observed defects with reasonable promptness. All questions arising under this Article shall be decided by the Director of Budget and Finance, Property Management.

Article 16 (Deleted)

Article 17 Assignment

The Contractor shall not assign the Contract. It shall not be sublet as a whole or sublet by trades or other portions in an amount of more than 75% of the monetary value of the Contract. The remaining 25% shall be executed by the Contractor with labor and materials directly purchased and paid for by the Contractor. Costs for insurance, over-head, supervisions, etc., may not be claimed as a portion of the 25% mentioned above. The execution of work by a subsidiary of the Contractor is not considered direct employment. The Contractor shall not assign any monies due or to become due to him/her hereunder, without the previous written consent of the County.

Article 18 Maryland State Sales Tax

- A. Contractors who are performing work for the State of Maryland or any of its political subdivisions are required to pay tax on materials and supplies which will be incorporated into the work.

- B. The Contractor must pay the tax on all equipment which is purchased, Even though it may be used on a job for the State of any of its political subdivisions.

V. MATERIALS

Article 19 Materials

Materials include all manufactured products and processed and unprocessed natural substances required for completion of the Contract. The Contractor in accepting the Contract is assumed to be thoroughly familiar with the materials required and their limitations as to use and requirements for connections, setting, maintenance and operation.

Whenever an article, material or equipment is specified and a fastening, furring, connection (including utility connections), bed or accessory is normally considered essential to its installation in good quality construction, such shall be included as if fully specified. Nothing in the Construction Specifications shall be interpreted as authorizing any work in any manner contrary to applicable law, codes or regulations (See Article 31).

A. Approval

All materials are subject to the Architect's or Engineer's approval as to conformity with the specifications, quality, design, color, etc. No work for which approval is necessary shall be contracted for, or used, until written approval is given by the Architect or Engineer. Approval of a subcontractor, as such, does not constitute approval of a material which is other than that included in the Construction Specifications.

B. New Materials

Unless otherwise specified, all materials shall be new.

C. Quality

Unless otherwise specified, all material shall be of the best quality of the respective kinds.

D. Samples

The Contractor shall furnish for approval all samples as directed. The work shall be the same as the approved samples.

E. Painting and Color

The Architect and Contractor shall jointly prepare the paint and color schedules. The Architect shall direct the exact color, texture and finish.

F. Proof of Quality

The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials either before or after installation. The Contractor shall pay for any tests as may be deemed necessary in relation to "Substitutions" (Paragraph I. below).

G. Contractor's Option

When several products or manufacturers are named in the Construction Specifications for the same purpose or use, then the Contractor shall select any of those so named. However, all of the units of a thing required for a project must be the same in material and manufacture.

H. "Or Equal", "Equal", "Approved Equal"

The above terms are used as synonyms throughout the Construction Specifications. They are implied in reference to all named manufacturers. Only materials that, in the opinion of the Engineer, are fully equal in all details of construction, methods of assembly, finish and design quality will be considered. (See A, C, E, above, and I. below.)

I. Substitutions

Should the Contractor desire to substitute another material for one or more specified by name, the Contractor shall apply, in writing, for such permission and state the credit or extra involved by the use of such material. The Engineer will not consider the substitution of any material different in type or construction methods unless such substitution effects a benefit to the County. (See A. and D. above.)

The Contractor shall not submit for approval, materials other than those specified without a written statement why such a Substitution is proposed. Approval of a "substitute" material by the Architect or Engineer when the Contractor has not designated such material is a "substitute," shall not be binding on the County nor release the Contractor from any obligations of the Contract, unless the Architect or Engineer approves such "substitutions" in writing.

J. Standard Specifications

Whenever references are made in the Contract Documents to the *Baltimore County Standard Specifications for Construction and Materials* and *Standard Details for Construction*, it shall be understood that the latest standards and/or requirements are intended and shall apply. When no specification is cited and the quality, processing, composition or method of installation of a thing is only generally referred to then:

1. For things not otherwise specified below, the latest edition of the Applicable American Society for Testing Materials Specifications shall apply.

2. For things covered by the applicable portions, the National Bureau of Fire Underwriters Code shall apply.
3. For things generally considered as plumbing and those things requiring plumbing connections, the applicable portions of the latest edition of the American Society of Mechanical Engineers Code and the Baltimore County Plumbing Code shall apply.
4. For things generally considered as heating and ventilating work and not covered by A.S.M.E. Code, the applicable portions of the latest edition of the Heating and Ventilating Guide, published by the American Society of Heating and Ventilating Engineers, and the Baltimore County Building Code shall apply.

K. Storage

The contractor shall confine apparatus and storage of materials to the "off-road" area delineated as the "Limit of Contract." The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger the safety of the structure or any part thereof.

VI. QUALIFICATION, EMPLOYEES, WORKMANSHIP, SUBCONTRACTORS AND ADVERTISING

Article 20 Qualification of Bidders

Bidders are required to be prequalified 10 days prior to bid opening, satisfactorily evidencing that they have the ability, equipment, organization and financial resources sufficient to enable completion of the work satisfactorily within the time specified in the Proposal.

Article 21 Employees and Workmanship

A. Employees

1. Qualification

Only personnel thoroughly trained and skilled in the task assigned them may be employed on any portion of the work, or they shall be removed.

2. Licensed

When County, State or Federal laws require that certain personnel (electricians, plumbers, etc.) be licensed, then all such personnel employed on the work shall be so licensed.

B. Quality of Labor

The Contractor shall employ on the work, at all times, sufficient personnel to complete the work within the time stated in the Proposal.

C. Work Areas

The Contractor shall confine the operations of his/her employees to the limits as provided by law, ordinance, permits or directions of the Office of Budget and Finance Property Management. Generally, the "off-road" area will be the same as the "limit of Contract" line.

D. Methods and Quality

1. All workmanship shall be of good quality. Whenever the method of the work or manner of procedure is not specifically stated or shown in the Contract Documents, then it is intended that the best standard practice shall be adhered to. Recommendations of the manufacturers of approved materials shall be considered as a part of Construction Specifications and all materials shall be applied, installed, connected, erected, used, cleaned and conditioned as so called for thereby. This, however, does not remove any requirement in Construction Specifications to add to the manufacturer's recommendations.
2. All materials shall be accurately assembled, set, etc., and when so required in good construction, shall be true to line, even, square, plumb, level and regularly spaced, coursed, etc. Under no circumstances, either in new or old work, shall any material be applied over another which has not been thoroughly cleaned, sanded or otherwise treated so as not to impair the finish, adhesion, or efficiency of the next applied item.
3. All methods, procedures and results are subject to the Engineer's approval as to finished result to be obtained. However, this is not to be interpreted as placing upon the Engineer any responsibility for the "work" management which is solely the responsibility of the Contractor.

E. Joining of Work

1. The Contractor shall so schedule the work as to ensure efficient and uninterrupted progress and to hold to an absolute minimum the cutting and patching of new work. All cutting, patching and digging necessary to the execution of the work is included.
2. The Contractor shall so schedule (to include subcontracts) the construction performed by each group or trade that each installation or portion of the construction shall member with and join with all other work as required for a complete installation, all according to accepted good construction practice.

F. Superintendent

The Contractor shall keep on the work, at all times during its progress, a competent superintendent and all necessary assistants, all approved by the

Office of Budget and Finance Property Management. Prior to commencement of the work, the Contractor shall submit in writing to the Office of Budget and Finance Property Management the name and qualifications of the person to be employed as Superintendent for the execution of the Contract. A written approval or rejection will be given following review of the data. Persons who have previously proved unsatisfactory on work executed for the County, or who are without proper qualifications, will not be approved. Should the Superintendent be complained of by the Office of Budget and Finance Property Management for cause, he/she shall be removed from the work. Should it be necessary to change the Superintendent, the above procedure shall be repeated. The Superintendent will represent the Contractor. All directions given to the Superintendent shall be as binding as if given to the Contractor. Important directions shall be confirmed on written request in each case.

G. Discipline

The Contractor shall at all times enforce strict discipline and good order among his/her employees and shall not employ or permit to remain on the work any unfit person. The Contractor shall enforce all instructions relative to use of water, heat, power, no smoking, and control any use of fires, as required by law and for the Office of Budget and Finance Property Management. Employees must not be allowed to loiter on the premises before or after job working hours.

Article 22 Employment Lists

The Contractor may contact MARYLAND STATE EMPLOYMENT SERVICE, Towson, MD, 21204, if so desired, for additional labor regarding this project.

Article 23 Contractor's Supervision (Also see Article 21, Paragraph F.)

The Contractor shall constantly maintain efficient supervision of the work, using his/her best skills and coordinating ability. The Contractor shall carefully study and compare all drawings, specifications, and other instructions and check them against conditions existing or being constructed on the project. The Contractor shall report to the Engineer any error inconsistency or omission which may be discovered. (See also Article 5, Paragraph E, and Instructions to Bidders.) The Contractor shall not be held responsible for the existence or discovery of such errors or conflicts and neither shall the adjustment of such errors or conflicts be grounds for claim for extra on the art of the Contractor unless such adjustment involves work not obviously contemplated by the Contract Documents or necessary to progress of the work. The Contractor shall be responsible for the coordination of the work of all subcontractors.

Article 24 The County's Right to do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the County after three days' written notice to the Contractor may, without prejudice to any other remedy, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

Article 25 County's Right to Terminate Contract

A. Terminate Contract

The Office of Budget and Finance, Property Management, upon proof that sufficient cause exists to satisfy such action, may without prejudice to any other right or remedy, and after giving the Contractor seven (7) days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the work by whatever method may be deemed expedient, if any of the following conditions exists:

1. If the contractor should
 - a. Be adjudged a bankrupt or make a general assignment for the benefit of creditors,
 - b. Has a receiver appointed on account of insolvency.
 - c. Fails to or repeatedly and persistently refuses to supply properly skilled workers or proper materials, except in cases for which extension of time is provided,
 - d. Fails to make payment to subcontractors, or for materials and labor,
 - e. Persistently disregards laws, ordinances or the instructions of the Engineer, or
 - f. Is otherwise guilty of a substantial violation of any provision of the Contract.

2. Payment Status

In cases such as identified above, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expenses of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the contractor shall pay the difference to the County. The expense incurred by the County as herein provided, and the damage incurred through the Contractor's default, shall be itemized by the Engineer and a certified copy supplied to the Contractor.

Article 26 Sanitary Conveniences

- A. The Contractor shall arrange for the erection and Maintenance of temporary toilets equipped with running water and drain connection for use of employees. These conveniences shall be erected and kept clean and in good condition, as required by law, until ordered removed by the Engineer.
- B. In lieu of A. above, the Contractor may install a portable approved chemical toilet at an approved location.
- C. The permanent plumbing fixtures to be constructed under this Contract shall not be used during construction, under any circumstances.

Article 27 Subcontracts Deleted

Article 28 Relation of Contractor and Subcontractor

- A. **The Contractor agrees** to bind every subcontractor and every subcontractor agrees to be bound by the terms of the Agreement, *Baltimore County's Standard Specifications for Construction and Materials* and *Standard Details for Construction the General Conditions*, the Drawings and Construction Specifications, as far as applicable, to his/her work, including the following provisions of this Article, unless specifically noted to the contrary in the subcontract approved in writing as adequate by the Office of Budget and Finance, Property Management.
- B. **The Subcontractor agrees** to be bound to the Contractor by the terms of the Agreement, *Baltimore County's Standard Specifications for Construction and Materials* and *Standard Details for Construction, General Conditions*, Special Provisions, Construction Specifications, and to assume towards him/her all obligations and responsibilities that he/she, by those documents, assumes towards the County.
 - 1. To submit to the Contractor applications for payment in such reasonable times as to enable the Contractor to apply for payment under Article 8 of these *General Conditions*.
 - 2. To make all claims for extras, for extensions of time and for damages for delays or otherwise, to the Contractor in the manner provided in *Baltimore County's Standard Specifications for Construction and Materials* or those *General Conditions* for like claims by the Contractor upon the County, except that the time for making claims for extra cost is one (1) week.

C. **The Contractor agrees** to be bound to the Subcontractor by all the obligations the County assumes to the Contractor under Agreement, *Baltimore County's Standard Specifications for Construction and Materials, General Conditions*, Drawings and Construction Specifications, and by all the provisions thereof affording remedies and redress to the Contractor from the County.

1. To pay the Subcontractors:

- a. Upon receipt of payment, if issued under the schedule of values described in *Baltimore County's Standard Specifications for Construction and Materials, G.P.- 9.03* or Article 8 of these *General Conditions*, the amount allowed to the Contractor on account of the Subcontractor's work, to the extent of the Subcontractor's interest herein.
 - b. Upon the receipt of payment, if issued otherwise than as in Paragraph C.1., above, so that at all times the total payments shall be as large in proportion to the value of the work done by him as the total amount certified to the Contractor is to the value of the work done by him/her.
 - c. To such extent as may be provided by the Contract Documents or the subcontract, if either of these provides for earlier or larger payments than the above.
 - d. On demand for his/her work or materials as far as executed and fixed in place, less the retained percentage, at the time the payment is requested, even though the Engineer fails to approve it for any cause not the fault of the Subcontractor.
 - e. A just share of any fire insurance money received by him/her, the Contractor, under Article 35 of these *General Conditions*.
2. To make no demand for liquidated damages or penalty for delay in any sum in excess of such amount as may be specified in the subcontract.
3. That no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first ten (10) days of the calendar month following that in which the claim was originated.
4. To give the Subcontractor an opportunity to be present and to submit evidence in any manner involving his/her rights.

5. The Contractor and the Subcontractor agree that nothing in this Article shall create any obligation on the part of the County to pay to or to see to the payment of any sums to any Subcontractor.

Article 29 Interlocking Contracts

The attention of the Contractor and all Subcontractors is specifically called to the necessity of reading the Specifications covering items of the work which connect with or are dependent upon the work specified under each heading, and each Contractor executing the work called for there under shall be responsible for arranging for proper provision for connecting and coordinating his/her work with such other items.

Article 30 Advertising Signs

- A. The Contractor will furnish, erect and maintain a project sign for the duration of the project. The sign shall be placed on the site where and as directed by the Engineer. The sign shall be fastened to three posts spaced 4' apart. The posts shall be 4" x4", seven feet above ground and three feet below ground.
- B. The project sign is shown on page GC-27 in this book.

VII. LAWS, PERMITS, LICENSES, INSURANCE, AND BONDS

Article 31 Laws, Permits and Regulations

- A. Permit and Service Connections:
 1. **BUILDING PERMIT** - The County will obtain the building permit at no cost to the Contractor.
 2. **PERMANENT WATER SERVICE** - The County will apply for the water service and pay all related charges; i.e., water meter, water systems connection charge, water distribution charge and sewer systems connection charge. Total installation of the permanent water service is part of this Contract. Water service shall be installed by a County Prequalified Utility Contractor.
 3. **PLUMBING PERMIT** - The Contractor shall apply for the Permit; however, the County will pay all related charges and fees.
 4. **PERMANENT ELECTRIC SERVICE** - The Contractor shall apply for and pay for the electrical permit. The County shall obtain BGE permanent gas and electric service to the site at no cost to the Contractor.

The Contractor shall coordinate the installation of permanent gas and electric service with Baltimore Gas & Electric

Company. Both the gas and electric services shall be activated at the same time under one account number showing Baltimore County as owner. The Contractor shall be responsible for payment of consumption charges for the use of gas and electric energy obtained through the permanent service until the building is accepted by the County or until agreed upon by the County in direct coordination with the Building Services Division of Baltimore County. Charges from BGE for removal of existing electric service will be paid by the County.

5. **PERMANENT TELEPHONE SERVICE** - The County shall pay for the telephone service and systems to and in the building. The Contractor is responsible for supplying and installing all conduit, cables and junction boxes as shown on the drawings or called out in the Specifications.
 6. **CABLE** - The County shall pay for any cable television service into the building. The contractor is responsible for supplying and installing the remaining work as shown on the drawings and called out in the Specifications.
 7. **TEMPORARY SERVICES** -All temporary services, such as water, electric, telephone, etc., shall be the Contractor's entire responsibility. (Also see Article 46.)
 8. **MISCELLANEOUS PERMITS** - The Contractor shall procure any and all necessary permits not previously mentioned and pay any and all related charges and fees required and incidental to the due and lawful prosecution of the work.
- B. The Contractor shall give all notices and comply with all State and Federal laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Drawing and Contract Specifications are at variance therewith, he/she shall promptly notify the Engineer, in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Engineer, he/she shall bear all costs arising there from.

Article 32 Compensation, Liability, and Property Damage Insurance

(See Insurance Provision in Part VI of this Contract.)

Article 33 Builder's Risk Insurance

- A. The Contractor shall, at his/her own cost, insure the work and keep it insured at all times during the period of construction, and until final acceptance of it by the County, against loss or damage covered by

an "All Risk" Builders Risk type of policy. The amount of insurance shall be the 100% estimated replacement cost of the work.

- B. The policies shall be made payable to the County and the Contractor, as their interest may appear, and the policies shall be left in the possession of the Engineer, prior to the start of construction.

Article 34 Guaranty Bonds

- A. Prior to signing of the Contract, the Contractor will be required to furnish bond covering the faithful performance of the Contract and the payment of all obligations arising there under, in such form as the County may prescribe with such sureties as the County may approve. The premiums shall be paid by the Contractor.
- B. The Bond to be in the amount of the total Contract price.
- C. At the direction of the Office of Budget and Finance, Property Management, the Contractor may be required to increase the above bond. Such addition will be paid for by the County in the amount of actual cost to the Contractor.

Article 35 Damages

- A. If either party to this Contract should suffer damages in any manner because of the wrongful act or neglect of the other party or of anyone employed by him/her, then reimbursement shall be made by the other party for such damage.
- B. Claims under this clause shall be made in writing to the party liable within a reasonable time at the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work or materials, and shall be adjusted by agreement.
- C. Should the Contractor cause damage to any separate contractor on the work, the Contractor agrees, upon due notice, to settle with such contractor by agreement or refer the matter to the Office of Budget and Finance, Property Management, who will render a decision after hearing all evidence in the matter. The Contractor shall pay or satisfy such decision.

VIII. INSPECTION AND SURVEYS

Article 36 Inspection

- A. If the Construction Specifications, the Engineer's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by another authority, the date fixed for such inspection. Inspections by

the Engineer shall be made promptly, and where practicable, at the source of supply. Any work covered without approval of the Engineer must, if required, be uncovered for examination at the Contractor's expense.

- B. If initial tests and/or inspections show substandard products, materials, workmanship, etc. and the Contractor elects, with the Engineer's approval, to perform additional tests and/or inspections to prove the acceptability of the substandard products, materials, workmanship etc., he/she shall perform same at his/her expense.

Article 37 Surveys

- A. The General Contractor shall, at his/her own expense, employ a registered surveyor to provide Elevation Bench Mark, and locate corners of the building and the limits of contract.
- B. The General Contractor shall, at his/her own expense, employ a competent field engineer, to give the lines and levels for the building, sidewalks and footings, etc. The Contractor will be responsible for all lines and levels and will guarantee all lines and levels as are shown on drawings.

Article 38 Unauthorized Work

Work done without lines and grades being established, work done beyond the lines and grades shown on the Plans or as established, except as herein provided, or any extra work done without written authority will be considered as unauthorized and at the expense of the Contractor and will not be measured by the Engineer, or paid for by the County. Work so done may be ordered by the Engineer to be removed and replaced at the Contractor's expense.

IX. CONSTRUCTION

Article 39 Construction Schedule

The Contractor shall hold bi-weekly "progress meetings" at the site, at a time suitable to the Engineer, at which the progress of the work shall be reported upon in detail with reference to schedules. Each interested subcontractor shall be required to have present a competent representative to report the condition of his/her branch of the work and to receive instructions. Minutes of these "progress meetings" shall be taken by the Contractor who shall type them for distribution to members of the conference, the Office of Budget and Finance, Property Management, and other interested persons. These minutes shall be received by all parties prior to the next scheduled "progress meeting."

Article 40 Protection of Work and Property

- A. All trees along the way of access shall be boxed, also all trees surrounding the building which are liable to injury by the moving, storing and working up of materials. No permanent tree shall be used for attachment of any ropes or derricks. Every public way, catch basin, conduit, tree, fence or things injured in carrying out this Contract, shall be replaced and put in good condition, unless the same shall be permanently done away with by order of the Engineer.
- B. The Contractor shall erect and properly maintain at all times as required by the conditions and progress of the work, all necessary safeguards for the protection of workers and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hod hoists, well holes, elevator hatchways, scaffolding, window openings, stairways and falling material.
- C. In an emergency affecting the safety of life, or of the work, or of the adjoining property, the contractor, without special instruction or authorization is hereby permitted to act, at his/her discretion, to prevent such threatened loss or injury, and he/she shall so act, without appeal, if so instructed or authorized. Any compensation claimed by the Contractor on account of emergency work shall be determined as outlined in Article 11.

Article 41 Shoring, Bracing and Sheeting

- A. The Contractor shall do all necessary shoring, bracing and sheeting required, or as directed by the Engineer, to carryout the work, install the foundations and other building construction, to protect the street, sidewalks and all adjoining buildings and property. He/she shall thoroughly brace and protect all earth banks sides of pits, trenches, and other excavations to prevent danger to persons or structures, and to prevent injurious cavings or erosion of any sort. Shoring and sheeting shall be removed after, or as, the walls are built and properly set.
- B. Full responsibility for both the design (by an Engineer licensed in Maryland) and the execution of all shoring, bracing, and sheeting work shall rest upon the contractor. While the Engineer shall be fully advised of all details for such work before the work itself is executed, this shall not in any way relieve the Contractor for full responsibility for all damage or expense arising from faulty installation of the said work of shoring, bracing, or sheeting.

Article 42 Tests

- A. Soils testing shall be performed by an independent testing firm arranged and paid for by the County.

- B. Materials testing shall be performed by an independent testing firm, paid for by the Contractor, which has previously been approved by the County and Architect/Engineer. Certified copies of all such test reports shall be submitted to the Engineer for approval.

Article 43 Cleaning Up

- A. The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his/her employees or work, and at the completion of the work, shall remove all his/her rubbish from and about the project site, and all his/her tools, scaffolding and surplus material.

In case of dispute, the County may remove the rubbish and charge the cost to the several contractors as the Engineer shall determine to be just.

- B. All debris shall be kept sprinkled to reduce dust and shall be promptly removed from the building, and no combustible materials shall be stored against perimeter walls.
- C. The Contractor shall clean entirely the building as it is completed, wash all windows, scrub all floors at least once, and leave all floors free from spots and blemishes. The interior of the building and the project area shall be left "broom clean," or its equivalent.

Article 44 As-Built Drawings

The Contractor shall, as the project progresses, neatly record on a set of white prints any changes and all revisions to the work wherever they shall differ from the Contract Drawings. Upon completion of the work, the Contractor shall turn over to the Architect this set of prints.

Article 45 Drainage and Pumping

The Contractor shall remove all water, including rain water, encountered during the entire progress of the work, using pumps, drains or other methods approved by the Engineer. Excavations and the project site shall be kept free from water until all backfilling is completed. The water shall be discharged to catch basins, or other drainage points as directed by the Engineer.

Article 46 Temporary Water, Electric and Other Services

- A. The Contractor shall arrange for and pay for the installation of temporary connection to the County's water mains, including all incidental fees and expenses for water supply during construction of the project, and shall pay for all water used. Wasting of County water will not be permitted.

- B. The Contractor shall arrange for and pay for temporary electric light and power service required during construction of the project, and shall pay for all electricity used. Gasoline or other torches for lighting will not be permitted.
- C. The Contractor shall provide and pay for any other temporary services which may be required for the satisfactory completion of the project.
- D. The Contractor shall provide, at his/her own expense, all cold weather protection, temporary heat and fuel as necessary to carry on the work expeditiously during inclement weather, to protect work and materials against injury from dampness and cold, to dry out the building and provide suitable working conditions. Refer to other sections for temperatures required for work under the various trades

The methods of heating and type of fuel and equipment used shall be subject to approval by Engineer.

With special permission, in writing, permanent heating system may be used to dry out building and provide suitable working conditions in all or various parts thereof as soon as practicable. If used, Contractor shall be responsible for use of permanent heating system for purpose described and all costs of fuel, attendance, etc. in connection therewith shall be borne by him/her. Such use shall not relieve Contractor of his/her responsibility to turn over system to Owner in perfect condition on completion of project, including the removal of all dust of construction from air handling units, etc., the replacing of all filters, etc., nor shall it shorten stipulated guarantee period which will commence upon the date of final acceptance of the work.

Article 47 Connecting to Existing Utilities

The Contractor shall, at his/her own cost and expense and as part of this work under the Contract, furnish all labor, materials, tools, and appliances, and do all work required for making connections to existing storm drains, sanitary sewer, water, gas and electric service connections, as shown on drawings, and the cost of making such connections shall be included in his/her bid.

Article 48 Existing Utilities Shown on Plans

Water mains, gas mains, storm drains, sanitary sewers, and other utilities are shown on the Plans, in accordance with the best information available, for the information of the Contractor. The County assumes no responsibility for accuracy or completeness of the information shown. Existing mains and services shall be carefully protected and any damage to them caused by the work shall be immediately repaired to the satisfaction of the Engineer by the Contractor at his own expense, using materials of the quality and kinds damaged.

X. MISCELLANEOUS ADDENDA

Article 49 Holidays

The word "holidays" used in these Contract Documents shall be taken to mean the below listed holidays, which in Baltimore County, occur as shown below:

January 1	New Year's Day
3rd Monday in January	Martin Luther King's Birthday
3rd Monday in February	President's Day
4th Monday in May	Memorial Day
June 19	Juneteenth Independence
July 4	Independence Day
1st Monday in September	Labor Day
2nd Monday in October	Indigenous Peoples' Day
November 11	Veteran's Day
4th Thursday in November	Thanksgiving Day
December 25	Christmas
All Days of General Elections	

If any holiday occurs on Sunday, the following Monday shall be considered a holiday. If the holiday occurs on Saturday, the Friday immediately preceding shall be considered a holiday.

Article 50 Buy American Steel Act

The State of Maryland has approved House Bill No. 1659 to "Buy American Steel" for all Public Works projects in the State of Maryland, effective July 1, 1978. Compliance with Article 20.17 Metal Pipe (Page 100) and Article 20.18 Metal for Structures (Page 102) in the *S.H.A. Specifications for Materials, Highways, Bridges and Incidental Structures* dated March 1968 will satisfy this condition. Also see *Baltimore County's Standard Specifications for Construction and Materials* Section GP 7.28.

Article 51 Guarantee

- A. The Contractor guarantees all work against faulty or imperfect materials, against all imperfect or careless and/or unskilled workmanship, against all leaks and against all mechanical and electrical failure of equipment for a period of two (2) years from the date of acceptance of the project by the County. See other Sections of this Specification for other guarantees.
- B. The Contractor shall remove, replace or re-execute, without cost to the Owner, any work found to be imperfect during the guarantee period.

Article 52 Offices and Telephones

- A. The Contractor shall erect and maintain upon the project site, and where directed by the Engineer, suitable offices for his/her own use and that of the Engineer.

- B. A room of adequate size shall be provided and maintained in the Contractor's office to be used for "Progress Meetings," which frequently involve fifteen (15 or more persons). This space shall be so arranged that they can be held without interference with or from the other office or supervisory work. The room shall be 300 sq. ft. minimum and 10 ft. minimum width.

These offices shall be provided with adequate heating and lighting, all at the expense of the Contractor. In addition to the above requirements, air-conditioning will be required, the cost of which is to be included in the lump sum bid price. The system must be capable of maintaining a temperature of 80 degrees F dry bulb and approximately 50% relative humidity in the conditioned area when outside temperatures are 95 degrees F dry bulb and 78 degrees F wet bulb.

- C. The Engineer's office shall meet or exceed all requirements for a Type 1 office in accordance with *Baltimore County's Standard Specifications for Construction and Materials*, Section 103 Engineer's Office.

The Contractor shall provide telephone and FAX service in the Office of the Engineer. The Contractor shall pay all costs of installation and all charges for local and Baltimore City calls, but will not be expected to pay for long distance calls made from the Engineer's Office.





SPECIFICATIONS

Gwynn Oak Park Improvements Project

Baltimore County Property Management
Office of Budget and Finance, Property Management

*100% Design
December 13, 2024*

Submitted By:

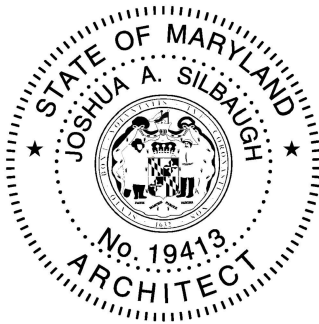


BALTIMORE COUNTY, MARYLAND
OFFICE OF BUDGET AND FINANCE, PROPERTY MANAGEMENT

GWYNN OAK PARK IMPROVEMENTS PROJECT

Professional Seals Page

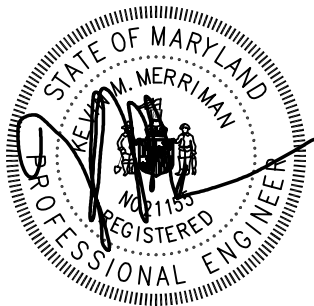
The following Specification Sections have been prepared by or under the direct supervision of the Consultants Professionals:



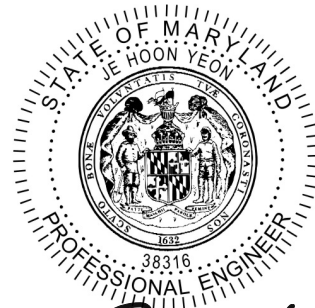
Architectural



Civil Engineer



Structural Engineer



Electrical Engineer

BALTIMORE COUNTY, MARYLAND
OFFICE OF BUDGET AND FINANCE, PROPERTY MANAGEMENT

GWYNN OAK PARK IMPROVEMENTS PROJECT

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**SECTION 01 10 00
SUMMARY****PART 1 GENERAL****1.01 PROJECT**

- A. Project Name: Gwynn Oak Park Improvements Project.
- B. Owner's Name: Baltimore County Office of Budget and Finance, Property Management Division.
- C. The Project consists of construction of an enlarged parking area to replace the existing parking lot, a new outdoor pavilion, replacement of an existing pavilion, rehabilitation of an existing performance stage, upgrades to park to improve access for persons with disabilities, new planting beds, new trash enclosures and various additional improvements.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in the Contract Agreement.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work as indicated on drawings.
- B. Scope of alterations work is indicated on drawings.
- C. Owner will remove the following items before start of work:
 - 1. Owner will coordinate removal of vehicles from existing parking facility.

1.04 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Owner intends to occupy a certain portion of the Project prior to the completion date for the conduct of normal operations.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
 - 3. Temporary/short-term closure of park shall be coordinated with owner.
- C. Existing building spaces may not be used for storage.
- D. Time Restrictions:
 - 1. Limit conduct to between the hours of 7:30 am to 5:00 pm..
- E. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the site is unoccupied.
 - 2. Prevent accidental disruption of utility services to other facilities.

1.06 WORK SEQUENCE

- A. Construct Work in accordance with contract drawings.
- B. Coordinate construction schedule and operations with Owner.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED****END OF SECTION**

**SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703: edition acceptable to architect and owner.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- F. Revise schedule to list approved Change Orders, with each Application For Payment.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, or edition acceptable to architect and owner.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Engineer for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- I. Submit one electronic and zero hard-copies of each Application for Payment.
- J. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 30 00.
 - 2. Construction progress schedule, revised and current as specified in Section 01 30 00.

- K. When Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.04 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Engineer will issue instructions directly to Contractor.
- C. For other required changes, Engineer will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Engineer will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 15 calendar days.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
- F. Substantiation of Costs: Provide full information required for evaluation.
 - 1. Provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
- G. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- H. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- I. Promptly enter changes in Project Record Documents.

1.05 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 25 00
SUBSTITUTION PROCEDURES**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

- A. Instruction to Bidders per Section GP Section 2 of Baltimore County Standard Specifications for Construction and Materials
- B. Substitutions per Section GP Section 6.05 of the Baltimore County Standard Specifications for Construction and Materials.
- C. Requirements for substitution requests made after award of contract (During construction) to be as required in Section GP Section 6.05 of the Baltimore County Standard Specifications for Construction and Materials.
- D. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.
- E. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

- A. Substitutions: See General Conditions for definition.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 - 1. Note explicitly any non-compliant characteristics.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 - 1. No specific form is required. Contractor's Substitution Request documentation must include the following:
 - a. Project Information:
 - 1) Official project name and number, and any additional required identifiers established in Contract Documents.
 - 2) Owner's, Architect's, and Contractor's names.
 - b. Substitution Request Information:
 - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - 2) Indication of whether the substitution is for cause or convenience.
 - 3) Issue date.

- 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
- 5) Description of Substitution.
- 6) Reason why the specified item cannot be provided.
- 7) Differences between proposed substitution and specified item.
- 8) Description of how proposed substitution affects other parts of work.
- c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
 - 1) Physical characteristics.
 - 2) In-service performance.
 - 3) Expected durability.
 - 4) Visual effect.
 - 5) Sustainable design features.
 - 6) Warranties.
 - 7) Other salient features and requirements.
 - 8) Include, as appropriate or requested, the following types of documentation:
 - (a) Product Data:
 - (b) Samples.
 - (c) Certificates, test, reports or similar qualification data.
 - (d) Drawings, when required to show impact on adjacent construction elements.
- d. Impact of Substitution:
 - 1) Savings to Owner for accepting substitution.
 - 2) Change to Contract Time due to accepting substitution.
- D. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Baltimore County Contract specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.
- B. Submittal Form (before award of contract):
 - 1. Submit substitution requests by completing the form in Baltimore County Contract; see this contract for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- C. Owner will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
 - 1. Submit substitution requests by completing the form in Baltimore County Contract; see this contract section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Architect will consider requests for substitutions only within 15 days after date of Agreement.
- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.

2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
3. Bear the costs engendered by proposed substitution of:
 - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
- E. Substitutions will not be considered under one or more of the following circumstances:
 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 2. Without a separate written request.
 3. When acceptance will require revisions to Contract Documents.

3.04 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.

3.05 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Submittals for review, information, and project closeout.
- E. Number of copies of submittals.
- F. Submittal procedures.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 PRECONSTRUCTION MEETING**

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect/Engineer.
 - 3. Contractor.
 - 4. Key Building Staff.
 - 5. Major Subcontractors.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 4. Submission of initial Submittal schedule.
 - 5. Designation of personnel representing the parties to Contract, Contractor, Owner, Building Staff, and Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. Criteria for Progress Meetings will be discussed during the Pre-Construction Meeting.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect/Engineer.
 - 4. Contractor's superintendent.
 - 5. Major subcontractors.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems, and decisions.

4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFIs log and status of responses.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Maintenance of quality and work standards.
 11. Effect of proposed changes on progress schedule and coordination.
 12. Other business relating to work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 32 16

3.04 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 2. Prepare in a format and with content acceptable to Owner.
 3. Prepare using an electronic version of the form appended to this section.
 4. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
- D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 2. Discrete and consecutive RFI number, and descriptive subject/title.

3. Issue date, and requested reply date.
 4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 5. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 6. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 2. Note dates of when each request is made, and when a response is received.
- G. Review Time: Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 2. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

3.05 SUBMITTAL SCHEDULE

- A. Submit to Engineer for review a schedule for submittals in tabular format.
1. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
 2. Coordinate with Contractor's construction schedule and schedule of values.
 3. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 4. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.06 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Engineer for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.

- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.07 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Engineer's knowledge as contract administrator or for Owner.

3.08 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.09 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Engineer.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.10 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a single transmittal for related items.
 - 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 3. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 5. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - 6. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Send submittals in electronic format via email to Architect.

7. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 calendar days excluding delivery time to and from the Contractor.
 8. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 9. When revised for resubmission, identify all changes made since previous submission.
 10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
 12. Submittals not requested will not be recognized or processed.
- B. Product Data Procedures:
1. Submit only information required by individual specification sections.
 2. Collect required information into a single submittal.
 3. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 2. Do not reproduce Contract Documents to create shop drawings.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
1. Transmit related items together as single package.
 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
 3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.11 SUBMITTAL REVIEW

- A. Submittals for Review: Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Engineer will acknowledge receipt and review. See below for actions to be taken.
- C. Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Engineer's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Conforms", or language with same legal meaning.
 - b. "Conforms As Noted", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Non-Conforming - Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
- E. Engineer's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
 - a. "No Review Required" - to notify the Contractor that the submittal has been received for record only.

END OF SECTION

**SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE**

PART 1 GENERAL**1.01 SECTION INCLUDES:**

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 SUBMITTALS

- A. Within thirty (30) days after award of the contract, The Contractor shall submit to the Department a detailed baseline schedule indicating the time allocated by the Contractor for performance of each portion of the Work. The baseline schedule shall show commencement of Work from the date the Notice to Proceed is issued. The baseline schedule shall show Full and Final Completion of the Work within the Contract Time as specified in the Contract or as mutually agreed upon with the County in writing pursuant to a Contract Modification after execution of the Contract.
- B. If preliminary schedule requires revision after review, submit revised schedule within 15 calendar days.
- C. Within 15 calendar days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.
- E. Submit in PDF format.
- F. Submit under transmittal letter form specified in Paragraph 3.10 of Section 01 30 00 - Administrative Requirements.

1.03 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.
- B. Contractor's Administrative Personnel: one years minimum experience in using and monitoring CPM schedules on comparable projects.

1.04 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 22 x 17 inches.
- C. Sheet Size: Multiples of 8-1/2 x 11 inches.
- D. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 PRELIMINARY SCHEDULE**

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules to define critical portions of the entire schedule.

- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.
- G. Indicate delivery dates for owner-furnished products.
- H. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 15 day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
 - 1. By preceding work item or event number from lowest to highest.
 - 2. By amount of float, then in order of early start.
 - 3. Listing of activities on the critical path.

3.05 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

- G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Engineer, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

**SECTION 01 35 53
SECURITY PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Security measures including entry control, personnel identification, and miscellaneous restrictions.

1.02 SECURITY PROGRAM

- A. Protect Work , existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
- B. Initiate program in coordination with Owner's existing security system at project mobilization.
- C. Maintain program throughout construction period until Owner acceptance precludes the need for Contractor security.

1.03 ENTRY CONTROL

- A. Restrict entrance of persons and vehicles into Project site and existing facilities.
- B. Allow entrance only to authorized persons with proper identification.
- C. Owner will control entrance of persons and vehicles related to Owner's operations.
- D. Contractor shall control entrance of persons and vehicles related to Contractor's operations.

1.04 PERSONNEL IDENTIFICATION

- A. Provide identification badge to each person authorized to enter premises.
- B. Badge To Include: Personal photograph, name, assigned number and employer.
- C. Maintain a list of accredited persons, submit copy to Owner on request.
- D. Require return of badges at expiration of their employment on the Work.

1.05 RESTRICTIONS

- A. Do no work on Sundays.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Submittals.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Tolerances.
- G. Manufacturers' field services.
- H. Defect Assessment.

1.02 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants.
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Design Data: Submit for Engineer's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
 - 1. Include required product data and shop drawings.
 - 2. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- C. Test Reports: After each test/inspection, promptly submit two copies of report to Engineer and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by Engineer, provide interpretation of results.

2. Test report submittals are for Engineer's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Engineer, in quantities specified for Product Data.
 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Engineer.
- E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Manufacturer's Field Reports: Submit reports for Engineer's benefit as contract administrator or for Owner.
 1. Submit report in duplicate within 30 days of observation to Engineer for information.
 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- G. Erection Drawings: Submit drawings for Engineer's benefit as contract administrator or for Owner.
 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 2. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. As indicated in individual specification sections, Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION**3.01 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the Engineer will use to judge the Work.
- C. Notify Engineer and Owner fifteen (15) calendar days in advance of dates and times when mock-ups will be constructed.
- D. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- E. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- F. Obtain Engineer's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Engineer will issue written comments within seven (7) calendar days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- G. Engineer will use accepted mock-ups as a comparison standard for the remaining Work.
- H. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Engineer.
- I. Where possible salvage and recycle the demolished mock-up materials.

3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.

2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 6. Perform additional tests and inspections required by Architect.
 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the Work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 6.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations.
1. Observer subject to approval of Engineer.
 2. Observer subject to approval of Owner.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures, and fencing.
- D. Security requirements.
- E. Vehicular access and parking.
- F. Waste removal facilities and services.
- G. Field offices.

1.02 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
- B. New permanent facilities may be used.

1.03 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
- E. Traffic Controls: To be identified by Owner during the Pre-Construction Meeting.

1.04 FENCING

- A. Construction: Contractor's option.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.05 INTERIOR ENCLOSURES

- A. Provide temporary partitions as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Prevent unauthorized persons from entering the building.
- C. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.06 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

1.07 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.

- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
- G. Existing parking areas identified by Owner may be used for construction parking.

1.08 WASTE REMOVAL

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.09 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate offices a minimum distance of 30 feet from existing structures.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION - NOT USED**

END OF SECTION

**SECTION 01 55 00
VEHICULAR ACCESS AND PARKING**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Access roads.
- B. Parking.
- C. Existing pavements and parking areas.
- D. Permanent pavements and parking facilities.
- E. Construction parking controls.
- F. Flag persons.
- G. Flares and lights.
- H. Haul routes.
- I. Traffic signs and signals.
- J. Maintenance.
- K. Removal, repair.
- L. Mud from site vehicles.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Temporary Construction: Contractor's option.
- B. Materials for Permanent Construction: As specified in product specification sections, including earthwork, paving base, and topping.

2.02 SIGNS, SIGNALS, AND DEVICES

- A. Stock Post Mounted and Wall Mounted Traffic Control and Informational Signs:
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.
- C. Flag Person Equipment: As required by local jurisdictions.

PART 3 EXECUTION**3.01 PREPARATION**

- A. Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.

3.02 ACCESS ROADS

- A. Use of existing on-site streets and driveways for construction traffic is permitted.
- B. Tracked vehicles not allowed on paved areas.
- C. Construct new temporary all-weather access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.
- D. Extend and relocate as work progress requires, provide detours as necessary for unimpeded traffic flow.
- E. Provide unimpeded access for emergency vehicles. Maintain 20 foot width driveways with turning space between and around combustible materials.
- F. Provide and maintain access to fire hydrants free of obstructions.

3.03 PARKING

- A. Use of designated areas of existing parking facilities by construction personnel is permitted.

- B. Use of designated areas of new parking facilities by construction personnel is permitted.
- C. Arrange for temporary parking areas to accommodate use of construction personnel.
- D. When site space is not adequate, provide additional off-site parking.

3.04 PERMANENT PAVEMENTS AND PARKING FACILITIES

- A. Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.
- B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

3.05 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.06 FLAG PERSONS

- A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.07 FLARES AND LIGHTS

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.08 HAUL ROUTES

- A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

3.09 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Relocate as work progresses, to maintain effective traffic control.

3.10 MAINTENANCE

- A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
- B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.11 REMOVAL, REPAIR

- A. Remove temporary roads when permanent paving is usable.
- B. Repair existing facilities damaged by use, to original condition.
- C. Remove equipment and devices when no longer required.
- D. Repair damage caused by installation.

3.12 MUD FROM SITE VEHICLES

- A. Provide means of removing mud from vehicle wheels before entering streets.

END OF SECTION

**SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus.
- B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
- D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile.
- F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.

1.03 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of the approved erosion and sediment control plan for erosion and sedimentation control .
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
- C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- D. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.

3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- I. Open Water: Prevent standing water that could become stagnant.
- J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
 1. Straw or hay.
 2. Erosion control matting or netting.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
 1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
 2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491/D4491M.
 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
 4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
 6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

- D. Silt Fence Posts: One of the following, minimum 5 feet long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
 - 2. Hardwood, 2 by 2 inches in cross section.
- E. Riprap: See Section 31 37 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 INSTALLATION

- A. Comply with requirements of the approved erosion and sediment control plan in the contract documents.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D4873/D4873M.
 - 2. Install with top of fabric at nominal height and embedment as specified.
 - 3. Fasten fabric to wood posts using one of the following:
 - a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gauge, 0.083 inch shank diameter.
 - b. Five staples per post with at least 17 gauge, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
 - 4. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
 - 5. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.
- C. Temporary Seeding:
 - 1. When hydraulic seeder is used, seedbed preparation is not required.
 - 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 - 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
 - 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
 - 5. Incorporate fertilizer into soil before seeding.
 - 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
 - 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 - 8. Repeat irrigation as required until grass is established.

3.04 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 - 1. Promptly replace fabric that deteriorates unless need for fence has passed.
 - 2. Remove silt deposits that exceed one-third of the height of the fence.
 - 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Clean out temporary sediment control structures weekly and relocate soil on site.

- E. Place sediment in appropriate locations on site; do not remove from site.

3.05 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Engineer.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Procedures for Owner-supplied products.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS**2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is encouraged.
 - 1. See Section 01 10 00 for list of items required to be salvaged for reuse and relocation.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. See Section 01 40 00 - Quality Requirements, for additional source quality control requirements.
- C. Use of products having any of the following characteristics is not permitted:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Made using or containing CFC's or HCFC's.
 - 3. Made of wood from newly cut old growth timber.
- D. Where other criteria are met, Contractor shall give preference to products that:

1. Are extracted, harvested, and/or manufactured closer to the location of the project.
2. Have longer documented life span under normal use.
3. Result in less construction waste. See Section 01 74 19
4. Are made of recycled materials.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
 1. See also Section 01 4000 - Quality Requirements, Part 1 Article, "References and Standards."
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Products Specified by Naming One or More Manufacturers with a Provision for Approved Equal: Use a product of one of the manufacturers named and meeting specifications, or alternate manufacturer meeting or exceeding the specified requirements.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 OWNER-SUPPLIED PRODUCTS

- A. See below for Owner and Contractor responsibilities..
- B. Owner's Responsibilities:
 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 2. Arrange and pay for product delivery to site.
 3. On delivery, inspect products jointly with Contractor.
 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 5. Arrange for manufacturers' warranties, inspections, and service.
- C. Contractor's Responsibilities:
 1. Review Owner reviewed shop drawings, product data, and samples.
 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 3. Handle, store, install and finish products.
 4. Repair or replace items damaged after receipt.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.
- F. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- G. For exterior storage of fabricated products, place on sloped supports above ground.
- H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- I. Comply with manufacturer's warranty conditions, if any.
- J. Do not store products directly on the ground.
- K. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- L. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- M. Prevent contact with material that may cause corrosion, discoloration, or staining.
- N. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- O. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- J. General requirements for maintenance service.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.
 - e. Alternatives to cutting and patching.
 - f. Effect on work of Owner or separate Contractor.
 - g. Written permission of affected separate Contractor.
 - h. Date and time work will be executed.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.03 QUALIFICATIONS

- A. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.

- B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.04 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 - 3. Indoors: Limit conduct of especially noisy interior work to 8 am to 5 pm.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Engineer seven calendar days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Engineer of any discrepancies discovered.

- C. Contractor shall locate and protect survey control and reference points.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.
- G. Utilize recognized engineering survey practices.
- H. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Structure foundation, column locations, floor elevations.
- I. Periodically verify layouts by same means.
- J. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Engineer before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
 - 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.

3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. See Section 01 10 00 for other limitations on outages and required notifications.
 - c. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
 1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.
 2. Fit products together to integrate with other work.

3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.

- B. Notify Engineer and Owner seven calendar days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.12 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.13 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
 - 1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, area drains, drainage systems, and on-site paved surfaces.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Engineer.
 - 2. Provide copies to Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Engineer when work is considered ready for Engineer's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Engineer's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Engineer.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Engineer when work is considered finally complete and ready for Engineer's Substantial Completion final inspection.
- H. Complete items of work determined by Engineer listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than two years from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL**1.01 WASTE MANAGEMENT REQUIREMENTS**

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood.
 - 5. Asphalt paving: May be recycled into paving for another project.
 - 6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 7. Glass.
- E. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- F. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
 - 5. Incineration, either on- or off-site.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit Waste Management Plan within 30 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
- C. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - a. List each material proposed to be salvaged, reused, or recycled.
 - b. State the estimated net cost, versus landfill disposal.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
 - 7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.
- D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - 2. Submit Report on a form acceptable to Owner.
 - 3. Landfill Disposal: Include the following information:

- a. Identification of material.
- b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
- c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
- d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
- 4. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
- 5. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
- 6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.
- E. Recycling Incentive Programs:
 - 1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
 - 2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Engineer.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Prebid meeting.

2. Preconstruction meeting.
 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
1. As a minimum, provide:
 - a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
 - b. Separate dumpsters for each category of recyclable.
 - c. Recycling bins at worker lunch area.
 2. Provide containers as required.
 3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
 4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
 5. Locate enclosures out of the way of construction traffic.
 6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
 8. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

**SECTION 01 78 00
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.02 SUBMITTALS

- A. Project Record Documents: Submit documents to Engineer with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 calendar days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 calendar days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 calendar days after acceptance.
 - 2. Make other submittals within 10 calendar days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 calendar days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Addenda.
 - 3. Change Orders and other modifications to the Contract.
 - 4. Reviewed shop drawings, product data, and samples.
 - 5. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- B. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- C. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- B. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- C. Additional information as specified in individual product specification sections.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- B. Provide control diagrams by controls manufacturer as installed.
- C. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- D. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- E. Include test and balancing reports.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE (O&M) MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Engineer, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and

major component parts of equipment.

- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

**SECTION 02 30 00
SUBSURFACE EXPLORATION**

PART 1 GENERAL

1.01 DESCRIPTION

- A. The boring logs included as an appendix to these Specifications presenting physical data on subsurface conditions are for the information of the Owner only, and in no event is this information to be considered as part of the Contract. It is expressly understood that neither the Owner nor the Engineer will be responsible for any interpretation or conclusions drawn therefrom by the Contractor.
- B. There is no expressed or implied agreement that the depths, location or character of subsurface materials have been correctly indicated on the Drawings, and the Contractor shall take into account that conditions affecting the cost or quantities of work to be done may differ from those indicated.
- C. Limitations of Subsurface Information Indicated on Drawings:
 - 1. Certain information regarding the reputed presence, size, character and location of existing underground structures and utilities, pipe and conduits has been indicated on the Drawings for the benefit of the Owner. There is no certainty of the accuracy of this information, and the location of underground structures indicated may be inaccurate, and other obstructions than those indicated may be encountered.
 - 2. The Contractor hereby distinctly agrees that neither the Owner nor the Engineer is responsible for the correctness or sufficiency of the information given:
 - a. That in no event is this information to be considered as a part of the Contract;
 - b. That he shall have no claim for delay or extra compensation or damage against the Owner or the Engineer on account of incorrectness of information given; or on account of the insufficiency or absence of information regarding obstructions either revealed or not revealed by the Drawings; and
 - c. That he shall have no claim for relief from any obligation or responsibility under the Contract, in case the location, size or character of any pipe or other underground structure is not as indicated on the Drawings, or in case any pipe or other underground structure is encountered that is not indicated on the Drawings.
- D. Digging Test Pits:
 - 1. Test pit excavation shall be performed in accordance with the requirements of Article 205 of the Baltimore County Standard Specifications for Construction and Materials, except as modified herein.
 - 2. Test pit excavation is incidental to construction. No additional payment shall be made for test pit excavation shown on the plans or required by this section.
 - 3. In locations where new underground facilities are to be connected to or cross existing facilities and utilities, the Contractor will not be permitted to proceed with new construction until he has dug test pits and determined the exact location and elevation of the existing facility. Dig such test pits only at the locations agreed to by the Engineer and prior to start of new construction.
 - 4. Furnish written logs to the Engineer of all test pits performed. The logs shall contain the following minimum information:
 - a. Existing ground elevation
 - b. Top of Existing utility elevation (NAVD 88)
 - c. Northing and Easting coordinates (NAD 83/2011)
 - d. Outside diameter or dimensions
 - e. Material (for utility pipelines)

END OF SECTION

**SECTION 02 41 00
DEMOLITION****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Removing buildings, structures, fences, and other existing structures or features as noted on the Plans.
- B. Perform in accordance with the requirements of Section 102 (Removal and Disposal of Existing Building) of the Baltimore County Standard Specifications for Construction and Materials, except as modified herein. Items to be removed or modified by demolition are identified on the Contract Drawings.

1.02 SITE CONDITIONS

- A. Exterior Dust Control: To prevent unnecessary spread of dust during performance of exterior demolition work, thoroughly moisten surfaces and debris as required to prevent dust being a nuisance to the public, neighbors and concurrent performance of other work on the site.
- B. Protection: Exercise care during demolition work to confine demolition operations to the areas as indicated on the Drawings. The physical means and methods used for protection are at the Contractor's option. However, the Contractor will be completely responsible for replacement and restitution of incidental damage of whatever nature at no expense to the Owner.
 - 1. Additionally, if public safety is endangered during the progress of the demolition work, provide adequate protective measures to protect adjacent residential properties, or public pedestrian and vehicular traffic on streets and walkways.
 - 2. Signs, signals and barricades used shall conform to requirements of Federal, State and local laws, rules, regulations, precautions, orders and decrees.
- C. Explosives and Blasting: Not permitted in performance of demolition work.
- D. Perform demolition work in accordance with the requirements of all Local, State and Federal Regulatory Agencies having jurisdiction.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Materials needed or required for temporary protection in the form of barricades, fences, enclosures, etc., shall be new or pre-used construction materials of sound condition and reasonably clean.
- B. Temporary Fencing
 - 1. Timber and plywood or metal chain link fencing as required to ensure a secure work area when work is not active.
- C. Equipment, machinery and apparatus, motorized or otherwise, used to perform demolition work may be chosen at the Contractor's discretion, but shall perform the work within the limits of the Contract requirements.

PART 3 EXECUTION**3.01 INSPECTION**

- A. Prior to performance of demolition work, carefully inspect the entire site and locate those objects and structures designated to be demolished and removed.
- B. Carefully inspect all structures and verify with the Engineer the objects being removed and objects to be preserved.
- C. Locate existing exposed and buried active utilities and determine the requirement for their protection, or their disposition with respect to the demolition work.

3.02 PERFORMANCE

- A. General: The means and methods of performing demolition and removal operations are the sole responsibility of the Contractor. However, equipment used, and methods of demolition

and removal will be subject to approval of the Engineer.

- B. Park Operations: The park facility will remain open during construction with limited access. The Contractor shall coordinate safety and security measures with the county project manager.
- C. Security and Safety: If demolition work will create areas that may be dangerous or a potential hazard in the event of unauthorized access, the Contractor shall provide temporary fencing or other means to secure the site.
- D. Debris Removal: Dispose of demolition debris off Site in a lawful manner.
- E. When removing concrete slabs, saw cut such slabs at the limits of removal to assure a smooth, uniform joint with new concrete installation.
- F. When removing masonry, remove to the next full size unit so proper toothing in of new work may be done.
- G. Perform removal of masonry and concrete debris, keeping such debris dampened during removal and until outside building.

3.03 SALVAGE

- A. The Owner shall have the right to claim as salvage any items and materials removed under the work of this Section. Should such right of salvage be exercised by the Owner, move and neatly store removed items on the site in locations agreeable to the Owner, in a manner approved by the Engineer.
- B. Items to be salvaged by the Owner will be identified at the beginning of the project. Immediately before removal by the Contractor, a joint inspection by the Contractor, the Owner and the Engineer will be made of the items to determine and record their condition and the exact limits of removal. After this meeting and until the items are accepted into storage by the Owner, the Contractor shall be responsible for the condition of the salvaged items.

END OF SECTION

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE - CIVIL**

PART 1 GENERAL**1.01 SUMMARY**

- A. Section Includes: Provision for cast-in-place concrete materials, mix design, formwork, reinforcing and placement.

1.02 REFERENCES

- A. American Concrete Institute:
1. ACI 301, Specifications for Structural Concrete for Buildings.
 2. ACI 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
 3. ACI 305R, Standard Specification for Hot Weather Concreting.
 4. ACI 306.1, Standard Specification for Cold Weather Concreting.
 5. ACI 318, Building Code Requirements for Reinforced Concrete.
 6. ACI 347, Formwork for Concrete.
- B. American Society for Testing and Materials:
1. ASTM A185; Specification for smooth Welded Steel Wire Fabric for Concrete Reinforcement.
 2. ASTM A615; Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, including Supplementary Requirements.
 3. ASTM C31; Methods of Making and Curing Concrete Test Specimens in the Field.
 4. ASTM C39; Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 5. ASTM C94, Standard Specifications for Ready-Mixed Concrete.
 6. ASTM C143; Test Method for Slump of Portland Cement Concrete.
 7. ASTM C172; Methods of Sampling Freshly Mixed Concrete.
 8. ASTM C173; Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
 9. ASTM C231; Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 10. ASTM C260, Standard Specifications for Air-Entraining Admixtures for Concrete.
 11. ASTM C494, Standard Specifications for Chemical Admixtures for Concrete.
 12. ASTM D1751; Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
1. Unless otherwise indicated on Drawings or Specifications, all concrete shall comply with the Baltimore County Standard Specifications for Construction and Materials.
 2. Unless otherwise indicated on Drawings or Specifications, use Concrete Mix 2 for sidewalks, curbs, etc. and Concrete Mix 3 for sign foundation.

1.04 SUBMITTALS

- A. Samples: Submit samples of materials being used as specified and when requested by Engineer. Include names, sources and descriptions.
- B. Certificates: Furnish Engineer and local authorities if required, certificates originated by batch plant certifying ready mixed concrete as manufactured and delivered to be in conformance with ASTM C94.
- C. Delivery Tickets: Delivery tickets to accompany each load of concrete from batch plant. Information presented on ticket to include tabulation covered by ASTM C94, 15.1.1 through 15.2.8, as well as any additional information local codes require. Tickets required to be signed by Contractor's representative, noted as to time and place of pour and kept in a record at site. Make records available for inspection upon request by Engineer.

- D. Test Reports: Submit test reports specified.
- E. Reinforcing steel shop drawings.
- F. Design Mix: Prior to production of concrete, submit for approval, all mix designs proposed for project. Include with the mix design a standard deviation analysis in accordance with ACI 301 Section 3.9.1 or trial mixture test data proposed in ACI 301 Section 3.9.3.3. Slump shall be 3 inches +/- 1 inch. Air-entrainment shall be 6 +/- 1 percent. Use materials in such proposed design mix as specified herein. Make such adjustments in the proposed design mix as directed by the Engineer.
- G. Schedule: Submit schedule indicating methods and sequence of pouring before concrete is placed.
- H. Testing Agency: Submit name and qualifications of Testing Agency to Engineer for approval prior to proceeding with testing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide concrete materials conforming to ACI 301 except as noted.
- B. Admixtures:
 - 1. Provide concrete with water reducing and retarding admixture when placed at ambient air temperatures above 75 deg. F. When temperatures are below 75 deg. F., use a water reducing admixture. Water reducing and retarding admixture to conform to ASTM C494 for Type D, and water reducing admixture for Type A. Proportioning and mixing as recommended by manufacturer.
 - 2. Do not use admixtures causing accelerated setting of cement in concrete.
 - 3. Store admixtures in a manner to prevent contamination, evaporation or damage.
 - 4. Air-entrainment admixtures to conform to ASTM C260.
 - 5. Calcium Chloride is not permitted.
- C. Preformed Expansion Joint Fillers:
 - 1. Nonextruding and Resilient Bituminous Types (for exterior use in pavements and sidewalks only): ASTM D1751.
 - 2. Acceptable Manufacturers:
 - a. A. C. Horn.
 - b. W. R. Meadows, Inc.
 - c. Or Approved Equal.
- D. Epoxy Bonding Compound: Use product such as A.C. Horn "Epoxitite Binder," Sika Chemical "Sikadur Hi-Mod," Dural International "Duralbond" or approved equal.
- E. Patching Cement: Use product such as Sika Chemical "Sikatop 123" or approved equal.
- F. Reinforcing Steel:
 - 1. Reinforcement Bars: ASTM A615, Grade 60, deformed steel, which shall satisfy the exceptions in ACI Building Code, AASHTO and Federal Specifications.
 - 2. Welded Wire Fabric: ASTM A185.
 - 3. Metal Accessories: CRSI Manual of Standard Practice for Reinforcing Concrete Construction
- G. Formwork:
 - 1. Provide formwork designed and constructed in accordance with ACI 347R to required dimensions, plumb, straight, and mortar tight.
 - 2. Concrete Support Forms: Spirally constructed of laminated plies of fiber with a non-water sensitive adhesive and wax impregnated exterior surface.
 - a. Sonoco Products Company, Sonotube Fibre Form.
 - b. Wood, plywood, metal or other material, approved by the Engineer, suitable to obtain type of finish required.

PART 3 EXECUTION**3.01 PLACEMENT OF FORMWORK**

- A. Erection:
 - 1. General: Construct forms in accordance with ACI 347R to required dimensions, plumb, straight, mortar tight, and paste tight where appearance is important.
 - 2. Securely brace and shore forms to prevent displacement, bowing and pillowing, and to safely support imposed concrete load.
 - 3. Earth form to undisturbed earth is required and permitted only for concrete reaction backings.
- B. Form Removal:
 - 1. Remove forms in accordance with ACI 347R without damage to concrete and in a manner to ensure complete safety and serviceability of the structure.

3.02 PLACEMENT OF REINFORCING STEEL

- A. Continue reinforcement across or through construction joints.
- B. Place metal reinforcement accurately and securely brace against displacement within permitted tolerances and in accordance with ACI 318 through the use of reinforcing accessories.
- C. When obstructions interfere with the placement of reinforcement, pass such obstructions by placing reinforcing around it. Do not bend the reinforcing to clear the obstructions.
- D. Install welded wire fabric as indicated, lapping joints eight inches and wiring securely. Extend welded wire fabric to within two inches of sides and ends of slabs.
- E. Do not lay metal reinforcement on formwork.
- F. Place slab reinforcement supported from the ground on concrete blocks of the correct height and having a compressive strength equal to or greater than the specified compressive strength of concrete being placed. Use concrete blocks not larger than 3 inches by 3 inches with a height equal to required bottom steel cover.

3.03 PLACEMENT OF NEW CONCRETE

- A. Mix, place, cure and finish concrete as specified in applicable sections of ACI 301, 304R, 305R and 306.1.
- B. Space sidewalk construction joints with joint filler at 16 feet maximum. Immediately after sidewalk concrete has received a floated finish, give surface a coarse transverse scored texture by drawing a broom across the surface.
- C. Surfaces shall be protected from the direct rays of the sun to prevent cracking and crazing.
- D. Notify Engineer at least 48 hours prior to proposed placement of concrete.
- E. Testing and Inspection:
 - 1. During the entire period when concrete is being placed, provide testing services by an independent testing laboratory at no cost to the Owner.
 - 2. The Engineer reserves the right to make any and all tests as he deems necessary during the progress of the work.
 - 3. Failure of the independent testing laboratory or the Engineer to detect defective work will not prevent rejection when defect is later discovered, nor will it obligate the Engineer for final acceptance.
 - 4. The Independent Testing Laboratory shall:
 - a. Obtain composite samples in accordance with ASTM C172.
 - b. Mold and cure three test specimens for each strength test in accordance with ASTM C31 and as follows:
 - 1) Concrete compression test: Use standard 6 inch x 12 inch cylinders.
 - 2) Identify each test by number, mix, amount of admixture, origin of sample in the structure, the date the test specimen was made, the date the test specimen was tested, the amount of slump determined, and the compressive and flexural

strength test results.

3) Test Methods:

- (a) Compressive strength test: ASTM C39.
- (b) Test one specimen at 7 days for information and test two specimens at 28 days for acceptance.
- (c) Perform one strength test for each 50 cu. yds. of concrete poured, unless waived by the Engineer, but not less than one test for each structure.
- c. Make slump tests for each truck load upon truck arrival at the job-site and whenever consistency of concrete appears to vary in accordance with ASTM C143.
- d. Make air content tests for each truck load upon truck arrival at the job-site in accordance with ASTM C231 or ASTM C173.
- e. Prepare and submit all reports required in the various standards and specifications referenced herein.
 - 1) Distribution of reports shall be:
 - (a) Two copies to the Engineer.
 - (b) One or more copies, as required, to the Contractor.
- f. Immediately notify the Contractor and the Engineer of any test results which do not conform to the Specification requirements.

F. Evaluation and Acceptance:

- 1. The strength level of the concrete will be considered satisfactory if the average of two 28 day compressive strength tests equal or exceed specified strength.
- 2. If the concrete fails to meet the strength requirements, the Contractor shall resolve the situation to the Engineer's approval at no additional contract cost.

3.04 REPAIRS TO CONCRETE SURFACES

- A. Cut out concrete found to be cracked or spalled to a sound surface. Remove loose concrete and rust on exposed reinforcement and clean surface of dust, dirt, and foreign matter using stiff nylon or bristle brushes and clean water.
- B. Prepare cut away portions according to manufacturer's instructions.
- C. Fill deteriorated areas with approved patching cement in successive layers not exceeding manufacturer's instructions for application. This also applies to surface voids determined by the Engineer to need patching.
- D. Final patching to restore original surfaces and profile.

END OF SECTION

SECTION 03 30 00**CAST-IN-PLACE CONCRETE****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Foundation walls.
 - 3. Slabs-on-grade.
 - 4. Suspended slabs.
 - 5. Concrete toppings.
 - 6. Masonry walls.
- B. Related Sections:
 - 1. Section 016000 "Product Requirements" for Concrete cement and aggregate must be extracted, processed and manufactured at a facility within 500 miles of the project site.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete mixture. Include alternate mix when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
- E. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.

5. Curing compounds.
 6. Floor and slab treatments.
 7. Bonding agents.
 8. Adhesives.
 9. Semirigid joint filler.
 10. Joint-filler strips.
 11. Repair materials.
- F. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
1. Aggregates.
- G. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
1. Floor slabs shall be finished to a minimum flatness F-number Ff=30 and a minimum levelness F-number Fl=25 in any direction (U.N.O.).
 2. Exterior concrete stairs shall have the treads and landings sloped approximately 1/8" per 12" to assure that no water rests on a riser or the landing.
- H. Field quality-control reports.
1. Submit results of compression cylinders and grout cubes.
 2. Test Reports: Including strength and density of furnished product.
 3. Inspection reports: certifying rebar and welded wire fabric placement, etc.
- I. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for formwork and shoring and reshoring installations that are similar to those indicated for this Project in material, design, and extent.
- C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
- D. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- F. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."

- G. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.
 - 1. Avoid damaging coatings on steel reinforcement.
 - 2. Repair damaged epoxy coatings on steel reinforcement according to ASTM D 3963.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - c. Structural 1, B-B or better; mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- E. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- F. Chamfer Strips: Wood, metal, PVC, or rubber strips, **3/4 by 3/4 inch**, minimum.
- G. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- H. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- I. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than **1 inch** to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than **1 inch** in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.
- B. Reinforcing Bars: ASTM A 615/, **Grade 60**, deformed.
- C. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from galvanized steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.
- B. Joint Dowel Bars: Plain-steel bars, ASTM A 615, **Grade 60**. Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I/II supplement with the following which shall have 25% by weight of the total cementitious material:
 - a. Fly Ash: ASTM C 618, Class F or C.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
 1. Class: Moderate weathering region, but not less than 3M.
 2. Nominal Maximum Aggregate Size: **3/4 inch**.
 3. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, except that less than 8 percent may be retained on coarsest sieve and on **No. 50** sieve, and less than 8 percent may be retained on sieves finer than **No. 50**.
- C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately **9 oz./sq. yd.** dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- G. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- H. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Evaporation Retarder:
 - a. Cimfilm; Axim Concrete Technologies.
 - b. Finishing Aid Concentrate; Burke Group, LLC (The).
 - c. Spray-Film; ChemMasters.
 - d. Aquafilm; Conspec Marketing & Manufacturing Co., Inc.
 - e. Sure Film; Dayton Superior Corporation.
 - f. Eucobar; Euclid Chemical Co.
 - g. Vapor Aid; Kaufman Products, Inc.
 - h. Lambco Skin; Lambert Corporation.
 - i. E-Con; L&M Construction Chemicals, Inc.
 - j. Confilm; Master Builders, Inc.
 - k. Waterhold; Metalcrete Industries.
 - l. Rich Film; Richmond Screw Anchor Co.
 - m. SikaFilm; Sika Corporation.
 - n. Finishing Aid; Symons Corporation.
 - o. Certi-Vex EnvioAssist; Vexcon Chemicals, Inc.
 - 2. Clear, Waterborne, Membrane-Forming Curing Compound:
 - a. AH Clear Cure WB; Anti-Hydro International, Inc.
 - b. Spartan Cote WB; Burke Group, LLC (The).
 - c. Safe-Cure & Seal 20; ChemMasters.
 - d. High Seal; Conspec Marketing & Manufacturing Co., Inc.
 - e. Safe Cure and Seal; Dayton Superior Corporation.
 - f. Diamond Clear VOX; Euclid Chemical Co.
 - g. SureCure; Kaufman Products Inc.
 - h. Glazecote Sealer-20; Lambert Corporation.
 - i. Dress & Seal WB; L&M Construction Chemicals, Inc.
 - j. Vocomp-20; W. R. Meadows, Inc.
 - k. Metcure; Metalcrete Industries.
 - l. Cure & Seal 100E; Nox-Crete Products Group, Kinsman Corporation.
 - m. Rich Seal 14 percent E; Richmond Screw Anchor Co.
 - n. Kure-N-Seal W; Sonneborn, Div. of ChemRex, Inc.
 - o. Florseal W.B.; Sternson Group.
 - p. Cure & Seal 14 percent; Symons Corporation.

- q. Horncure 100; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
- r. Hydroseal; Unitex.
- s. Vexcon Starseal 309; Vexcon Chemicals, Inc.
- 3. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:
 - a. Klear-Kote Cure-Sealer-Hardener, 30 percent solids; Burke Group, LLC (The).
 - b. Polyseal WB; ChemMasters.
 - c. UV Safe Seal; Lambert Corporation.
 - d. Lumiseal WB Plus; L&M Construction Chemicals, Inc.
 - e. Vocomp-30; W. R. Meadows, Inc.
 - f. Metcure 30; Metalcrete Industries.
 - g. Vexcon Starseal 1315; Vexcon Chemicals, Inc.

2.7 RELATED MATERIALS

- A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- B. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
 - 1. Type: Class II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
 - 2. Type: Class I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 - 3. Type: Class IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- C. Reglets: Fabricate reglets of not less than 0.0217-inch thick galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- D. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.8 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5700 psi at 28 days when tested according to ASTM C 109/C 109M.

2.9 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Slabs-on-Grade, Piers, Footings: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 3000 psi at 28 days.
 2. Minimum Cementitious Materials Content: 517 lb/cu. yd.
 3. Maximum Water-Cementitious Materials Ratio: 0.50 maximum.
 4. Slump Limit: 4 inches plus or minus 1 inch.
 5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
- B. Exterior Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 3500 psi at 28 days.
 2. Minimum Cementitious Materials Content: 517 lb/cu. yd.
 3. Maximum Water-Cementitious Materials Ratio: 0.45 maximum.
 4. Slump Limit: 4 inches plus or minus 1 inch.
 5. Air Content: Used in concrete exposed to weather. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 5.0 to 7.0 percent, unless otherwise indicated.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to COORDINATE SLUMP WITH SPEC SETION 033000-2.10-AASTM C 94 and ASTM C 1116, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 - 1. Class C, 1/2 inch.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
 - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Do not chamfer corners or edges of concrete.
- J. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- K. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- L. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- M. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor bolts, accurately located, to elevations required.
 - 2. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete provided concrete is hard

enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

- B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
 - 1. 28-day design compressive strength.
 - 2. At least 70 percent of 28-day design compressive strength.
 - 3. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
 - 4. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least **1-1/2 inches** into concrete.
 - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Architect.
- C. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.
- D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- E. Deposit concrete in forms in horizontal layers no deeper than **24 inches** and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
 1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least **6 inches** into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Scream slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When air temperature has fallen to or is expected to fall below **40 deg F (4.4 deg C)**, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than **50 deg F (10 deg C)** and not more than **80 deg F (27 deg C)** at point of placement.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- H. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below **90 deg F (32 deg C)** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.
- 3.7 FINISHING FORMED SURFACES
- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding **1/8 inch** in height.
1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
 2. Do not apply rubbed finish to smooth-formed finish.
- C. Rubbed Finish: Apply the following to smooth-formed finished concrete:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
- 3.8 FINISHING FLOORS AND SLABS
- A. General: Comply with recommendations in ACI 302.1R for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

- B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h** before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with **12-inch** lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least **12 inches**, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy

rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.12 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of **1/4 inch** to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes **1 inch** or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least **3/4 inch** clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes **1 inch** or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding **5 cu. yd.**, but less than **25 cu. yd.**, plus one set for each additional **50 cu. yd.** or fraction thereof.
 2. Testing Frequency: Obtain at least one composite sample for each **100 cu. yd.** or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 3. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 5. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is **40 deg F (4.4 deg C)** and below and when **80 deg F (27 deg C)** and above, and one test for each composite sample.
 6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 7. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

- a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
- 8. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
 - a. Test two field-cured specimens at 7 days and two at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than **500 psi**.
- E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION

SECTION 04 05 11
MASONRY MORTARING AND GROUTING

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Mortar for masonry.
- B. Grout for masonry.

1.02 REFERENCE STANDARDS

- A. ASTM C91/C91M - Standard Specification for Masonry Cement.
- B. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
- C. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- D. ASTM C476 - Standard Specification for Grout for Masonry.
- E. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
- F. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength.
- G. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
- H. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.
- I. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry.

1.03 SUBMITTALS

- A. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- B. Samples: Submit two samples of mortar, illustrating mortar color and color range.
- C. Reports:
 - 1. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.
 - 2. Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.06 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS**2.01 MORTAR AND GROUT APPLICATIONS**

- A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.
 - 1. Exception: If a specified mix design is not available in a premixed dry package, provide equivalent mix design using standard non-premixed materials.
- B. Mortar Color: Natural gray unless otherwise indicated.
- C. Mortar Mix Designs: ASTM C270, Property Specification.
 - 1. Exterior, Non-loadbearing Masonry: Type N.
- D. Grout Mix Designs:
 - 1. Bond Beams and Lintels: 2500 psi strength at 28 days; 8-10 inches slump; mix in accordance with ASTM C476.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - 2. Engineered Masonry: 2500 psi strength at 28 days; 8-10 inches slump; mix in accordance with ASTM C476.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

- A. Packaged Dry Material for Mortar for Unit Masonry: Premixed masonry cement and mason's sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Type: Types as scheduled in this section.
 - 2. Color: Mineral pigments added as required to produce approved color sample.
 - 3. Water repellent mortar for use with water repellent masonry units.
- B. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
 - 1. Type: As scheduled in this section.
- C. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
 - 1. Color(s): As selected by Architect from manufacturer's full range.
- D. Water: Clean and potable.
- E. Accelerating Admixture: Nonchloride type for use in cold weather.
- F. Integral Water Repellent Admixture: Polymeric liquid admixture added to mortar at the time of manufacture.
 - 1. Performance of Mortar with Integral Water Repellent:
 - a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours:
 - 1) No water visible on back of wall above flashing at the end of 24 hours.
 - 2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
 - 3) No more than 25 percent of wall area above flashing visibly damp at end of test.
 - b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
 - c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.
 - 2. Use only in combination with masonry units produced with integral water repellent admixture.

2.03 MORTAR MIXING

- A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.

- C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.
- D. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- E. Do not use anti-freeze compounds to lower the freezing point of mortar.
- F. If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.
- C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 PREPARATION

- A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

- A. Install mortar and grout to requirements of section(s) in which masonry is specified.
- B. Do not install grout in lifts greater than 16 inches without consolidating grout by vibration during placement and reconsolidating after initial water loss has occurred and before plasticity is lost.

3.03 GROUTING

- A. Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.
- B. Low-Lift Grouting:
 - 1. Limit height of pours to 48 inches.
 - 2. Limit height of masonry to 16 inches above each pour.
 - 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
 - 4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.

END OF SECTION

**SECTION 04 20 00
UNIT MASONRY****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Concrete block.
- B. Mortar and grout.
- C. Reinforcement and anchorage.
- D. Flashings.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- E. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- G. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
- H. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
- I. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- J. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength.
- K. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
- L. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry.
- M. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing.
- N. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls.
- O. BIA Technical Notes No. 46 - Maintenance of Brick Masonry.
- P. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and masonry accessories.
- C. Shop Drawings: Indicate reinforcement bar sizes, spacings, quantities, bending and cutting schedules, supporting and spacing devices, and accessories.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- E. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the

manufacture of concrete block.

- F. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Manufacturers
1. York Building Products Co.
 2. Or Approved Equal.
- B. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
 2. Special Shapes: Provide non-standard blocks configured for corners and bond beams.
 - a. Provide square-edged units for outside corners.
 3. Load-Bearing Units and Non-Load Bearing: ASTM C90, normal weight.
 - a. Both hollow and solid block, as indicated.
 - b. Exposed Faces: Manufacturer's standard color and texture except where indicated.
 4. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
 - a. Use for units exposed to exterior.
 - b. Performance of Units with Integral Water Repellent:
 - 1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
 - (a) No water visible on back of wall above flashing at the end of 24 hours.
 - (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
 - (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
 - 2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
 - 3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
 - c. Use only in combination with mortar that also has integral water repellent admixture.
 - d. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
 - e. Manufacturers:
 - 1) GCP Applied Technologies; Dry-Block: www.gcpat.com
 - 2) BASF; MasterPel 240.
 - 3) Eucon Blocktite by Euclid Chemical.
 - 4) Aquashield by Ridgeview Concrete Technologies.
 - 5) Or approved equal.

2.02 MORTAR AND GROUT MATERIALS

- A. Mortar and Grout: As specified in Section 04 05 11.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers for Joint Reinforcement and Anchorage Products:
1. Blok-Lok Limited: www.blok-lok.com/#sle.

2. Hohmann & Barnard, Inc: www.h-b.com/#sle.
 3. WIRE-BOND www.wirebond.com/#sle.
 4. Or Approved Equal.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.
- C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
1. Type: Ladder.
 2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M Class B.
 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

2.04 FLASHINGS

- A. Embedded Pan Flashing System for Single-Wythe CMU: System of UV-resistant high-density polyethylene CMU cell flashing pans and interlocking CMU web covers. Cell flashing pans have integral weep spouts, designed to resist insect intrusion and clogging with mortar, to be built into mortar bed joints and extend into each ungrouted cell. Attached web covers will span from pan to pan providing protection over the web and the joints of the CMU. Include manufacturer's accessory drainage mesh.
1. Basis of Design: BlockFlash, manufactured by Mortar Net Solutions: www.mortarnet.com.
- B. Metal Flashing Materials:
1. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.
- C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
- D. Drip Edge: Stainless steel; angled drip with hemmed edge; AISI Type 304, 18-8 soft temper, 2-D finish, 0.0156 in. thickness; 3 inches deep; with adhesive strip on top surface.
- E. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with adjoining materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
- C. Clean reinforcement of loose rust.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.

- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Flush.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- F. Interlock intersections and external corners.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Cut mortar joints flush where cement parging is required.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Reinforcement Bars: Secure at locations indicated and to avoid displacement during grouting. Minimum spacing between bars or to masonry surfaces shall be one bar diameter.
 - 1. Welding of splices is not permitted.
- B. Joint Reinforcement: Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- C. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- D. Place continuous joint reinforcement in first and second joint below top of walls.
- E. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.
- F. Lap joint reinforcement ends minimum 6 inches.
- G. Reinforced Hollow Unit Masonry: Keep vertical cores to be grouted clear of mortar, including bed area of first course.
 - 1. Bond Beams, Masonry Lintels, and Similar Conditions: At bond beams or other locations for horizontally reinforced masonry, provide special masonry units or saw to accommodate reinforcement.

3.07 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install flashings to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Install single-wythe CMU pan flashing system in bed joints of CMU walls where indicated and to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges

located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Attached web covers will span from pan to pan providing protection over the web and the joints of the CMU. Install drainage mesh in open cells directly above pans.

- C. Extend metal flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel flat drip with hemmed edge.
- D. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.08 GROUTED COMPONENTS

- A. Lap splices for horizontal bars in bond beams minimum 24 bar diameters. Lap slices for vertical bars minimum 48 bar diameters.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.
 - 1. Refer to Section 04 0511 - Mortar and Masonry Grout.

3.09 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.10 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and other penetrations. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.11 PARGING

- A. Dampen masonry walls prior to parging.
- B. Scarify each parging coat to ensure full bond to subsequent coat.
- C. Parge masonry walls in two uniform coats of mortar to a total thickness of 3/4 inch.
- D. Steel trowel surface smooth and flat with a maximum surface variation of 1/8 inch per foot.
- E. Strike top edge of parging at 45 degrees.

3.12 FIELD QUALITY CONTROL

- A. An independent testing agency employed by Contractor and approved by Owner will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.
- C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.13 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.

- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.14 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

**SECTION 04 72 00
CAST STONE MASONRY**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Architectural cast stone.
- B. Units required are indicated on drawings as "cast stone".
- C. Units required are:
 - 1. Exterior wall units, including wall caps and coping.

1.02 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- C. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- G. ASTM C150/C150M - Standard Specification for Portland Cement.
- H. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- I. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
- J. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
- K. ASTM C1364 - Standard Specification for Architectural Cast Stone.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Test results of cast stone components made previously by the manufacturer.
- C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.
- D. Mortar Color Selection Samples.
- E. Verification Samples: Pieces of actual cast stone components not less than 6 inches square, illustrating range of color and texture to be anticipated in components furnished for the project.
- F. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. A firm with a minimum of 5 years experience producing cast stone of types required for project.
 - 2. Current producer member of the Cast Stone Institute or the Architectural Precast Association.
 - 3. Manufacturer's production facility currently holds a Plant Certification from the Cast Stone Institute or the Architectural Precast Association.
 - 4. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.05 MOCK-UP

- A. Provide full size cast stone components for installation in mock-up of planter.
- B. See Section 01 40 00 - Quality Requirements for additional requirements.
- C. Approved mock-up will become standard for appearance and workmanship.
- D. Mock-up may remain as part of the completed work.
- E. Remove mock-up not incorporated into the work and dispose of debris.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.
- B. Number each piece individually to match shop drawings and schedule.
- C. Store cast stone components and installation materials in accordance with manufacturer's instructions.
- D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.
- E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.
- F. Store mortar materials where contamination can be avoided.
- G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Architectural Cast Stone:
 - 1. Any current producer member of the Architectural Precast Association.
 - 2. Any current producer member of the Cast Stone Institute.

2.02 ARCHITECTURAL CAST STONE

- A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, complying with ASTM C1364.
 - 1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
 - 2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
 - 3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
 - 4. Color: Selected by Architect from manufacturer's full range.
 - 5. Remove cement film from exposed surfaces before packaging for shipment.
- B. Shapes: Provide shapes indicated on drawings.
 - 1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
 - 2. Unless otherwise indicated on drawings, provide:
 - a. Wash or slope of 1:12 on exterior horizontal surfaces.
 - b. Drips on projecting components, wherever possible.
 - c. Raised fillets at back of sills and at ends to be built in.
- C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI 318.

1. Pieces More than 24 inches in Any Dimension: Provide full length two-way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.03 MATERIALS

- A. Portland Cement: ASTM C150/C150M.
 1. For Mortar: Type I or II, except Type III may be used in cold weather.
- B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.
- C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.
- D. Pigments: ASTM C979, inorganic iron oxides; do not use carbon black.
- E. Admixtures: ASTM C494/C494M.
- F. Water: Potable.
- G. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, galvanized.
 1. Galvanized in accordance with ASTM A767/A767M, Class I.
- H. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.
- I. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.
- J. Mortar: Portland cement-lime, as specified in Section 04 05 11 ; do not use masonry cement.
- K. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.
- B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

- A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 20 00.
- B. Mechanically anchor cast stone units indicated; set remainder in mortar.
- C. Setting:
 1. Drench cast stone components with clear, running water immediately before installation.
 2. Set units in a full bed of mortar unless otherwise indicated.
 3. Fill vertical joints with mortar.
 4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

- A. Joints: Make all joints 3/8 inch, except as otherwise detailed.
 1. Rake mortar joints 3/4 inch for pointing.
 2. Remove excess mortar from face of stone before pointing joints.
 3. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
 4. Leave the following joints open for sealant:
 - a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
 - b. Joints in projecting units.
 - c. Joints between rigidly anchored units, including soffits, panels, and column covers.
 - d. Joints below lugged sills and stair treads.
 - e. Joints below ledge and relieving angles.
 - f. Joints labeled "expansion joint".

B. Installation Tolerances:

1. Variation from Plumb: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet or more.
2. Variation from Level: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet, or 3/8 inch maximum.
3. Variation in Joint Width: Not more than 1/8 inch in 36 inches or 1/4 of nominal joint width, whichever is less.
4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.04 REPAIR

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
- B. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.
- C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

- A. Clean completed exposed cast stone after mortar is thoroughly set and cured.
 1. Wet surfaces with water before applying cleaner.
 2. Apply cleaner to cast stone in accordance with manufacturer's instructions.
 3. Remove cleaner promptly by rinsing thoroughly with clear water.
 4. Do not use acidic cleaners.
- B. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

3.06 PROTECTION

- A. Protect completed work from damage.
- B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

**SECTION 04 73 00
MANUFACTURED STONE MASONRY**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Adhered manufactured stone masonry veneer (AMSMV).
- B. Installation materials.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 04 05 11 - Masonry Mortaring and Grouting: Site-mixed mortars.
- B. Section 04 20 00 - Unit Masonry: Through-wall masonry flashings.

1.03 REFERENCE STANDARDS

- A. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar.
- B. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- C. ASTM C847 - Standard Specification for Metal Lath.
- D. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster.
- E. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.
- F. ASTM C1670/C1670M - Standard Specification for Adhered Manufactured Stone Masonry Veneer Units.
- G. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.
- H. ASTM C1780 - Standard Practice for Installation Methods for Adhered Manufactured Stone Masonry Veneer.
- I. ICC-ES AC51 - Acceptance Criteria for Precast Stone Veneer.
- J. MVMA (AMSV) - Installation Guide and Detailing Options for Compliance with ASTM C1780 For Adhered Manufactured Stone Veneer.
- K. NCMA TEK 20-01 - Key Installation Checkpoints for Manufactured Stone Veneer.
- L. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for AMSMV units, mortar, and lath, including:
- C. Shop Drawings: Submit detail drawings depicting proper installation and flashing techniques. Coordinate locations with those found on drawings.
- D. Selection Samples: For each finish product specified, provide two standard sample boards consisting of small-scale pieces of veneer units representing manufacturer's full range of available colors and patterns. One board shall be sent to the Architect for review, one shall be sent to the Owner.
- E. Verification Samples: For each finish product specified, two samples, minimum size 12 inches square, representing actual product, color, patterns and texture.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum twenty years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified, with at least five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Prevent mechanical damage and contamination by other materials.
- C. Protect products from precipitation combined with freezing temperatures. Do not install products with visible frozen moisture.
- D. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.

1.07 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.
- B. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- C. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Provide 50 year manufacturer warranty for AMSMV.

PART 2 PRODUCTS

2.01 ADHERED MANUFACTURED STONE MASONRY VENEER (AMSMV)

- A. AMSMV: Cast masonry units using a mixture of cement, lightweight aggregates, concrete additives and color pigments to replicate appearance of natural stone and designed to be applied with a cementitious mortar to a backing surface, complying with ASTM C1670/C1670M and ICC-ES AC51.
 - 1. Style: Basis of Design: Eldorado Stone, LLC. Cantina.
 - 2. Color, Texture, Range, Special Shapes: Match Basis of Design colors.
- B. AMSMV Trim: Provide wall caps, keystones, quoins, and corner stones as indicated on the drawings.

2.02 MORTAR APPLICATIONS

- A. At Contractor's option, mortar may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.
- B. Mortar Color: Natural gray unless otherwise indicated.
- C. Dash Bond Coat: One part Portland cement, with maximum two parts sand.
- D. Scratch Coat Mortars: Scratch coat mortars for application directly to metal lath.
 - 1. Site-Mixed: ASTM C270, Type N or Type S, using the Proportion Method as specified in Section 04 05 11.
 - 2. Prepackaged/Preblended: ASTM C1714/C1714M, Type N or Type S.
- E. Setting Bed Mortars: Setting bed used to adhere AMSMV units to scratch coat mortar or to bondable concrete or concrete masonry.
 - 1. Site-Mixed: ASTM C270, Type S, using the Proportion Method as specified in Section 04 05 11.
 - 2. Prepackaged/Preblended: ASTM C1714/C1714M, Type S.

- F. Pointing Mortars: Pointing or grouting mortars used to fill the joints between individual AMSMV units once the setting bed mortar has sufficiently cured.
 - 1. Site-Mixed: ASTM C270, Type N or Type S, using the Proportion Method as specified in Section 04 05 11.
 - 2. Prepackaged/Preblended: ASTM C1714/C1714M, Type N or Type S.
 - 3. Color: Mineral oxide pigment; Match mortar color.

2.03 ACCESSORIES

- A. Metal Lath:
 - 1. Diamond Mesh Metal Lath: ASTM C847, galvanized, self-furring, installed per manufacturer's written installation instructions.
 - a. Weight: 2.5 lb/sq yd, minimum.
- B. Flashings: As specified in Section 04 20 00.
- C. Bonding Compound: Provide type recommended for bonding scratch coat to solid surfaces, complying with ASTM C932.
- D. Cleaning Solution: Non-acidic, not harmful to AMSMV work or adjacent materials, approved by AMSMV manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that backup wall system construction complies with AMSMV manufacturer's instructions, MVMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51.
- B. Verify that substrates to receive mortar scratch coat or setting bed comply with AMSMV manufacturer's instructions, MVMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51:
 - 1. Concrete Masonry: Verify joints are cut flush and surface is ready to receive mortar setting bed. Verify no bituminous or water repellent coatings exist on masonry surface.
- C. Verify that related items provided under other sections are properly sized and located.
- D. Verify that built-in items are in proper location, and ready for installation of AMSMV.

3.02 PREPARATION

- A. Dampen masonry surfaces to reduce excessive suction.
- B. Clean concrete surfaces of foreign matter using approved acid solutions, solvents, or detergents, and then rinse surfaces thoroughly with clean water.
- C. Roughen smooth concrete surfaces and apply bonding compound in accordance with manufacturer's written installation instructions.
- D. Apply dash bond coat to solid bases and moist cure for at least 24 hours before applying setting bed.

3.03 INSTALLATION - SCRATCH COAT

- A. Apply mortar scratch coat of 1/2 inch nominal to cover metal lath in accordance with ASTM C926. Scratch surface when somewhat firm. If scratch coat dries before applying setting bed mortar and AMSMV, moisten scratch coat by misting it with water.

3.04 INSTALLATION - AMSMV

- A. Install AMSMV with a cementitious mortar setting bed to a scratch coat backing surface, in accordance with AMSMV manufacturer's instructions, MVMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51.
- B. Mortar Joints: Concave.
- C. Caps: Install capstones where located on drawings.
- D. Seal all joints at wall openings and penetrations with sealant approved for use with AMSMV.

3.05 INSTALLATION - MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

3.06 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Clean AMSMV in accordance with manufacturer's installation instructions.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.07 PROTECTION

- A. Protect finished work from rain during and for 48 hours following installation.

END OF SECTION

SECTION 05 12 00**STRUCTURAL STEEL FRAMING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Structural steel.
 - 2. Architecturally exposed structural steel.
 - 3. Grout.
- B. Related Sections:
 - 1. Division 1 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Division 5 Section "Steel Deck" for field installation of shear connectors.
 - 3. Division 5 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame, miscellaneous steel fabrications, and other metal items not defined as structural steel.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges", that support design loads.
- B. Architecturally Exposed Structural Steel: Structural steel designated as architecturally exposed structural steel in the Contract Documents.

1.4 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction".
 - 2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections.
- B. Construction: Combined system of moment frame, braced frame, and shear walls.
- C. Moment Connections: Type FR, fully restrained.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.
 - 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 2. Include embedment drawings.
 - 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 - 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.

5. For structural-steel connections indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Welding certificates.
- D. Qualification Data: For testing agency.
- E. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
 1. Structural steel including chemical and physical properties.
 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 3. Shear stud connectors.
 4. Shop primers.
 5. Nonshrink grout.
- F. Source quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed structural steel work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the Work.
- C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- D. Comply with applicable provisions of the following specifications and documents:
 1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
 3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
 4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
 5. AISC's "Specification for Allowable Stress Design of Single-Angle Members."
 6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 1. Fasteners may be repackaged provided Contractor's testing and inspecting agency observes repackaging and seals containers.
 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.8 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS**2.1 STRUCTURAL-STEEL MATERIALS**

- A. W-Shapes: ASTM A 992/A 992M, Grade 50.
- B. Channels, Angles: ASTM A 36.
- C. Plate and Bar: ASTM A 36.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
 - 1. Weight Class: Standard.
 - 2. Finish: Black.
- F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - 1. Finish: Plain.
- B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- C. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
 - 1. Configuration: as indicated.
 - 2. Nuts: ASTM A 563 hex carbon steel.
 - 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 4. Washers: ASTM F 436 hardened carbon steel.
 - 5. Finish: Plain.
- D. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
 - 1. Nuts: ASTM A 563 hex carbon steel.
 - 2. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 3. Washers: ASTM F 436 hardened carbon steel.
 - 4. Finish: Plain.

2.3 PRIMER

- A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
 - 1. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
 - 2. Mark and match-mark materials for field assembly.
 - 3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Architecturally Exposed Structural Steel: Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel identified as architecturally exposed structural steel.
 - 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, seam marks, roller marks, rolled trade names, and roughness.
 - 2. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning" or SSPC-SP 3, "Power Tool Cleaning."
- G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- H. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
 - 1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 1. SSPC-SP 2, "Hand Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 1. Prime paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
 2. Galvanize lintels, shelf angles and welded door frames attached to structural-steel frame and located in exterior walls.
 3. All structural steel, bolts, connectors and fasteners exposed to moisture shall be galvanized.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
 1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base, Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- G. Do not use thermal cutting during erection.
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- I. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened (U.N.O.).
- B. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds
 - 1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

2. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
 - a. Grind butt welds flush.
 - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to inspect the erected steel in the field. This inspection shall also include alignment, position of member, welds and high-strength bolted connections, painting, etc. The inspection agency shall also submit to the Structural Engineer certified reports showing results of these inspections.
- B. Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.
 1. Should deficiencies in welds be noted by visual inspection then field welds may be tested according to AWS D1.1 and the following inspection procedures, at Owner's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
 2. In addition to the visual inspection as indicated above, ultrasonic testing of all groove welds which are in tension and 25% of all groove welds which are in compression shall be required. The testing shall be done using "Branson" ultrasonic testing equipment, or other approved non-destructive testing systems. If faulty welds are discovered by this testing, costs of repair and any additional tests shall be borne by the Contractor.
- D. Should visual inspection identify deficiencies in welded shear connectors, then field-welded shear connectors may be tested according to requirements in AWS D1.1 for stud welding at Owner's option as follows:
 1. Perform bend tests if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
 2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.
- E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- F. Submit certified field reports, indicating that the steel, including corrected deficiencies as erected meets all of the requirements of the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.
- B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel where primer is damaged or

missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
- C. Touchup Painting: Cleaning and touchup painting are specified in Section 099100 "Painting."

END OF SECTION

**SECTION 05 50 00
METAL FABRICATIONS**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 04 26 13 - Masonry Veneer: Placement of metal fabrications in masonry.
- D. Section 32 33 00 - Site Furnishings: Steel pipe bollards to match other site furnishings.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- F. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- G. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
- H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- I. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- J. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- K. AWS D1.2/D1.2M - Structural Welding Code - Aluminum.
- L. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel.
- M. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets on --.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.
 - a. Include the following, as applicable:
 - 1) Design criteria.

- 2) Engineering analysis depicting stresses and deflections.
- 3) Member sizes and gauges.
- 4) Details of connections.
- 5) Support reactions.
- 6) Bracing requirements.
- D. Designer's Qualification Statement.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

- A. Design shop fabricated steel and aluminum items under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- F. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5052 alloy, H32 or H22 temper.
- C. Bolts, Nuts, and Washers: Stainless steel.
- D. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.
- D. After erection, prime welds, abrasions and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

**SECTION 06 73 00
COMPOSITE DECKING**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Plastic composite decking.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Supporting assemblies.
- B. Section 04 20 00 - Unit Masonry: Supporting assemblies.

1.03 REFERENCE STANDARDS

- A. ACMA (FRP) - Guidelines and Recommended Practices for Fiber-Reinforced-Polymer (FRP) Architectural Products.
- B. ANSI/ACMA/PIC (CSP) - Code of Standard Practice, Industry Guidelines for Fabrication and Installation of Pultruded FRP Structures.
- C. ASTM D7032 - Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails.
- D. ICC (IBC) - International Building Code.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's published product literature:
 - 1. Include sizes and profiles; structural design data.
- C. Samples: Submit two samples, 12 inches by 12 inches in size, indicating specified texture and finish.
- D. Manufacturer's Instructions: Manufacturer's published installation instructions.
- E. Source Quality Control Submittals: Report documenting compliance with quality control section of ANSI/ACMA/PIC (CSP).
- F. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installing work of type specified in this section, and with at least three years of documented experience and approved by manufacturer.
- B. Documents at Project Site: Maintain at project site one copy of manufacturer's installation instructions, installation drawings, shop drawings, reference standard documents, and ANSI/ACMA/PIC (CSP).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original, unbroken packages, or bundles bearing label of manufacturer and component identification markings.
- B. Store materials under cover and elevated above grade.
- C. Package and label adhesives separately; store in dry, indoor facility.
- D. Store adhesives at minimum ambient temperature of 70 degrees F and maximum 85 degrees F, in ventilated area, and as required by manufacturer's instructions.
- E. Protect decking units from damage including cracking or chipping.
- F. Handle and store FRP components in compliance with handling and storage requirements of ACMA (FRP).

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

- B. Correct defective Work within five year period after Date of Substantial Completion.
- C. Provide manufacturer's standard limited warranty for products.
- D. Provide manufacturer's standard 25-year warranty against splintering, splitting, rot, and decay.

PART 2 PRODUCTS

2.01 PLASTIC COMPOSITE DECKING

- A. Manufacturers:
 - 1. AZEK Building Products; _____: www.timbertech.com/#sle.
 - 2. Trex Company, Inc; _____: www.trex.com/#sle.
 - 3. Wolf Home Products; Wolf Perspective Decking: www.wolfhomeproducts.com.com/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Plastic Composite Decking: Plastic composite decking boards with radiused corners consisting of capped, semi-capped, or solid plastic-cellulose composite units; for exterior applications where ICC (IBC) permits combustible construction; complying with ASTM D7032.
 - 1. Deck Board Size: 7/8 inch by 3-1/8 inches.
 - 2. Fascia Board Size: 3/4 inch by 7-1/4 inches.
 - 3. Color: As indicated on drawings.
- C. Accessories:
 - 1. Manufacturer's standard fasteners and anchorage devices.

PART 3 EXECUTION

3.01 EXAMINATION - GENERAL

- A. Verify dimensions, tolerances, and interfaces with related work; verify location of supporting assemblies.
- B. Examine field conditions to confirm that building lines, grades, and elevations will allow proper installation of decking.
- C. Verify support work has been constructed to allow accurate placement and alignment of anchor bolts and other connections to supporting assemblies.
- D. Verify substrates to determine that conditions are acceptable for installation of decking in accordance with manufacturer's written instructions.

3.02 INSTALLATION - PLASTIC COMPOSITE DECKING

- A. Install decking in accordance with manufacturer's published instructions, subject to conditions of its evaluation report.

3.03 TOLERANCES

- A. Install decking complying with installation tolerances indicated in ANSI/ACMA/PIC (CSP).

3.04 PROTECTION

- A. Protect installed decking from subsequent construction operations.

END OF SECTION

SECTION 26 00 10
ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SCOPE

- A. General: The provisions of this section are general and are intended to apply to all electrical sections, to govern the quality of design, fabrication, workmanship and operation of materials, equipment and appurtenances to be furnished and/or installed thereunder.
- B. Equipment: All electrical equipment, including but not limited to, wiring devices, wiring materials and electrical construction materials shall be new and of the highest quality and latest improved design.
- C. Workmanship: Workmanship shall be of the highest grade and all installation work shall be performed by thoroughly qualified mechanics of the appropriate trade. All equipment shall be installed and connected in accordance with the best engineering practice. Manufacturer's instructions and recommendations shall be followed and all electric connections shall be provided.
- D. Completeness: The Contractor shall furnish all labor, materials, tools, equipment and services necessary for the complete electrical system ready for continuous operation. Provide all required mounting hardware and accessories to install all equipment and devices. Make all equipment and devices fully operational.
- E. Drawings: The drawings showing the layout of the electrical system indicate approximate locations of outlets, apparatus and equipment. The runs of feeders and branches as shown, the drawings are schematic only and are not intended to show the exact routing and location of conduits and conduit terminations. The final determination as to routing, location and termination shall be governed by structural conditions, obstructions and job conditions. This shall not be construed to mean that the design of the system may be changed without the written approval of the Engineer; it merely refers to the exact run of raceways and the exact placement of outlets, etc. It shall be the Contractor's responsibility to obtain all shop drawings affecting conduit terminations to the equipment specified in this or other sections or furnished by others, and to verify conduit locations before installation. The Contractor shall consult all contract drawings and specifications which may affect the location of any outlet, equipment or conduit run, to avoid improper locations of such items and to avoid interference with other trades.
- F. Accessibility: Electrical equipment such as junction and pull boxes, panelboards, switches, controls and such other apparatus as may require maintenance or operation from time to time, is made easily accessible. Although the equipment may be shown on the drawings in certain locations, in the course of building construction, it may develop that such locations do not afford proper accessibility, in which case the Contractor shall direct the Engineer's attention to the condition before advancing the construction.
- G. Site examinations: All bidders, prior to submitting a bid, shall thoroughly acquaint themselves with the conditions under which the work will be performed. No allowance shall be made subsequently in connection with this, for any error or negligence on the contractor's part.
- H. Unless noted as "existing" or "relocated", all construction is new and shall be furnished and installed by the contractor.

1.03 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: Comply with electrical construction code requirements of State, City and such other local political subdivision specifications as may exceed the requirements of national codes, standards and approving bodies.
- B. All electrical equipment installed under this contract shall bear UL label. Equipment shall be installed in accordance with the requirements of UL and the manufacturer.
- C. Comply with the National Electrical Code.
- D. Certificates and Permits: Upon completion of work, and prior to final payment, furnish to the Engineer formal certification of final inspections from authorities having jurisdiction and secure required permits or certificates (if any) from such authorities. Additionally, prepare detailed diagrams and drawings which may be required by those authorities having jurisdiction. All the cost for obtaining certificates and permits will be paid by the Contractor.

1.04 REFERENCES AND DEFINITIONS

- A. Basic References: The following codes, standards, and approvals as referenced throughout the Sections of Division 26, shall serve as the minimum standards and quality requirements directly appropriate to the work and workmanship. References to catalogs, standards, codes, specifications and recommendations, etc., means latest edition of such publications in effect at the date of invitation to submit bid.
 - 1. American National Standards Institute (ANSI): ANSI C2; National Electrical Safety Code
 - 2. National Electric Manufacturer's Association (NEMA) Standards as apply to specified Products.
 - 3. National Fire Protection Association (NFPA): NFPA 70 (National Electrical Code), NFPA 72 (National Fire Alarm Code), NFPA 70E (Standard for Electrical Safety Requirements for Employee Workplaces), and other applicable NFPA codes
 - 4. Underwriters' Laboratories, Inc. (UL) Listings, Labels, and Approvals shall govern the quality and performance of specified Products.
 - 5. Americans with Disabilities Act (ADA)
 - 6. Institute of Electrical and Electronics Engineers, Inc (IEEE)
 - 7. National Electrical Contractor's Association (NECA)
 - 8. International Electrical Testing Association (NETA)
 - 9. Occupational Safety and Health Administration (OSHA)
- B. Definitions:
 - 1. "Provide" - means "furnish and install"
 - 2. "Indicated" - means "indicated in contract documents"
 - 3. "Concealed" - means items referred to are hidden from normal sight, this includes items partly excavated or crawl spaces and in service tunnels used solely for repairs and maintenance
 - 4. "Exposed" - means items are not "concealed"
 - 5. "Feeder" - means "All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device"
 - 6. "Feeder circuit breakers" - means circuit breakers protecting feeders.
 - 7. NETA ATS - International Electrical Testing Association Acceptance Testing Specifications 2007 Edition
 - 8. "Building" – A structure that stands alone or that is cut off from adjoining structures by fire walls with all openings therein protected by approved fire doors

9. "degrees C" – means "degrees Celsius"
10. "degrees F" – means "degrees Fahrenheit"

1.05 SUBMITTALS

- A. Product Data: Submit Product Data applicable to items listed under Submittals in each Section of Division 26; and such items as may be indicated on the Drawings.
- B. Shop Drawings
 1. General: The Contractor shall submit to the Engineer for approval, before fabrication, detailed shop drawings for all electrical equipment and materials.
 2. Shop drawings shall clearly indicate, using arrows and/or highlighting on all copies, which items are being submitted and that each item being submitted is in compliance with all requirements on the drawings and in these specifications. All pertinent specification and drawing requirements shall be indicated on the manufacturer's drawings. Complete model number of equipment shall be indicated.
 3. Shop drawings of related equipment shall be submitted together.
- C. "As-Built" Drawings:
 1. Accurate project record drawings and specifications, showing in red ink on the working drawings and electrical drawings all changes from the original plans made during installation of the work. Upon completion of the work the contractor shall deliver to the Owner one neat set of drawings with alterations and notations made in red ink.
- D. Operating and Maintenance Manuals
 1. General: Upon completion of the work, the Contractor shall furnish Operating and Maintenance Manuals for use by the Owner. The manuals shall include operating and maintenance information on all systems and items of equipment. The data shall consist of catalogs, brochures, bulletins, charts, schedules and drawings describing location, operation, maintenance, lubrication, operating weight and other information necessary for the Owner to establish an effective operating and maintenance program.
 2. Shop Drawings: Copies of appropriate shop drawings shall be included in the Operating and Maintenance Manuals. The requirements for manuals is a separate contractual item and in no way supersedes the requirements for shop drawings and vice-versa.
 3. Approval: Completed manuals shall be submitted to the Engineer for review and approval. Incomplete or inadequate manuals will be returned to the Contractor for correction and resubmission.
 4. Provide 3 copies of each operating and maintenance manual unless a greater quantity is specified elsewhere in the specifications, in which case the higher quantity will apply.
 5. Equipment keys and passwords shall be provided to the Owner's authorized representative or representatives. A document shall be provided indicating who received the keys and what are the passwords. Document shall be neat and typewritten.
 6. All factory and field test reports shall be included into the O&M Manuals.
 7. Provide a separate section in the O&M Manuals for maintenance testing schedules of all equipment. A factory authorized representative of the equipment manufacturer shall certify the maintenance program. Include calendar schedule in table format to indicate all maintenance actions included during the warranty period with spaces for future testing.
 8. Records of all factory and field tests by the contractor, manufacturer, or independent testing company shall be included in the O&M Manuals.
 9. Wiring diagrams for all factory and field wiring shall be included in the O&M Manuals.
- E. Spare Parts and Accessories List
 1. A complete list of spare parts and Accessories for equipment shall be provided.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and equipment to the Project site in a clean condition with openings plugged or capped (or otherwise sealed by packaging) both during shipping and during temporary storage.
- B. Delivered electrical equipment crating and/or packaging shall clearly identify pick-points or lift-points. In the absence of crating or packaging, pick-points or lift-points must be identified on the equipment.
- C. When unloading materials and equipment provide special lifting harness or apparatus as may be required by manufacturers. Handle materials and equipment in accordance with manufacturer's written instructions.
- D. The Contractor shall determine the required equipment needed for unloading operations and have such equipment on site to perform unloading work on the date of equipment delivery.
- E. Store materials and equipment, both on and off site, in accordance with manufacturer's written instructions. Keep equipment in a dry location.
 - 1. Temporary Heating: Apply temporary heat to materials and equipment, according to manufacturer's written instructions, throughout periods when environment is not controlled for temperature and humidity within manufacturer's stipulated service conditions.

1.07 WARRANTY

- A. The Contractor shall guarantee that all work performed and all materials and equipment installed by him are free from defects. He shall repair or replace any defective equipment, materials or workmanship, free of cost to the Owner for a period of two (2) years from date of acceptance. Where individual specification sections indicate a Special Warranty period longer than two (2) years, the longer warranty period shall apply.
- B. During this warranty period the Contractor shall:
 - 1. Correct and make good all electrical defects. Faulty equipment and materials shall be repaired or replaced as required to produce satisfactory results as directed by the engineer and without additional cost to the Owner. Contractor shall provide service within 24 hours after the call has been made by the Owner.

1.08 DAMAGE TO OTHER WORK

- A. Damage: Cutting or damage to existing structures, surfaces or installations shall be repaired at the expense of the Contractor. All such repairs or patching shall be done by mechanics of the appropriate trade and shall be neatly done by mechanics of the appropriate trade and shall be neatly done and in such a fashion as to leave no readily apparent joint or change in appearance, and to leave no structural or other weakness.

1.09 TEMPORARY POWER

- A. The contractor shall be entirely responsible for temporary power. All applications, fees, temporary connections, etc. shall be made by the contractor.

1.10 COORDINATION

- A. General: The Contractor shall coordinate the work performed and equipment furnished by the Electrical Contractor with work performed and equipment furnished by other trades to ensure a complete and satisfactory installation.
- B. In Maryland, contact "Miss Utility" prior to starting any site work.

1.11 INTERRUPTION OF ELECTRIC SERVICE

- A. Do not interrupt electric, telephone or cable tv service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Construction Manager no fewer than 10 days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without the Construction Manager's written permission.

1.12 ELECTRICAL INSPECTIONS

- A. The Contractor shall hire the services of a certified independent electrical inspector. The Contractor shall submit the inspector's certification for review and approval. The inspector shall comply with ALL of the following:
 1. The inspector shall be certified by the Office of the Maryland State Fire Marshal as a Nongovernmental Electrical Inspector (see COMAR 29.07.01).
 2. The inspector shall inspect the contractor's work for compliance with all applicable electrical codes. The inspector shall submit inspection reports to the owner in a report format that is acceptable to the owner. The inspector shall be responsible for inspecting, reviewing, and approving/rejecting the contractor's work.
 3. The inspector shall inspect the electrical installation, and affix his approval/rejection notice on the electrical installation. At a minimum, the notice shall include his name, date of inspection, pass/fail mark, and description of electrical violation if a fail mark is indicated.
 4. At the end of the construction, the inspector shall provide an Inspectors Certification Letter which is signed and dated with his full name. The Letter shall be addressed to the owner, and shall indicate whether or not the installation has passed inspection.

END OF SECTION

SECTION 26 00 51
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Touch up paint
6. Common electrical installation requirements.

1.03 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
B. NBR: Acrylonitrile-butadiene rubber.

1.04 SUBMITTALS

- A. Product Data: Provide product data for all items indicated in this specification section.

1.05 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
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. To 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.
- D. Coordinate sleeve selection and application with selection and application of firestopping.

PART 2 - PRODUCTS

2.01 SLEEVES FOR RACEWAYS AND CABLES

- A. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel.
1. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.

- b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.02 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

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. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Carbon steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.03 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.04 ACCESS DOORS

- A. Door and frame shall be constructed of steel, 16 gauge minimum. Access door shall have a continuous piano hinge. Door shall have a flush mounted lock. Finish shall be prime coat of rust inhibitive electrostatic powder, baked enamel. Access door shall be **field** painted to match the surrounding wall or ceiling.
- B. Provide fire rated access doors to maintain the fire rating of wall and ceiling assemblies, to restore original fire-resistance rating of assembly.

2.05 DUCT-SEALING COMPOUND

A. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, and not deteriorous to cable insulation. Capable of adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals. Sealing compound will not flow up to 250 degrees F. Sealing compound will not become brittle at minus 30 degrees F. Duct-Sealing compound shall be O-Z Gedney DUX 1 or DUX 5, or approved equal.

2.06 TOUCH UP PAINT

- A. Provide touch up paint from the manufacturer of the electrical equipment. Paint shall match the finish of the equipment. At a minimum, provide touch up paint for the following equipment:
 1. Panelboards, electrical cabinets, and enclosures.
 2. Disconnect switches.
 3. Enclosed circuit breakers.
 4. Wireways
 5. Surface raceway

PART 3 - EXECUTION**3.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION**

- A. Comply with NECA 1.
- B. Comply with NFPA 70, National Electrical Code.
- C. Measure indicated mounting heights to bottom of unit for suspended items and to bottom of unit for wall-mounting items, unless otherwise noted.
- D. 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.
- E. 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.
- F. Right of Way: Give to piping systems installed at a required slope.
- G. Where underground ducts or conduit enter the building, the inside of the ducts or conduit shall be sealed with Duct-Sealing Compound.
- H. Provide touch up paint as required on equipment finishes that have been scratched, and provide touch up paint as directed by the engineer. Touch up paint shall be provided in accordance with the manufacturer's recommendations. Do not allow paint to come in contact with conductors, insulation or any live parts. All nameplates and labels shall remain visible and legible.
- I. Overcurrent devices shall be readily accessible and shall be installed so that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, is not more than 6 feet 7 inches above the floor or working platform.
- J. Provide access doors where required to keep concealed electrical devices and equipment accessible in accordance with the National Electrical Code.
- K. Unless otherwise noted, access doors shall be painted to match surrounding wall or ceiling.
- L. Before electrical service is supplied, the contractor shall equip all unmetered cabinet, switch, circuit breaker doors, covers, fittings, wire enclosures, wireways, wire troughs, etc with a suitable means to accommodate Baltimore Gas and Electric Company seals.

3.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint.

- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.
- K. Aboveground, Exterior-Wall Penetrations: Seal penetrations using cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.03 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.04 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated ceiling, floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly.
- B. Install UL Listed Firestopping Material in accordance with the manufacturer's recommendations, and UL's requirements.

END OF SECTION

SECTION 26 00 60
GROUNDING AND BONDING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.01 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise noted.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.

2.02 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

PART 3 - EXECUTION

3.01 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller (exception: conductors for vibrating equipment, such as transformers, motors and generators, shall use stranded conductors), and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

3.02 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.03 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

END OF SECTION

SECTION 26 00 73
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.03 DEFINITIONS

- A. RMC: Rigid metal conduit.
- B. MFMA: Metal Framing Manufacturer's Association

1.04 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.05 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.

1.06 QUALITY ASSURANCE

- A. Comply with NFPA 70.

1.07 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.

PART 2 - PRODUCTS**2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS**

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. Thomas & Betts Corporation.
 - e. Unistrut; Tyco International, Ltd.
 - f. Hilti
 - 2. Outdoors:

- a. Steel Channel Metallic Coatings: Hot-dip galvanized after fabrication in accordance with ASTM 123 and applied according to MFMA-4.
- b. Fittings and Accessories:
 - 1) Conduit hangers, conduit clamps, beam clamps, and wall brackets shall be steel, hot-dip galvanized after fabrication in accordance with ASTM 123.
 - 2) Threaded hardware such as mechanical expansion anchors, nuts, bolts, and threaded rods shall be steel, hot-dip galvanized after fabrication in accordance with ASTM 123. Threaded hardware not available as hot-dip galvanized after fabrication shall be stainless steel type 304.
- 3. Indoors:
 - a. Steel Channel metallic Coatings: Pre-Galvanized Steel with mill galvanized coating designation G90.
 - b. Fittings and Accessories:
 - 1) Conduit hangers, conduit clamps, beam clamps, and wall brackets shall be pre-galvanized (designation G90) or electroplated zinc (ASTM B633).
 - 2) Threaded hardware shall be electroplated zinc (ASTM B633).
- 4. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Mechanical-Expansion Anchors: Insert-wedge-type, steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 2. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - 3. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - 4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 5. Toggle Bolts: All-steel springhead type.
 - 6. Hanger Rods: Threaded steel.

PART 3 - EXECUTION**3.01 APPLICATION**

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted 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 single-bolt conduit clamps using spring friction action for retention in support channel.

3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 6. To Light Steel: Sheet metal screws.
 - 7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 26 00 75
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

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

1.02 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with 29 CFR 1910.145.

1.04 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS**2.01 RACEWAY AND METAL-CLAD CABLE IDENTIFICATION MATERIALS**

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Color for Printed Legend:
 - 1. Power Circuits: Black letters on an orange field.
 - 2. Instrumentation and Control Circuits: Black letters on a yellow field.
 - 3. Legend: Indicate system or service and voltage, if applicable.
- C. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.02 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- C. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.03 UNDERGROUND-LINE WARNING TAPE

- A. Description: Permanent, bright-colored, continuous-printed, polyethylene tape.
 - 1. Not less than 6 inches wide by 4 mils thick.
 - 2. Compounded for permanent direct-burial service.

3. Embedded continuous metallic strip or core.
4. Printed legend shall indicate type of underground line.

2.04 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.

2.05 INSTRUCTION SIGNS

- A. Self-Adhesive Instruction Signs: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.

2.06 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Phenolic Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.07 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
 1. Minimum Width: 3/16 inch.
 2. Tensile Strength: 50 lb, minimum.
 3. Temperature Range: Minus 40 to plus 185 deg F.
 4. Color: Black, except where used for color-coding.

PART 3 - EXECUTION

3.01 APPLICATION

- A. Power-Circuit Conductor Identification: For primary and secondary conductors No. 4/0 AWG and larger in vaults, pull and junction boxes, manholes, and handholes use write-on tags. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
- B. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use marker tape. Identify each ungrounded conductor according to source and circuit number.
- C. Locations of Underground Lines: Provide underground-line warning tape for direct buried and concrete encased ducts or ductbanks.
- D. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
 1. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
 2. Provide arc-flash labeling per NEC.
 3. Provide the service fault current rating label at the service termination/meter cabinet per NEC. Coordinate with BGE for the secondary fault current at the termination.
- E. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 1. Labeling Instructions:

- a. Indoor Equipment: Adhesive film label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where 2 lines of text are required, use labels 2 inches high.
- b. Outdoor Equipment: Adhesive film label with clear protective overlay
- 2. Equipment to Be Labeled:
 - a. Panelboards, electrical cabinets, controls, and enclosures.
 - b. Access doors and panels for concealed electrical items.
 - c. Disconnect switches.

3.02 INSTALLATION

- A. Verify the identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - 1. Color shall be factory applied or, for sizes larger than No. 10 AWG if authorities having jurisdiction permit, field applied.
 - 2. Colors for 240/120V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Neutral: White
 - 3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 12 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 36 inches overall.

END OF SECTION

SECTION 26 01 19
UNDERGROUND DUCTS AND UTILITY STRUCTURES

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Conduit, ducts, and duct accessories for direct-buried duct banks, and in single ductruns.

1.03 DEFINITION

- A. RNC: Rigid nonmetallic conduit.
- B. OSHA: Occupational Safety and Health Administration

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Duct-Bank Coordination Drawings: Show duct plans, duct profiles and coordination with other utilities and underground structures.
 - 1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.
- C. Field quality-control test reports.
- D. Shop Drawings for Factory-Fabricated Handholes and Boxes: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:
 - 1. Duct entry provisions, including locations and duct sizes.
 - 2. Cover design.
 - 3. Grounding details.
 - 4. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.

1.05 QUALITY ASSURANCE

- A. Comply with ANSI C2.
- B. Comply with NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

1.07 COORDINATION

- A. Coordinate elevation, layout and installation of ducts with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into handholes, and boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to handholes, and as approved by the Owner and/or the Engineer.

PART 2 - PRODUCTS**2.01 CONDUIT**

- A. RNC: NEMA TC 2, Type EPC-40-PVC (PVC Schedule 40) and Type EPC-80-PVC (PVC Schedule 80), UL 651, with matching fittings by same manufacturer as the conduit, complying

with NEMA TC 3 and UL 514B. RNC shall be sunlight resistant and rated for use with 90 degree C conductors.

2.02 DUCT ACCESSORIES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cantex, Inc.
 - 2. Condux International, Inc.
 - 3. Lamson & Sessions; Carlon Electrical Products.
 - 4. Manhattan/CDT; a division of Cable Design Technologies.
 - 5. Spiraduct/AFC Cable Systems, Inc.
- B. Duct Accessories:
 - 1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
 - 2. Warning Tape: Underground-line warning tape specified in Specification Section "Electrical Identification."

2.03 HANDHOLES AND BOXES

- A. Polymer Concrete Handhole:
 - 1. Enclosures, boxes, and covers shall conform to all test provisions of the most current ANSI/SCTE 77 "Specification For Underground Enclosure Integrity" for Tier 22 applications. All covers are required to have the Tier level rating embossed on the surface. In no assembly can the cover design load exceed the design load of the box.
 - 2. Handhole shall be tested by UL to meet the requirements of ANSI/SCTE 77. Handhole shall be UL Listed.
 - 3. Handhole shall have a solid bottom.
 - 4. Handhole design load (including box and cover) shall be 22,500 pounds.
 - 5. Handhole cover shall be secured to the box with stainless steel bolts.
 - 6. Handhole shall be manufactured by Quazite or approved equal. See drawings for dimensions of handhole.

2.04 DUCT SEALING COMPOUND

- A. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, and not deteriorious to cable insulation. Capable of adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals. Sealing compound will not flow up to 250 degrees F. Sealing compound will not become brittle at minus 30 degrees F. Duct-Sealing compound shall be O-Z Gedney DUX 1 or DUX 5, or approved equal.

2.05 SOURCE QUALITY CONTROL

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Polymer Concrete Handhole: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
- C.

PART 3 - EXECUTION

3.01 DUCT APPLICATION

- A. Direct-buried ducts: Duct shall be NEMA TC 2, Type EPC-80-PVC, unless otherwise noted on the drawings.

3.02 EARTHWORK

- A. Excavation and Backfill: Do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restore surface features at areas disturbed by excavation and reestablish 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 the path of underground ducts and utility structures. Repair existing pavement after underground ducts and utility structures have been constructed/installed. The newly repaired pavement shall match the existing pavement.

3.03 DUCT INSTALLATION

- A. Burial Depth:
 - 1. Direct buried duct or ductbanks: All direct buried duct or ductbanks shall have a minimum of 24" of cover from the top of the duct or ductbank to finished grade, unless otherwise noted on the drawings.
 - 2. Concrete encased ducts or ductbanks: See drawings
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches, both horizontally and vertically, at other locations, unless otherwise indicated.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Provide duct sealing compound where underground ducts and ductbanks stub up at utility poles and where underground ducts and ductbanks enter buildings. Duct sealing compound shall provide a watertight seal inside the ducts and ductbanks.
- E. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.
- F. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in ducts, including spares.
 - 1. Provide pulling cord in all unused or spare ducts.
- G. Building Wall Penetrations: Install conduit penetrations of building walls as specified in Specification Section "Common Work Results for Electrical."
- H. Direct-Buried Ducts:
 - 1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
 - 2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.
 - 3. Excavate trench bottom to provide firm and uniform support for ducts.
 - 4. Place and compact bedding course on trench bottoms. Use satisfactory soil, free of particles larger than 1 inch in any direction, as the compact bedding course. Depth of bedding course shall be not less than 6".
 - 5. After installing first tier of ducts, 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 inches over ducts 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.

6. Separation: Provide a minimum of 12" separation between electrical (power or communications) ducts and foreign structures (including, but not limited to, gas, water, sanitary and oil pipes), unless otherwise noted. Provide a minimum of 12" separation between power ducts and communications (including, but not limited to, telephone and cable tv) ducts, unless otherwise noted. Provide a minimum of 3" separation between power ducts and other power ducts, unless otherwise noted. Provide a minimum of 3" separation between communication ducts and other communication ducts, unless otherwise noted.
7. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated.
8. Warning Tape: Bury warning tape above all direct buried ducts. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 36 inches. Space additional tapes 12 inches apart, horizontally. Depth of warning tape shall be 12" below finished grade.
9. Concrete encasement at bends and 90 degree elbows: All bends and 90 degree elbows shall be concrete encased with a minimum of 3" thick of 3000 psi concrete at 28 days.
- I. Provide underground-line warning tape above all direct buried and concrete encased ducts.
- J. Excavation for Utility Trenches:
 1. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of ducts and ductbanks.
- K. Utility Trench Backfill:
 1. Place backfill on subgrades free of mud, frost, snow, or ice.
 2. Backfill material shall be free of particles larger than 1 inch in any dimension.
 3. Carefully compact initial backfills under conduit haunches and compact evenly up on both sides and along the full length of conduit to avoid damage or displacement of conduit.
 4. Backfill voids while installing and removing shoring and bracing.
 5. Backfill in layers not more than 4 inches for material compacted by hand operated tampers.
 6. Compact soil material: refer to specification sections 31 23 16.13 and 31 23 23 for requirements.
- L. Underground ducts and ductbanks shall be made watertight.

3.04 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts.
 2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
- B. Correct deficiencies and retest as specified above to demonstrate compliance.

3.05 CLEANING

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

- B. Clean internal surfaces of handholes, including sump. Remove foreign material.

END OF SECTION

SECTION 26 01 20
CONDUCTORS AND CABLES

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.
 - 3. Sleeves and sleeve seals for cables.

1.03 DEFINITIONS

- A. AWG: American Wire Gauge
- B. KCMIL: Thousand Circular Mil

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.05 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.06 COORDINATION

- A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS**2.01 CONDUCTORS AND CABLES**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. American Insulated Wire Corp.; a Leviton Company.
 - 2. General Cable Corporation.
 - 3. Senator Wire & Cable Company.
 - 4. Southwire Company.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation:
 - 1. Comply with NEMA WC 70 for Types THHN/THWN-2. Suitable for operation at 600 volts or less in wet or dry locations

2.02 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Geaney; EGS Electrical Group LLC.

4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- C. 600V Vinyl Insulating Tape: The tape is based on polyvinyl chloride (PVC) and/or its copolymers and has a rubber based, pressure-sensitive adhesive. The tape shall be 7 mils thick, and UL Listed and marked per UL Standard 510 as "Flame Retardant, Cold and Weather Resistant."
- D. Screw-on Pressure Cable Connector: Connector shall be UL Listed. Voltage rating shall be 600 volts for building wire and 1000 volts for signs and fixtures.
- E. Mechanical Connector: Connector shall be UL Listed. Connector shall be wrapped with electrical insulating tape in accordance with the NEC and the manufacturer's requirements. Connectors shall be dual rated (suitable for use with copper or aluminum conductors), unless other wise noted.
- F. Compression Connector: Connector shall be UL Listed. Connector shall be wrapped with electrical insulating tape in accordance with the NEC and the manufacturer's requirements. Use compression tool recommended by manufacturer. Connectors shall be dual rated (suitable for use with copper or aluminum conductors), unless other wise noted.

PART 3 - EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Service: Copper. Stranded.
- B. Feeders: Copper (unless otherwise noted on the drawings). Stranded.
- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller (exception: conductors for vibrating equipment, such as transformers, motors and generators, shall use stranded conductors); stranded for No. 8 AWG and larger.
- D. Class 1 and Class 2 Control Wiring: Copper. Stranded.

3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Aboveground Service Entrance: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- B. Aboveground Exposed Feeders: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- C. Aboveground Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- D. Aboveground Feeders Concealed in partly excavated or crawl spaces and in service tunnels used solely for repairs and maintenance: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- E. Aboveground Exposed Branch Circuits: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- F. Aboveground Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- G. Aboveground Branch Circuits Concealed in partly excavated or crawl spaces and in service tunnels used solely for repairs and maintenance: Type THHN/THWN-2, single conductors in raceway, unless otherwise noted.
- H. Aboveground Class 1 and Class 2 Control Wiring: Type THHN/THWN-2, single conductors in raceway unless otherwise noted.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. Comply with the NEC.
- B. Comply with the manufacturer's recommendations and requirements.
- C. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- D. 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.
- E. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- F. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- G. Identify and color-code conductors and cables according to Specification Section "Electrical Identification."
- H. Do not splice feeders and underground branch circuits unless specifically indicated in the drawings. Cables shall be unspliced between termination points.
- I. Provide insulated bushings at the end of each metal clad cable.
- J. Use insulating bushings to protect ALL conductors, including conductors smaller than No. 4 AWG. Provide insulated grounding bushings where required by NFPA 70 or the Contract Documents.
- K. Spare wires shall be disconnected at both ends and shall be insulated at both ends with wire nuts held in place by electrical insulating tape. For large wire sizes, the spare wires shall be disconnected at both ends and shall be insulated at both ends with double wrapped electrical insulating tape.

3.04 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 and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

END OF SECTION

SECTION 26 01 30
RACEWAYS AND BOXES

PART 1 - GENERAL**1.01 RELATED DOCUMENTS**

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

1.02 DEFINITIONS

- A. LFMC: Liquidtight flexible metal conduit.
- B. RGS: Rigid Steel Conduit
- C. RNC: Rigid nonmetallic conduit.
- D. EMT: Electrical metallic tubing.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Source quality-control test reports.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS**2.01 METAL CONDUIT AND TUBING**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 3. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 4. O-Z Gedney; a unit of General Signal.
 - 5. Wheatland Tube Company.
 - 6. Robroy Industries Electrical Products Division
- B. Rigid Steel Conduit: ANSI C80.1.
- C. FMC: Zinc-coated steel
- D. EMT and Fittings: ANSI C80.3.
 - 1. Fittings: Compression type.
- E. LFMC: Flexible steel conduit with PVC jacket.
- F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Insulating Bushings: Plastic, 105 degree C minimum temperature rating.
 - 2. Insulated Grounding Bushings: Malleable Iron with plastic liner, 105 degree C minimum temperature rating.

2.02 NONMETALLIC CONDUIT AND TUBING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
 3. CANTEX Inc.
 4. Condux International, Inc.
 5. Electri-Flex Co.
 6. Lamson & Sessions; Carlon Electrical Products.
 7. RACO; a Hubbell Company.
 8. Thomas & Betts Corporation.
- B. RNC: NEMA TC 2, Type EPC-40-PVC (PVC Schedule 40) and Type EPC-80-PVC (PVC Schedule 80), UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B. RNC shall be sunlight resistant and rated for use with 90 degree C conductors.
- C. LFNC: UL 1660
- D. Fittings for LFNC: UL 514B

2.03 METAL WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Cooper B-Line, Inc.
 2. Hoffman.
 3. Square D; Schneider Electric.
- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Screw-cover type, unless otherwise noted
- E. Finish: ANSI 61 gray polyester powder paint finish inside and out over phosphatized surfaces.

2.04 BOXES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 2. EGS/Appleton Electric.
 3. Hoffman.
 4. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 5. O-Z/Gedney; a unit of General Signal.
 6. RACO; a Hubbell Company.
 7. Robroy Industries, Inc.; Enclosure Division.
 8. Spring City Electrical Manufacturing Company.
 9. Thomas & Betts Corporation.
 10. Walker Systems, Inc.; Wiremold Company (The).
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

- E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

2.05 ENCLOSURES AND CABINETS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hoffman.
- B. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
- C. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated on the drawings.
 - 1. Aboveground, Exposed: Rigid Steel Conduit, unless otherwise noted.
 - 2. Aboveground, Concealed: Rigid Steel Conduit, unless otherwise noted.
 - 3. Underground: See Specification Section "Underground Ducts and Utility Structures" and the drawings.
 - 4. Connection to Vibrating Equipment (Including Transformers, Motors, Pumps, Fans, and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC, unless otherwise.
 - 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R, unless otherwise noted.
- B. Indoors: Apply raceway products as specified below, unless otherwise indicated on the drawings.
 - 1. Aboveground, Exposed: EMT, unless otherwise noted.
 - 2. Aboveground, concealed in Ceilings and Interior Walls and Partitions: EMT, unless otherwise noted.
 - 3. Aboveground, concealed in partly excavated or crawl spaces and in service tunnels: Rigid Steel Conduit, unless otherwise noted.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, unless otherwise noted and except as follows:
 - a. Damp or wet locations: LFMC
 - 5. Damp or Wet Locations: Rigid Steel Conduit, unless otherwise noted.
 - 6. Where subject to physical damage: Rigid Steel Conduit, unless otherwise noted.
 - 7. Boxes and Enclosures: NEMA 250, Type 1, unless otherwise.
- C. Wireways: All wireways shall be metal, with ANSI 61 gray polyester powder paint finish inside and out over phosphatized surfaces, unless otherwise noted.
- D. Minimum Raceway Size: 3/4-inch trade size, unless otherwise noted.
- E. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.02 INSTALLATION

- A. Transition from underground PVC conduit or under concrete floor slab PVC conduit to aboveground metal conduit: Change from PVC conduit to Rigid Steel Conduit (or PVC Coated Steel Conduit where required by the RACEWAY APPLICATION in this Specification Section or the drawings) 6" below floor or grade, and continue with Rigid Steel Conduit (or PVC Coated Steel Conduit where required by the RACEWAY APPLICATION in this Specification Section or

the drawings) up to the device/equipment or 48" above finished floor/grade (whichever is higher), unless otherwise noted. Beyond the device/equipment or above 48" (whichever is higher), use the raceway specified in the RACEWAY APPLICATION of this Specification Section or the drawings, unless otherwise noted.

- B. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- C. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- D. Complete raceway installation before starting conductor installation.
- E. LFNC shall be used to protect the fire alarm and data cables installed with the power cables in same enclosures (Handhole, manhole).
- F. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- G. Raceway Terminations: Use insulating bushings to protect ALL conductors, including conductors smaller than No. 4 AWG. Provide insulated grounding bushings where required by NFPA 70 or the Contract Documents.
- H. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- I. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where otherwise required by NFPA 70.
- J. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC where required by the Contract Documents.
- K. 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.
- L. Raceway shall run parallel or perpendicular to wall and ceiling structures (columns, joists, support beams, etc.) for a neat appearance.
- M. All metallic raceways, boxes and enclosures shall be grounded.
- N. Provide watertight hubs for all junction boxes and enclosures installed outdoors or in wet locations. Hubs used with NEMA 3R junction boxes and enclosures shall be NEMA 3R or NEMA 4X rated. Hubs used with NEMA 4 or 4X junction boxes and enclosures shall be NEMA 4X rated.
- O. The underground raceway shall be made watertight.

3.03 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 26 01 40
WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Single and duplex receptacles, ground-fault circuit interrupters.
 - 2. Single- and double-pole snap switches.
 - 3. Device wall plates.

1.03 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. PVC: Polyvinyl chloride.
- D. Heavy Duty Grade: Industrial Grade

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Wiring Devices:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Leviton Mfg. Company Inc.
 - c. Pass & Seymour/Legrand; Wiring Devices Div.
 - 2. Wiring Devices for Hazardous (Classified) Locations:
 - a. Crouse-Hinds/Cooper Industries, Inc.; Arrow Hart Wiring Devices.
 - b. EGS/Appleton Electric Company.
 - c. Killark Electric Manufacturing Co./Hubbell Incorporated.

2.02 RECEPTACLES

- A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
- B. Straight-Blade and Locking Receptacles: Heavy-Duty grade.

- C. GFCI Receptacles: Straight blade, feed-through type with feed-through capacity equal to the ampere rating of the receptacle; heavy-duty grade, with ground fault protection, test and reset pushbuttons; NEMA WD 6, duplex receptacle; Complies with UL 498 and UL 943. Design units for installation in a 2-3/4 inch deep outlet box without an adapter.

2.03 SWITCHES

- A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.
- B. Snap Switches: Heavy-Duty grade, quiet type.

2.04 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Stainless steel screws.
 - 2. Material for Switches and Receptacles in Dry Locations: 0.035-inch-thick, satin-finished stainless steel, unless otherwise noted.
 - 3. Material for Receptacles in Wet Locations and Outdoors.
 - a. Cast aluminum construction.
 - b. Mounting screws and gaskets included for fast, easy installation onto surface mounted outdoor type boxes or flush-mounted wall boxes.
 - c. Weatherproof while-in-unattended use with cover closed and plug inserted.
 - d. Cover shall have provisions for padlocks.
 - 4. Material for Switches in Wet Locations and Outdoors:
 - a. Cast aluminum construction
 - b. Mounting screws and gaskets included for fast, easy installation onto surface-mounted outdoor type boxes or flush-mounted wall boxes.
 - c. Cover shall have provisions for padlocks.
 - d. Suitable for use in wet locations.
 - e. Switch cover shall be O-Z/Gedney FS-1-WSCA for single gang boxes and FS-2-WSCA for two gang boxes, or approved equal.

2.05 FINISHES

- A. Color:
 - 1. Wiring Devices Connected to Normal Power System: White, unless otherwise indicated or required by NFPA 70.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install devices and assemblies level, plumb, and square with building lines.
- B. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- C. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.

4. Remove wall plates and protect devices and assemblies during painting.
- D. Conductors:
 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
- E. Device Installation:
 1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 4. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
 5. When conductors larger than No. 10 AWG are installed on 15- or 20-A circuits, splice No. 10 AWG pigtails for device connections.
 6. Tighten unused terminal screws on the device.
 7. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

3.02 CONNECTIONS

- A. Ground equipment according to Specification Section "Grounding and Bonding."
- B. Connect wiring according to Specification Section "Conductors and Cables."
- C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.03 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
 2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION

SECTION 26 04 42
PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

- A. KAIC: Thousand Ampere Interrupting Capacity
- B. Branch Breaker: A circuit breaker at a panelboard, that is located on the load side of the Main Circuit Breaker or Main Lugs of that panelboard.
- C. NEC: National Electrical Code

1.4 SUBMITTALS

- A. Product Data: For overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers:
 - 1. Square D; a brand of Schneider Electric.
- B. The circuit breakers shall be manufactured by the same manufacture of the existing panelboard and 100% fully compatible with the existing panelboard.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the circuit breakers according to NEMA PB 1.1.
- B. Install filler plates in unused spaces.
- C. Comply with NECA 1.
- D. Provide a new updated panelboard directory to the inside existing panelboard cover.

END OF SECTION

SECTION 26 56 00
EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
 - 1. Exterior luminaires with lamps and ballasts.
 - 2. Luminaire-mounted photoelectric relays.

1.03 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. LER: Luminaire efficacy rating.
- D. Luminaire: Complete lighting fixture, including ballast housing if provided.

1.04 ACTION SUBMITTALS

- A. Product Data: For each luminaire, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
 - a. Testing Agency Certified Data: For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
 - b. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 6. Photoelectric relays.
 - 7. Ballasts/power supply, including energy-efficiency data.
 - 8. Lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
 - 9. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.
- B. Field quality-control reports.

- C. Warranty: Sample of special warranty.

1.06 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Lamps: Ten (10) for every 100 of each type and rating installed. Furnish at least one of each type.
 2. Glass and Plastic Lenses, Covers, and Other Optical Parts: One for every of each type and rating installed. Furnish at least one of each type.
 3. LED drivers: ten (10) for every 100 of each type and rating installed. Furnish at least one of each type.
 4. Globes and Guards: Two (2) for every 20 of each type and rating installed. Furnish at least one of each type.

1.07 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with IEEE C2, "National Electrical Safety Code."
- E. Comply with NFPA 70.

1.08 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturers may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
1. Warranty Period for Luminaires: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.02 GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during

relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Heat sink.

PART 3 - EXECUTION

3.01 LUMINAIRE INSTALLATION

- A. Install lamps in each luminaire.
- B. Fasten luminaire to the indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.

3.02 GROUNDING

- A. Ground metal and support structures according to Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.03 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 - 1. Verify operation of photoelectric controls.
- C. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION

**SECTION 31 10 00
SITE CLEARING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Work under this Section shall be performed in accordance with the requirements of Section 101 (Clearing and Grubbing) and 102 (Removal and Disposal of Existing Building) of the Baltimore County Standard Specifications for Construction and Materials, except as modified herein.

1.02 SITE CONDITIONS

- A. Environmental Requirements: Exercise the necessary means and methods to control dust on the site during performance of the work.
- B. Burning: On-site burning is not permitted.
- C. Explosives and Blasting: Not permitted in performance of site preparation work.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Protective Materials: Materials used for protection of plants shall conform to all applicable Federal, State and local laws.
- B. Tree Protection: As required by the Plans.
- C. Safety Fence: Blaze orange construction safety fence with 48-inch fabric height. Anchor with steel U-posts.
- D. Security Fence: Galvanized steel chain link, 6 feet high, meeting the requirements of Section 914 of the Standard Specifications, except that barbed wire vinyl coating are not required.
 - 1. Temporary fencing for site perimeter security which shall be left in place longer than 6 months shall be installed with buried posts.
 - 2. Temporary fencing left in place for less than 6 months may be installed with temporary poles with concrete bases.

PART 3 EXECUTION**3.01 INSPECTION**

- A. Prior to performance of the actual work, carefully inspect the entire site and locate those objects, trees, shrubs, wetlands, and the plant life designated to be removed. This work shall be coordinated and approved by the Engineer prior to initiating removal operations.

3.02 PERFORMANCE

- A. The Contractor shall strictly adhere to the requirements of the approved Erosion and Sediment Control Plan.
- B. Establish site yards, shops, and offices with entrances, fencing, and parking areas as required by the Contract Documents.
- C. Disposal: Dispose of debris off-site in a lawful manner.
 - 1. Dispose of debris from clearing and grubbing in a site having current approval for conducting solid waste disposal.
 - 2. Remove clearing and grubbing debris accumulations daily.
 - 3. Should the Contractor elect to continue work beyond normal working hours (with Baltimore County approval), clearing and grubbing debris shall not be allowed to accumulate for more than 48 hours.
 - 4. Debris removal also includes wood, brush, branches, etc.

END OF SECTION

**SECTION 31 22 00
GRADING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Removal and storage of topsoil.
- B. Rough grading the site for expanded parking facilities, stormwater management facilities, pavilions and miscellaneous park amenities..
- C. Finish grading for planting.

1.02 QUALITY ASSURANCE

- A. Perform Work in accordance with Baltimore County Standard Specifications for Construction and Materials.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Topsoil: Topsoil excavated on-site.
 - 1. Graded.
 - 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
- B. Other Fill Materials: See Section 31 23 23.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- F. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- G. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 23 23 for filling procedures.

- G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpile subsoil to be re-used on site; remove remainder from site.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- E. Place topsoil where required to level finish grade.
- F. Place topsoil to nominal depth of 6 inches.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil.
- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.07 FIELD QUALITY CONTROL

- A. See Section 31 23 23 for compaction density testing.

3.08 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

**SECTION 31 23 16.13
TRENCHING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Trench and in-line structure excavation, backfilling and compacting as well as associated trench-line surface restoration work.

1.02 DEFINITIONS

- A. Unclassified Excavation: Removal of materials of whatsoever nature in the excavation, including both earth and rock excavation, and other consolidated mineral mass, and existing structure foundations as may be encountered in the excavation.
- B. Subgrade: Trench bottom prepared as specified to receive bedding material, concrete cradle or encasement, or the bottom of excavations prepared to receive in-line structures.
- C. Pipe Zone: The area within the trench which extends from subgrade elevation to an elevation at least twelve inches above the top of the outside barrel of the pipe. Also, the trench dimensions within this pipe zone area shall be carefully controlled in order to comply with pipe manufacturer's warranty requirements.

1.03 REFERENCE STANDARDS

- A. Baltimore County Standard Specifications for Construction and Materials
- B. American Association of State Highway and Transportation Office
 - 1. AASHTO 8
 - 2. AASHTO 57
 - 3. AASHTO M43
- C. ASTM International:
 - 1. ASTM C33; Standard Specification for concrete Aggregates
 - 2. ASTM C602; Specification for Agricultural Liming Materials.
 - 3. ASTM D698; Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, using 5.5-lb (2.49-kg) Rammer and 12-in. (304.8 mm) Drop.
 - 4. ASTM D1556; Standard Test method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
 - 5. ASTM D1557; Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³(2,700 kN-m/m³))
 - 6. ASTM D2321; Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - 7. ASTM D2774; Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Pipe.
 - 8. ASTM D2922; Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. Maryland Department of Transportation (MDT), State Highway Administration, Standard Specifications for Construction and Materials, latest addition.

1.04 SUBMITTALS

- A. Test Reports:
 - 1. Aggregate Material Tests: Submit testing laboratory aggregate test reports based on requirements stated under the Quality Assurance Article.
 - 2. Compaction Density Tests: Submit compaction density test reports based on method of density determination as specified in Reference Standards and the method as approved by the Engineer.

1.05 FIELD CONDITIONS

- A. Classification of Excavated Materials: No consideration will be given to the nature of materials encountered in trenching operations. Therefore, as unclassified excavation, no additional

payment will be made for difficulties occurring in excavating and handling of materials.

- B. **Excess Material:** No right of property in material is granted the Contractor of excavated materials prior to backfilling. This provision does not relieve the Contractor of his responsibility to remove and dispose of surplus excavated materials or excavated materials not suitable for use in backfilling. Obtain written consent and any necessary permits and approvals before disposing of excess materials at an off-site location.
- C. **Removal of Obstructions:** Remove, realign or change the direction of above or below ground utilities and their appurtenant supports, if such is required in the opinion of the Engineer. Perform such work as extra work unless such work is done by the Owner of the obstruction without cost to the Contractor. However, uncover and sustain the obstruction in-place prior to the final disposition of the obstruction.
 - 1. The Contractor shall not be entitled to claims for damage or extra compensation due to the presence of such obstruction or delay in the removal or rearrangement of such obstruction.
 - 2. Do not obstruct fire hydrants.
 - 3. Do not interfere with persons, firms, corporations or utilities employing protective measures, removing, changing or replacing their property or structures, but allow these persons, firms, corporations or utilities to take such measures as they may consider necessary or advisable under the circumstances; which shall not relieve the responsibilities of the Contractor.
- D. **Environmental Requirements:** Plan work so as to provide adequate protection during storms with provisions available for preventing flood damage. Protect installed piping and other work against damage from uplift due to high ground water levels.
 - 1. Do not perform trenching, backfilling or compacting when weather conditions or the condition of materials are such, in the opinion of the Engineer, that work cannot be performed satisfactorily.
 - 2. Do not use frozen materials as backfill nor wet materials containing moisture in excess of the amount necessary for satisfactory compaction.
 - 3. Prior to use, moisten dry backfill material not having sufficient moisture to obtain satisfactory placement or compaction.
 - 4. Provide effective dust control by sprinkling water, spreading calcium chloride or other method approved by Engineer. Employ dust control when, where and in a manner required by Engineer.
 - 5. When it is necessary to haul wet soil material over roadways, use suitably tight vehicles to prevent spillage. Clear away spilled materials, as caused by hauling, from roadways.
- E. **Accommodation of Drainage:** Keep both piped and open drainage facilities unobstructed for proper surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except where stream crossings are necessary and then only to an extent which the Engineer shall consider necessary.
 - 1. Do not direct water flows across or over pavements except through approved pipes or properly constructed troughs of proper sizes and lengths.
 - 2. Perform grading in the vicinity of trenches so that the ground surface is properly pitched to prevent water running into the trenches.
- F. **Dewatering:** Keep excavations free from water during the performance of the work. Provide and operate dewatering equipment of sufficient capacity for dewatering the excavations.
 - 1. Provide for the disposal of the water removed from excavations in such manner as not to cause injury to the public health, to public or private property, to the work of others, to the portion of the work completed or in progress, nor to cause an impediment to the use of streets, roads and highways.
 - 2. Do not dispose of water in trenches by draining through completed portions of the piping.
- G. **Protection:** The Contractor shall assume the risks attending the presence or proximity of overhead or underground public utility (if any) and private lines, pipes, conduits and their associated support work, existing structures and property of whatever nature. Responsibility for

damages and expenses arising out of the work, for direct or indirect injury to such structures or to any person or property by reason of them, or by reason of injury to them, whether such structures are or are not shown on the Drawings, rests solely with the Contractor.

1. Excavation Condition: The Contractor shall be solely responsible for the conditions and results of the excavation work.
 2. Protection of Vegetation: Take necessary precautions to protect trees, shrubs, lawns and such other landscaping from damage. Restitution work for damages rests solely with the Contractor.
 3. Support of Existing Utilities: Adequately support underground utilities not requiring removal and exposed as a result of excavations. Provide adequate support along their entire exposed length by timber or planking. Install these supports in such manner that backfilling may be performed without dislodging such utilities.
 - a. Place and carefully compact On-Site Select Earth Backfill or Aggregate Backfill around the supports, and leave such supports in place as a guard against breakage due to backfill settlement.
 - b. Furnish support materials, including those left in place, and the labor of installing and maintaining the supports, at no increase in Contract Price.
 4. Temporary Protective Construction: Erect and maintain substantial temporary barricades and fences surrounding excavation to prevent unauthorized access.
 - a. Temporary Barrier: Where necessary, to keep one side of streets or roadway free from obstruction or to keep material piled along side of the trench from falling on private property outside the right-of-way, erect and maintain a safe and substantial barrier fence.
 - b. Excavation Covers: Cover open excavation when work therein is suspended or left unattended, such as at the end of a work day. For such covers, use materials of sufficient strength and weight to prevent their removal by unauthorized persons.
 - c. Removals: Remove temporary protective construction at the completion of work on the Project.
 5. Structure Supports: Where excavations are in the vicinity of buildings or structures, which by their construction or position might exert detrimental pressure on the excavation, provide suitable structure supports for such buildings or structures. Structure supports may be in the form of underpinning or special driven sheeting, or other suitable support systems of the Contractor's choosing. The option is allowed for short lengths of trench be opened at one time.
- H. Accommodation of Traffic: Do not obstruct streets, roads and highways. Unless authorized by the Engineer in writing. Maintain a straight and continuous passageway on sidewalks and over crosswalks, at least three feet wide and free from construction operations and materials.
- I. Explosives and Blasting: Not permitted in performance of trenching work.
1. Remove rock by such mechanical means and methods as developed specifically for rock removal without blasting.
 2. Additionally, perform rock removal in accordance with the requirements of State and local laws, rules and regulations, and utility owner requirements.
- J. Trench Work for Electrical: The requirements specified herein for excavating, backfilling and compacting pipeline trench work shall also apply to such work required for electrical conduit installations.
1. Exceptions to pipe line trench work requirements are as specified throughout the remainder of this Section.
- K. Change of Trench Location or Depth: Should the Engineer require a change in location of a trench from that indicated on the Drawings due to the presence of an obstruction, or from other cause and such change is made before the excavation is begun, the Contractor shall not be entitled to extra compensation or to a claim for damages.
1. If a change in trench location made at the requirement of the Engineer involves the abandonment of excavation already made, such abandoned excavation, together with the

necessary refill will be classed as Miscellaneous Unclassified Excavation and Backfill, in case the full width of the trench has not been abandoned. If the full width of trench has been abandoned the excavation and refill shall be classed as excavation and refill for trenches of the size and depth classification of excavation.

2. The Contractor shall have no claim for additional compensation as a result of changes in trench depths.
 3. If a changed location of a trench is authorized by the Engineer upon the Contractor's request, the Contractor shall not be entitled to extra compensation or to a claim for damage. If such change of trench location involves the abandonment of excavation already made, the abandoned excavation and refill shall be at the Contractor's expense.
- L. Change of Excavation Location: Should the Engineer require a change in location of an excavation from that indicated on the Drawings due to the presence of an obstruction or from other cause, and if such changed location increases or decreases the quantity of excavation, then an adjustment will be made in lump sum price bid under which the work was performed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Backfill: Soil or soil-rock mixed materials free of topsoil, vegetation, lumber, metal and refuse; and free of rock or similar hard objects larger than six inches in greatest dimension. Rock to soil ratio shall not exceed one part rock to three parts soil.
- B. Select Earth Backfill: Soil or soil-rock mixed materials free of vegetation, lumber, metal and refuse; and free of rocks or similar hard objects larger than one inch in greatest dimension. Rock to soil ratio shall not exceed one part rock to three parts soil.
- C. Aggregate Backfill: AASHTO No. 57 Coarse Aggregate.
- D. Pipe Zone Materials: Slag aggregates are not allowed.
 1. Pipe Zone Bedding: Coarse Aggregate conforming to AASHTO M43 gradation.
 - a. For piping having a diameter of 21 inches and less use AASHTO No. 8 Coarse Aggregate.
 - b. For piping having a diameter of 24 inches and larger use AASHTO No. 57 Coarse Aggregate.
 2. Initial Backfill: Coarse Aggregate conforming to AASHTO M-43 gradation.
 - a. For piping having a diameter of 21 inches and less use AASHTO No. 8 Coarse Aggregate.
 - b. For piping having a diameter of 24 inches and larger use AASHTO No. 57 Coarse Aggregate.
- E. Underground Warning Tape: Printed polyethylene metallic detection tape, six inches minimum width, color coded, one inch minimum lettering, printed with name of utility buried below, and suitable for installation in all soil types.
 1. Provide detection tape for the following pipe lines and utilities as installed or encountered in the work:
 - a. Electrical Conduit - Red.
- F. Topsoil: Topsoil free of subsoil, clay, stones (or similar hard objects) larger than two inches in greatest dimension, partially disintegrated debris, and materials toxic or harmful to vegetation growth.

PART 3 EXECUTION

3.01 PREPARATION

- A. Trench Line and Grade: Maintain trench line and grade as follows:
 1. Maintenance of Line and Grade by Other Approved Methods: Subject to the Engineer's prior approval, the Contractor may have the option to use methods customary to the utilities construction industry to maintain lines and grades of pipelines.
 - a. Laser: If a laser beam instrument is approved for use by the Engineer, perform field checks of the beam position every fifty feet of installed pipeline. Use survey or other

approved method to perform the laser beam position check.

- B. Pavement Removal: Cut existing pavement to neat lines equidistant from the centerline of the trench. Cut pavement with a mechanical saw.
 - 1. Cut Back: Remove pavement to a width equal to the specified maximum trench width plus 12 inches cut back; not less than 6 inches on each side of the trench width as excavated.

3.02 EXCAVATING

- A. Trench Shoring: Follow OSHA requirements for trench shoring as applicable to trench excavations.
- B. Salvaged Topsoil: In those areas where Site Grading operations are not being performed, strip turf and topsoil to the depth of suitable topsoil material and stock pile for subsequent topsoil placement operations.
- C. General Requirements: Perform excavation using machinery except that excavation by hand may be required where necessary to protect existing structures, utilities or private or public properties.
 - 1. No additional compensation will be paid for excavation by hand instead of machine excavation, as may be necessary from whatever cause.
 - 2. Begin excavation in trenches at the control point having the lower invert and proceed upgrade.
 - 3. Remove surface materials of whatever nature over the line of trenches and other excavations, and properly separate and store removed materials as suitable for use in backfilling or other purposes.
 - 4. Remove subsurface materials of whatever nature down to subgrade elevation. Properly separate and store removed subsurface materials as suitable for use in backfilling.
- D. Trenches for Electrical Work: Excavate trenches for both single and banded conduit runs to depths or elevations indicated, and where not indicated, to the depth required to provide a minimum of two feet of cover.
 - 1. Conduit Trench Subgrade Preparation: Prepare the bottom of trenches to provide uniform and continuous bearing and support for the conduit, unless concrete encasement or other type of bedding is shown on the Drawings or required by the Engineer.
 - 2. Conduit Trench Grades: Grade trenches a minimum of four inches in 100 feet. Grade trenches so conduit lines drain away from buildings except for conduit lines from one building to another, in which case grade conduit trenches level. Where conduit lines run to underground structures, grade trenches so conduits to drain to such structures.
 - 3. Direct Burial Cable Trenches: Excavate trenches, in both earth and rock, to accommodate both the cable and the Fine Aggregate bedding and cover as indicated on the Drawings. Trenching for direct burial cable may be performed by continuous-chain type excavators.
- E. Excavation Below Subgrade: Do not excavate below depths indicated or specified except where unstable or unsuitable material is encountered at subgrade. Excavate such material to the increased depth as may be required by the Engineer and refill to the proposed subgrade with thoroughly compacted Aggregate Backfill material as required by the Engineer.
 - 1. If excavations are carried below indicated or specified subgrades without written permission, refill excavations to proper subgrade with thoroughly compacted Aggregate Backfill material with no additional compensation paid.
 - 2. The Engineer's written requirement for Excavation Below Subgrade as described above shall entitle the Contractor to reimbursement for the quantities of additional excavation.

3.03 BACKFILLING

- A. General Requirements: Perform backfilling using machinery except that backfilling by hand may be required where necessary to protect existing structures, utilities or private or public properties.
 - 1. No additional compensation will be paid for backfilling by hand instead of machine backfilling, as may be necessary from whatever cause.

- B. Backfill Restrictions:
1. Do not use in backfilling work materials such as ashes, putrescible refuse and such other materials considered unsatisfactory by the Engineer. Do not permit excavations to be used as dumping areas for construction refuse.
 2. Do not use frozen backfill materials or place backfill materials on frozen subgrade or trench surfaces.
 3. Should there be a deficiency of proper backfill material, provide acceptable borrow material with no additional compensation paid.
 4. Except for temporary use in backfilling, no permanent bulkheads or retaining walls will be allowed in the trenches over piping.
- C. Subgrade Preparation (Pipe Zone): Provide Pipe Zone Bedding as pipe foundations in trenches made in both earth and rock substrates.
1. In place of Pipe Zone Bedding, provide Concrete Cradle or Encasement, or other type of bedding, where indicated on the Drawings, or where required in the field by the Engineer.
 2. Construct Pipe Zone Bedding as specified and in accordance with Detail Drawings, at no increase in Contract Price.
- D. Backfilling Trenches: Perform trench backfilling, and backfilling excavations for other in line structures, by methods which will result in thorough compaction of backfill material without displacement of the grade and alignment of the pipeline and its appurtenances and minimum settlement of backfilled material. Displacement of the pipeline and settlement of backfill shall be considered evidence of improper workmanship or inclusion of unsuitable backfill materials, or both, and will require regrading and realigning the pipeline and removing and re-compacting settled material at no increase in Contract Price. Exercise care to carry backfill up evenly within the trenches.
1. Initial Backfill: Following piping installation in bedding and in-line structure installation, backfill trenches to a height at least one foot above the top of the pipe barrel with Initial Backfill material placed in four inch compacted layers. This backfill shall be carefully placed in trenches in such manner as not to damage or disturb the pipe.
 2. Remainder of Backfill in Other Than Roadways: Backfill compacted in six inch layers to bottom of proposed topsoil surface layer. Replace topsoil to the approximate depth of existing topsoil as final backfilling operation and crown to three inches height. Maintain crowned surface to the satisfaction of Engineer, during the guarantee period.
 3. Remainder of Backfill in Paved Roadway Areas: Backfill remainder of the trench using backfill materials specified in the following:
 - a. Paved Roadways of Streets: Aggregate Backfill compacted in eight inch layers to the bottom of temporary or permanent pavement.
 - b. Unpaved Shoulders of Streets: On-Site Backfill compacted in six inch layers to a point six inches below the adjacent existing surface. Backfill the remaining six inches with compacted Aggregate Backfill.
 - c. Bituminous Driveways: On-Site Backfill compacted in six inch layers to a point eight inches below the adjacent existing surface. Backfill the remaining eight inches with compacted Aggregate Backfill and specified replacement pavement.
 - d. Stone Driveways and Parking Areas: Backfill compacted in six inch layers to a point six inches below the adjacent existing stone surface. Backfill the remaining six inches with stone surface replacement pavement.
 4. Remainder of Backfill Under Sidewalks: Backfill compacted in six inch layers to a point eight inches below the adjacent existing surface. Backfill the remaining eight inches with compacted Aggregate Backfill and specified concrete sidewalk.
 5. Remainder of Backfill in Unimproved Streets: Backfill compacted in six inch layers to a point six inches below the adjacent existing surface. Backfill the remaining six inches with compacted Aggregate Backfill.
- E. Compacting: During the course of backfilling and compacting work, the Engineer reserves the right to make tests at various locations or depths of trenches, to determine whether the

Contractor's compaction operations are meeting specified requirements. Compact trench backfill as follows:

1. Solidly tamp each layer of Initial Backfill around the pipeline with proper tamping tools made specially for this purpose.
2. Thoroughly compact Aggregate Backfill with a vibratory compactor of a type and size satisfactory to the Engineer. Compacting of Aggregate Backfill by puddling or jetting will not be permitted.
3. Use mechanical tampers to compact the various backfill materials in trench backfilling operations to produce a density of material at the bottom of each layer of not less than 92 percent of maximum density obtained at plus or minus two percentage points of the optimum moisture content, as determined by the ASTM D698 method. Perform field determinations of density, when requested by the Engineer, according to ASTM D1556 or ASTM D2922.
4. When testing is performed using ASTM D2922 methods, use machines capable of testing to the full depth of the lift being tested utilizing direct transmission methods. Testing machines utilizing backscatter methods are not acceptable.
5. The use of puddling or jetting for compacting the various backfill materials in trenches is prohibited.

3.04 ANCILLARY WORK

- A. Backfilling Trenches for Electrical Work: Perform trench backfilling for conduits by methods which will result in thorough compaction of backfill material without displacement of the conduit and minimum settlement of backfilled material. Settlement of backfill shall be considered evidence of improper workmanship or inclusion of unsuitable backfill materials, or both, and will require removing and recompacting settled material at no increase in Contract Price.
 1. Backfill single and banded conduits, not encased in concrete, using Select Earth Backfill placed to six-inches minimum compacted depth to a point six inches above the conduit. Backfill remainder of trench to the level of planned subgrade using Backfill materials placed in layers not exceeding six-inches in thickness after compaction.
 2. Backfill concrete encased conduits using Backfill materials placed in layers not exceeding six-inches in thickness after compaction.
 - a. In trenches under paved areas, use Aggregate Backfill placed in layers not exceeding four-inches in thickness after compaction to the bottom of the temporary or permanent paving.
 3. Backfill direct bury cable encased in Fine Aggregate placed to minimum compacted depth indicated. Backfill remainder of trench to the level of planned subgrade using Select Earth Backfill materials placed in layers not exceeding six-inches in thickness after compaction.
- B. Underground Warning Tape: For the purposes of early warning and identification of buried pipes during future trenching or other excavation, provide continuous identification tapes in trenches. Install in accordance with printed recommendations of the tape manufacturer, and as specified herein:
 1. Bury tape at a depth of 12-inches below grade. In pavements measure 12-inches from subgrade of pavement.
 2. Provide warning tape in trenches for utilities specified previously.
- C. Cleanup: After trenches and other excavations are backfilled and work completed, remove surplus excavated materials, rubbish or other materials from work site. Dispose of materials off site in a lawful manner.
 1. Remove surplus excavated material, rubbish and other construction debris, and keep removed to a point not more than two hundred feet from head of open trench, unless otherwise authorized by Engineer.
 2. Where surplus excavated material is lawfully disposed of on public property, spread the material evenly and leave the area in neat, smooth compacted condition.
 3. When repaving over trenches and other excavations is completed, sweep paved surfaces affected by work using hand or power sweepers, and if required by Engineer, flush with

- water to remove dust and small particles.
4. When it is necessary to haul soft or wet soil material over roadways, use suitably tight vehicles to prevent spillage. Clear away spillage of materials on roadways caused by hauling.
 5. In case the Contractor shall fail or neglect to do so or to make satisfactory progress in doing so, within twenty-four hours after the receipt of a written notice from the Engineer, the Owner may remove such surplus material and clear the roadways, sidewalks and other places, and the expense for such work charged to the Contractor or deducted from any moneys due or to become due under the Contract.
- D. Maintenance: The Contractor is solely responsibility for injury or damage resulting from lack of trench maintenance during the guarantee period. If trench surfaces are not satisfactorily maintained or repairs begun within three days after written notice from Engineer, repairs may be made by Owner and the cost charged against Contractor, or deducted from any moneys due or to become due under the Contract.
1. Seeded Area Protection and Maintenance: Protect seeded areas from washouts by methods specified in this Section. Reseed washouts and bare spots that develop from inadequate protection or otherwise until a healthy, complete coverage stand of grass is obtained.
 2. Temporary Barricades: Use temporary barricades to protect lawn areas from foot traffic or other areas until a healthy, total coverage stand of grass is obtained. Barricade materials subject to Engineer's approval.

END OF SECTION

**SECTION 31 23 23
FILL****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Filling, backfilling, and compacting for slabs-on-grade, paving, and site structures.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.

1.03 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
- B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- D. ASTM C150/C150M - Standard Specification for Portland Cement.
- E. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- F. ASTM C796/C796M - Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam.
- G. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- H. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
- I. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- J. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- K. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- L. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- M. ASTM D6817/D6817M - Standard Specification for Rigid Cellular Polystyrene Geofoam.
- N. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- O. ASTM D7557/D7557M - Standard Practice for Sampling of Expanded Geofoam Specimens.
- P. ICC-ES AC239 - Acceptance Criteria for Termite-Resistant Foam Plastic.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
- C. Compaction Density Test Reports. Aggregates: Submit Compaction Density Tests reports based upon ASTM D1557.
- D. Aggregate Certificates: When requested by the Engineer/Architect/PM, submit certificates from the aggregate supplier certifying conformity to the requirements stated under the Quality Assurance Article.

- E. Testing Agency Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Free of organics, debris and/or rock fragments in excess of 3 inches, in any dimension. In the top 18 inches of fill, the maximum particle size should be limited to approximately 1.5 inches..
- B. Structural / Select Fill: In accordance with ASTM D2487 Unified Soil Classification, imported select fill should consist of silty gravel (GM), clayey gravel (GC), gravelly sand (SP), silty sand (SM), clayey sand (SC), or low-plasticity sandy clay (CL) with a liquid limit and plasticity index of less than 40 and 15, respectively, or an approved alternate..
- C. Drain aggregate: AASHTO No. 57.
- D. Granular Fill: Graded aggregate base.
- E. Sand: Complying with Baltimore County Standard Specifications for Construction and Materials.
- F. Topsoil: See Section 31 22 00.

2.02 ACCESSORIES

- A. Geotextile: Nonwoven geotextile shall be rot and mildew resistant manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolephins or polyesters. Non-biodegradable, woven.
 - 1. The geotextile shall meet the material properties of Table H.1 of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- B. Vapor Retarder: 10 mil thick, polyethylene.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. If tests indicate materials do not meet specified requirements, change material and retest.
- C. Provide materials of each type from same source throughout the Work.
- D. For subgrade on which structures will be placed:
 - 1. If structures are indicated to be founded on rock and that rock has been undercut to an elevation lower than that indicated, fill undercut space with concrete of same class as that used in structure.
 - 2. If subgrade material is disturbed, remove and replace material with compacted structural or aggregate backfill.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.

- B. Identify required lines, levels, contours, and datum locations.
- C. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- D. Verify structural ability of unsupported walls to support imposed loads by the fill.
- E. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Select Fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.
- E. For subgrade on which slab-on-grade or pavement will be placed:
 - 1. Proofroll subgrade using a smooth drum roller capable of applying 10 ton of static force.
 - 2. When proof rolling indicates an area to be unstable or non-uniform, stabilize the area by removing the unsuitable material and replacing it with compacted select backfill material.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
 - 1. No additional compensation will be paid where backfilling by hand is required.
- C. Backfill Restrictions:
 - 1. After completion of footings and walls and the removal of forms and prior to backfilling, clean excavation free of trash and debris.
 - 2. Do not place backfill material prior to seven days after completion of structure walls.
 - 3. Do not place backfill material on wet or frozen areas.
 - 4. Do not operate heavy equipment closer to walls than a distance equal to the height of backfill material above the top of the structure footing.
 - 5. Do not place backfill material against exterior walls until supporting floors or slabs at top of walls are in place.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- G. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 92 percent of maximum dry density.
- H. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density and as indicated in Geotechnical Report.
 - 2. At other locations: 92 percent of maximum dry density and as indicated in Geotechnical Report.
- I. Reshape and re-compact fills subjected to vehicular traffic.
- J. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Structural Fill at parking lot embankments:
 - 1. Use structural fill.
 - 2. Fill up to subgrade elevations.
 - 3. Maximum depth per lift: 6 inches, compacted.
 - 4. Compact to minimum 97 percent of maximum dry density.
- C. Under Interior Slabs-On-Grade:
 - 1. Use granular fill.
 - 2. Depth: 4 inches deep.
 - 3. Compact to 95 percent of maximum dry density.
 - 4. Cover with sand.
 - a. Depth: 2 inches.
 - b. Compact to 95 percent of maximum dry density.
- D. At Foundation Walls and Footings:
 - 1. Use general fill.
 - 2. Fill up to subgrade elevation.
 - 3. Compact each lift to 90 percent of maximum dry density.
 - 4. Do not backfill against unsupported foundation walls.
 - 5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- E. Over Buried Utility Piping and Conduits in Trenches:
 - 1. Bedding: Use general fill.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
- F. Inside Planter Boxes:
 - 1. Use granular fill, 4 inches deep.
 - 2. Cover with geotextile.
 - 3. Cover with sand, 2 inches deep.
 - 4. Finish with topsoil, to within 2 inches of planter rim, lightly tamped.
- G. At Lawn Areas:
 - 1. Use general fill.
 - 2. Fill up to 6 inches below finish grade elevations.
 - 3. Fill up to subgrade elevations.
 - 4. Compact to 92 percent of maximum dry density.
 - 5. See Section 31 22 00 for topsoil placement.
- H. Under Pavers Set on Sand Leveling Bed:
 - 1. Use granular fill.
 - 2. Fill up to bottom of sand leveling bed.
 - 3. Compact to 95 percent of maximum dry density.
 - 4. See unit pavers section for leveling bed placement.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
 - 1. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
4. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

3.07 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.
- C. Disposal of Excess Waste and Waste Materials
- D. Remove all waste materials and excess materials including excavated material classified as unsatisfactory soil material, trash, and debris from Owner's property and legally dispose of it. All excess soils must be transported off-site only to facilities approved by Owner.

END OF SECTION

**SECTION 31 25 00
EROSION CONTROL**

PART 1 GENERAL**1.01 REQUIREMENTS OF REGULATORY AGENCIES**

- A. Erosion and Sediment Control Plan:
 - 1. Prior to initiating earth moving activities, implement the soil erosion and sediment control plan shown on the Contract Drawings in accordance with rules and regulations adopted by the Baltimore County Department of Environmental Protection and Sustainability and the Baltimore County Soil Conservation District.
- B. Fines and related costs resulting from failure to provide adequate protection against soil erosion and sediment control are the obligation of the Contractor.
 - 1. Silt, sediment and mud leaving the site will be construed as damage to neighboring property and evidence of negligence on the part of the Contractor.
 - 2. Damages to neighboring property shall be rectified and/or restitution shall be paid by the Contractor.
- C. Conduct work in compliance with rules, regulations and requirements of the Baltimore County Department of Environmental Protection and Sustainability. Erosion and sediment control measures employed will be subject to approval and inspection by the Baltimore County Sediment Control Inspector.
- D. If work outside the limit of disturbance shown on the approved Erosion and Sediment Control Plan is required to accomplish construction activities proposed by the Contractor, it shall be the Contractor's responsibility to amend the Erosion and Sediment Control Plan and obtain approval of the revisions from Baltimore County and the Baltimore County Soil Conservation District.

1.02 REFERENCE STANDARDS

- A. Baltimore County Department of Environmental Protection and Sustainability
- B. Baltimore County Soil Conservation District

1.03 SUBMITTALS

- A. Samples: Submit samples of materials to be used including names, sources and descriptions.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Materials for erosion control work shall be as described on the Contract Drawings.

PART 3 EXECUTION**3.01 PERFORMANCE**

- A. Conduct work in compliance with the approved erosion and sediment control plan, notes, and details shown on the Contract Drawings.

END OF SECTION

**SECTION 31 37 00
RIPRAP**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Riprap .

1.02 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Riprap: Provide Class 1 riprap in accordance with Contract drawings.
- B. Geotextile Fabric: Non-biodegradable, non-woven .

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not place riprap over frozen or spongy subgrade surfaces.

3.02 PLACEMENT

- A. Place geotextile fabric over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends, embankment slopes, and as indicated.

END OF SECTION

**SECTION 32 11 23
AGGREGATE BASE COURSES**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Aggregate base course.
- B. Paving aggregates.

1.02 REFERENCE STANDARDS

- A. Baltimore County Standards Specifications for Construction and Materials, latest edition.
- B. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. When aggregate materials need to be stored on site, locate within permitted Limit of Disturbance.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Pavement Subbase: Graded Aggregate Base conforming to Baltimore County Standard Specifications for Construction and Materials.
- B. Geotextile: See Section 31 23 23.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Under Bituminous Concrete Paving:
 - 1. Place coarse aggregate to a total compacted thickness of 6 inches.
- B. Under Portland Cement Concrete Paving:
 - 1. Place coarse aggregate to a total compacted thickness of 4 inches.
- C. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- D. Level and contour surfaces to elevations and gradients indicated.
- E. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- F. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for general requirements for field inspection and testing.

3.05 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

**SECTION 32 12 16
ASPHALT PAVING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Work under this Section shall comply with the requirements of Category 500 (Paving) of the Baltimore County Standard Specification for Construction and Materials except as modified herein.

1.02 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials: AASHTO T 180, Moisture-Density Relations of Soils Using a ten pound Rammer and an 18-inch Drop.
- B. ASTM International:
 - 1. ASTM D 1557, Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using ten pound (4.5-kg) Rammer and 18-inch (457-mm) Drop.
 - 2. ASTM D 2167, Test Method for Density of Soil in Place by the Rubber-Balloon Method.
- C. Baltimore County Standard Specifications and Details of Construction.

1.03 SUBMITTALS

- A. Paving Mixes: Submit aggregate gradation and paving mix design for all materials to be used in paving construction.
- B. Independent Testing Laboratory: Submit name and qualifications of Independent Testing Laboratory performing Quality Control Testing to Engineer for approval prior to performance of paving construction. Testing Laboratory shall meet standard Baltimore County Department of Public Works criteria.

1.04 QUALITY ASSURANCE

- A. Source Quality Control:
 - 1. Maintain the quality of work by using the products of a qualified bituminous concrete producer and qualified plant operating workmen.
 - 2. Use products of a bituminous concrete bulk producer regularly engaged in production of hot-mix, hot-laid bituminous concrete conforming to the standards referenced herein.
 - 3. Workmen Qualifications:
 - a. Provide at least one person thoroughly trained and experienced in the skills required and who readily understands the design and is completely familiar with the application of bituminous concrete paving work. During progress of bituminous concrete paving work the trained person shall be present to direct the performance of work.
 - b. For actual finishing of bituminous concrete surfaces and operation of the equipment, use only personnel thoroughly trained and experienced in the skills required.

1.05 FIELD CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install aggregate courses when ambient temperature is below or is expected to fall below freezing.
 - 2. Do not use aggregate containing frost nor place aggregate courses on frozen subgrade.
 - 3. Terminate placement of bituminous concrete surface courses of permanent pavement between October fifteen to thirty first, and do not resume placement prior to April first to fifteenth; interim days between date limits may be used for placement as determined by the Engineer depending upon weather conditions.
 - 4. Do not place bituminous concrete surface courses of permanent pavement when the ambient temperature is 40 degrees F. or lower; nor when the temperature of the pavement, base or binder on which it is to be placed is 40 degrees F. or lower.

5. Spread and compact hot-mixed, hot-laid bituminous mixtures at the ambient temperatures and weather limitations set in accordance with County specifications.
6. Protection:
 - a. Protect and maintain cut pavement edges until permanent replacement paving is placed.
 - b. Protect paved surfaces outside of the pavement removal limits. Repair pavement outside removal limits, as may be damaged by construction operations, at no increase in Contract Price.
 - c. Use such means as necessary to protect and maintain pavement materials before, during, and after installation to protect the installed work and materials of other trades.
7. In the event of failure of the work of this Section within the Guarantee Period, immediately make repairs and replacements. Upon failure to perform maintenance or repairs within three days after receiving written notice from the Owner or Engineer, the Owner may perform such maintenance or repairs and deduct the cost thereof from any moneys due or to become due the Contractor under the Contract.
8. Assume responsibility for any injury or damage resulting from lack of required maintenance or repairs during Guarantee Period. Indemnify and save harmless Baltimore County and Engineer from loss by reason of suit or action at law, based upon occurrence or omission occurring during this period.
 - a. Completion Certificate will not be issued until work of this Section is completed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Base Course: Hot mix asphalt base course, Superpave 19mm, PG 64S-22.
- B. Surface Course: Hot mix asphalt surface course, Superpave 12.5mm, PG 64S-22.
- C. All paving materials shall be in accordance with the Baltimore County Standard Specifications for Construction and Materials.

2.02 PAVEMENT MIXES

- A. Composition of Mixtures:
 1. See Geotechnical Report for pavement design.
 2. Design mixes shall be in conformance with the Baltimore County Standard Specifications for Construction and Materials, Section 904.
 3. Design mixes shall be submitted to the Engineer for approval.

PART 3 EXECUTION

3.01 PREPARATION

- A. Subgrade Preparation: Just prior to subbase installation, as specified in Section 32 11 23.
 1. Perform subgrade preparation only after site grading, trenching, etc., have been completed and accepted by the Engineer.
 2. The moisture content of the subgrade material at the time of compaction shall not exceed two percentage points above the optimum moisture content.
 3. Subgrade over Trenches: Backfill and compact trenches as specified in Section 31 23 16.13.
 - a. Subbase Construction: Install Subbase in accordance with Baltimore County standards. Install Subbase to 'after-compaction' thickness required.

3.02 PERMANENT PAVING INSTALLATION:

- A. General Requirements: Methods of preparing mixture, placing mixture, compaction, and protection of in-place bituminous concrete for pavement shall comply with Baltimore County standards. The specified thicknesses are the compacted thicknesses.
- B. Base Course Installation:

1. Bituminous Concrete Base Course: Construct in accordance with Baltimore County standards.
- C. Surface Course Installation:
 1. Bituminous Concrete Surface Course: Construct in accordance with Baltimore County standards.
- D. Compaction: As specified in Baltimore County Standard Specification Section 504.03.06.
- E. Sampling and Testing: As specified in Baltimore County Standard Specification Section 504.03.10.
- F. Repaving Trench Openings Installation: Permanent paving over trenches may be installed only when authorized by the County and shall not be sooner than six weeks following trench backfill. Follow two stage process outlined in the Baltimore County Specifications.
 1. Pavement Repair: Any existing bituminous surface damaged during construction shall be repaired prior to placement of new or overlay paving. Work shall be in accordance with Baltimore County Standard Specifications Sections 504 and 505.

3.03 MAINTENANCE

- A. Contractor is responsible for maintaining pavement without additional compensation until issuance of Completion Certificate.
- B. Without an increase in Contract Price maintain the work done under this Section for a period as stated in the Agreement after the date of the Owner's approval of the Completion Certificate issued by the Engineer. Maintenance shall include the repair or removal and replacement of such work which has failed, or wherever surface depressions have developed. Materials and methods used to repair or replace such work to conform to the applicable requirements of this Section.

END OF SECTION

**SECTION 32 14 00
UNIT PAVERS****PART 1 GENERAL****1.01 SUMMARY**

- A. The work specified in this Section consists of furnishing and installing unit pavers as required to reconstruct plaza paving areas removed during construction.

1.02 REFERENCES

- A. Referenced Standards:
 - 1. American Society of Testing and Materials (ASTM):
 - a. C 33 - Specification for Concrete Aggregates.
 - b. C 136 - Method for Sieve Analysis for Fine and Coarse Aggregate.
 - c. C 140 - Sampling and Testing Concrete Masonry Units.
 - d. C 144 - Standard Specification for Aggregate for Masonry Mortar.
 - e. C 936 - Specification for Solid Interlocking Concrete Paving Units.
 - f. C 979 - Specification for Pigments for Integrally Colored Concrete.
 - g. D 698 - Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures using a 5.5 lb Rammer and 12 inch drop.
 - h. D 1557 - Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures using a 10 lb (4.54 kg) Rammer and 18 inch drop.
 - i. D 2940 - Graded Aggregate Material for Bases or Subbases for Highways and Airports.

1.03 QUALITY ASSURANCE

- A. Installation shall be by a Contractor and crew with at least one year experience in installing interlocking unit pavers on projects of similar nature and size.
- B. Contractor shall conform to all local and state licensing and bonding requirements.

1.04 SUBMITTALS

- A. Submit the following:
 - 1. Shop or product drawings and product data.
 - 2. Full size samples of concrete paving units to indicate color, shape, and finish.
 - 3. Full size samples of brick paving units to indicate color and finish.
 - 4. Sieve analysis for gradation of bedding and joint sand.
 - 5. Test results from an independent testing laboratory for compliance of paving unit requirements to (ASTM C 936) or other applicable requirements.
 - 6. Manufacturer's certification of concrete pavers by ICPI as having passed ASTM standards.
 - 7. Indicate layout, pattern, and relationship of pavers to fixtures and project-formed details.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver unit pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. Unload pavers at job site in such a manner that no damage occurs to the product.
- B. Cover sand with a waterproof covering to prevent exposure to rain or removal by wind, and secure in place.
- C. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to the paving project.

1.06 ENVIRONMENTAL CONDITIONS

- A. Do not install sand or pavers during heavy rain or snowfall.
- B. Do not install sand and pavers over frozen base materials.
- C. Do not install frozen sand.

- D. At end of workday, or during rainy weather, cover work exposed to weather with waterproof coverings, securely anchored.

PART 2 PRODUCTS

2.01 BRICK PAVERS

- A. Provide brick pavers and reuse existing brick pavers for work outlined in sidewalk and ramp areas delineated on drawings as manufactured by: Glen-Gery Brick Center, Turnpike Industrial Park, 2750 commerce Drive, Middletown, PA 17057 (717) 939-6061 or approved equal. Bricks to be selected by Owner.

2.02 BEDDING SAND

- A. Clean, non-plastic, free from deleterious or foreign matter, natural or manufactured from crushed rock. Do not use limestone screenings or stone dust that do not conform to the grading requirements in Table 1. When concrete pavers are subject to vehicular traffic, the sands shall be as hard as practically available.
- B. Sieve according to ASTM C 136.
1. Conform to the gradation requirements shown in Table 1:
 - a. Table 1

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10

2.03 JOINT SAND

1. Polymeric Sand
2. Uniformly blended mixture of top quality mason-grade sand and a polymeric additive. When activated by water the polymer allows the sand to firm up in the joints between pavers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that the subgrade preparation, compacted density, and elevations conform to the drawings and specifications.
- B. Verify that geotextiles, if applicable, have been placed in accordance with the specifications and drawings.
- C. Verify that aggregate base materials, thickness compaction, surface tolerances, and elevations conform to the specifications.
- D. Verify location, type, installation, and elevations of edge restraints around the perimeter area to be paved.
- E. Verify that the base is dry, uniform, even, and ready to support sand, pavers, and imposed loads.
- F. Beginning of bedding sand and paver installation means acceptance of base and edge restraints.

3.02 INSTALLATION

- A. Unit Pavers, Bedding Sand, and Polymeric Sand shall be installed per manufacturer's specifications and recommendations. The following is a general outline of work to be performed. Any conflicts between this general outline and manufacturer specifications should defer to manufacturer information.
- B. Spread the bedding sand evenly over the base course and screed to a nominal 1 inch thickness. DO NOT EXCEED 1 inch thick. The screeded sand should not be disturbed. Place sufficient sand to stay ahead of the laid pavers. Do not use bedding sand to fill depressions in the base surface.
- C. Ensure that pavers are free of foreign material before installation.
- D. Install the pavers in the pattern(s) shown on the drawings, maintaining straight pattern lines.
- E. Joints between the pavers shall be between 1/16 and 3/16 inch.
- F. Fill gaps at the edges of paved areas with cut pavers or edge units. Cut pavers should be no smaller than one-third of the full unit size along edges subject to vehicular traffic.
- G. When required, cut pavers with a paver splitter or masonry saw.
- H. Randomly place new brick pavers within reset existing brick pavers to blend any variations.
- I. Use a low-amplitude, high-frequency plate vibrator capable of 5,000 lb compaction at a frequency of 75-100 hz to compact pavers.
- J. Vibrate the pavers, sweeping Polymeric Sand into the joints and vibrating until they are full. This will require 2 to 3 passes with the vibrator.
- K. Remove all excess Polymeric Sand from the pavers. Ensure tops of pavers are clean of Polymeric Sand.
- L. Moisten paver area with a light spray allowing water to flood into the paver joints. Repeat spraying 2-3 times at 10 minute intervals.
- M. Let dry without vehicle or foot traffic for 24 hours minimum.
- N. When completing work for the day, all pavers to within 3 ft of the laying edge must be left fully compacted with sand-filled joints.
- O. Final surface elevations shall not deviate more than 3/8 inch under a 10 ft long straight edge.
- P. The surface elevation of the pavers shall be 1/8 to 1/4 inch above adjacent drainage inlets, concrete collars or channels.

3.03 FIELD QUALITY CONTROL

- A. After removal of excess sand, check final elevations for conformance to the drawings.
- B. Upon completion of the work, clean up all work areas by removing any debris, surplus material, and equipment from the site.

END OF SECTION

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**SECTION 32 16 23
SIDEWALKS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Asphalt sidewalks.
- B. Concrete sidewalks.
- C. Concrete wheelchair ramps.

1.02 REFERENCE STANDARDS

- A. Baltimore County Standard Specifications for Construction and Materials.
- B. ACI PRC-305 - Guide to Hot Weather Concreting.
- C. ACI PRC-306 - Guide to Cold Weather Concreting.
- D. ADA Standards - 2010 ADA Standards for Accessible Design.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
- G. ASTM D946/D946M - Standard Specification for Penetration-Graded Asphalt Binder for Use in Pavement Construction.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

1.04 FIELD CONDITIONS

- A. Temperature Requirements: Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Follow recommendations of ACI PRC-305 and ACI PRC-306 when concreting during hot and cold weather, respectively.

PART 2 PRODUCTS**2.01 ASPHALT SIDEWALKS**

- A. Gravel Subbase: Graded Aggregate Base, Thickness as indicated on drawings.
- B. Asphalt Cement: Hot mix asphalt Superpave, 12.5mm, PG64S-22

2.02 CONCRETE SIDEWALKS AND WHEELCHAIR RAMPS

- A. Gravel Subbase: Graded Aggregate Base, Thickness as indicated on drawings.
- B. Concrete Forms: Wood.
- C. Concrete Materials: As indicated in Section 03 30 00.
- D. Aggregate: Pit Run, washed, 3/8 inch (1 cm) stone; free of shale, clay, friable material and debris.
- E. Reinforcement:
 - 1. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, plain type, flat sheets, unfinished.
- F. Joint Filler: Preformed expansion, with a thickness of 1/2 inch.
- G. Tactile Warning Surfaces: See Plan Details.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify gradients and elevations of the subgrade are correct as shown on drawings. Where poor subgrade material is encountered, remove and replace with suitable material.

- B. Verify compacted subgrade is acceptable, ready to support imposed loads and paving, and ready to receive work.

3.02 SUBBASE PREPARATION

- A. Maintain subgrade in a smooth, compacted condition with required section and established grade until concrete is placed.
- B. See Section 32 11 23 for aggregate subbase.

3.03 ASPHALT SIDEWALK INSTALLATION

- A. Place asphalt within 24 hours of applying primer or tack coat.
- B. For single course, place to thickness shown in the drawings.
- C. Compact to specified density. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 CONCRETE SIDEWALK AND WHEELCHAIR RAMP INSTALLATION

- A. Forming:
 - 1. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
 - 2. Sidewalk Forms: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Height equal to the full depth of the finished sidewalk.
 - 3. Wheelchair Ramps: Place and secure forms to location, dimension, profile, and gradient shown on drawings. Comply with ADA Standards.
- B. Reinforcement:
 - 1. Place wire-mesh reinforcement mid-height of forms.
- C. Placement:
 - 1. Place concrete in a single lift.
 - 2. Consolidate concrete by tamping and spading.
 - 3. Install work in accordance with Baltimore County Standard Specifications for Construction and Materials.
- D. Joints:
 - 1. Spacing: Provide scored joints every 10 feet (3 m).
 - 2. Filler height equal to the full depth of the finished concrete.
- E. Finishing:
 - 1. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge, 1/4 inch radius.
 - 2. Wheelchair Ramps: Broomed perpendicular to slope.

3.05 TOLERANCES

- A. Surface Flatness: 1/4 inch, maximum, measured with 10 foot straight edge.

3.06 PROTECTION

- A. Immediately after placement, protect sidewalk from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over sidewalk for 7 days minimum after finishing.

END OF SECTION

**SECTION 32 17 13
PARKING BUMPERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast concrete parking bumpers and anchorage.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Parking Bumpers: Precast concrete as indicated on Contract Drawings.
- B. Dowels: Steel, unfinished; 1/2 inch diameter, 24 inch long, pointed tip.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install units without damage to shape or finish. Replace or repair damaged units.
- B. Install units in alignment with adjacent work.
- C. Fasten units in place with 2 dowels per unit.

END OF SECTION

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**SECTION 32 17 23
PAVEMENT MARKINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Painted pavement markings.

1.02 REFERENCE STANDARDS

- A. Baltimore County Standard Specifications for Construction and Materials.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work of this section with adjoining work.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.07 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 SEQUENCING

- A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of markings.

PART 2 PRODUCTS

2.01 PAINTED PAVEMENT MARKINGS

- A. Comply with Baltimore County Standard Specifications for Construction and Materials.
- B. Painted Pavement Markings: As indicated on drawings.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Posts, rails, and frames.
- B. Wire fabric.
- C. Concrete.
- D. Manual gates with related hardware.
- E. Accessories.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

1.04 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS**2.01 FENCE SYSTEM**

- A. Provide fence system supplied by single manufacturer, including fabric, posts, rails braces, gates, fasteners and all others items required for complete installation. All components of fence system shall be black, PVC coated.

2.02 FABRIC

- A. PVC Coated Galvanized Steel Fabric: No. 9 gauge core, PVC coated galvanized steel wire having a minimum break load of 1290 pounds. Galvanizing shall be in accordance with ASTM A641-71a. PVCV coating shall be 7 mil minimum thickness, applied by fusion method over a thermoset plastic bonding agent. Fabric shall be interwoven in a two inch mesh with top and bottom selvage edges both twisted and barbed. All cut ends shall be coated at the factory during the weaving process. Coating shall be black.
- B. Galvanized Tension Wire: No. 7 gauge marcelled wire conforming to ASTM A 8724 and galvanized according to ASTM A 824 Type II zinc-coating (Class 2) at 1.20 ounces per sq. ft. Wire shall be PVC coated to match fabric.

2.03 FRAME WORK AND GATES

- A. Vinyl Coating: Ferrous metal elements of the fence frame and accessories shall be coated with 10 to 14 mils minimum thickness PVC, applied by the fusion method over a thermoset plastic bonding agent after fabrication. Color shall match fence fabric.
- B. Frame Work: Includes the following components:
 - 1. Intermediate (Line) Posts: Vinyl-coated, nominal two inch roll formed, open seam, self draining shapes fabricated from 50,000 psi minimum yield strength steel and weighing 3.12 lbs. per ft., or 2-1/2 inch schedule 40 at 3.65 per ft.
 - 2. End, Pull and Corner Posts: Vinyl-coated, nominal three inch roll formed, open seam, self draining shapes fabricated from 50,000 psi minimum yield strength steel and weighing 5.10 lbs. per ft., or 3-inch schedule 40 at 5.79 lbs. per ft.
 - 3. Gate Posts: Nominal four inch vinyl coated steel pipe or square shape members fabricated from 30,000 psi minimum yield strength steel and weighing 9.10 lbs. per ft.

4. Post Braces: Vinyl coated nominal 1-1/4" steel pipe weighing 2.27 lbs. per ft. minimum, with 3/8 inch diameter vinyl coated truss rod and adjustable take-up device. Provide two brace assemblies at each corner post and one brace assembly at each end and gate post.
5. Top Rail: Vinyl coated, nominal 1-1/4" steel pipe weighing 2.27 lbs. per ft. minimum.
6. Post Tops: Cover post ends with vinyl coated pressed steel or malleable iron, weather tight caps designed to permit passage of top rail, as required.
7. Stretcher Bars: One piece 3/16 x 3/4 inch bar of length equal to full height of fabric. Provide one bar for each gate and end post and two for each corner and pull post. Provide 1/2 inch wide stretcher bar bands spaced not over 15 inches O.C. to secure stretcher bars to posts. Bars shall be vinyl coated.

2.04 SWING GATES

- A. Swing Type Gate: Fabricated of vinyl coated nominal two inch tubular horizontal and vertical members and truss members (as required) assembled by welding. Provide the same fabric as fence and install with stretcher bars and bar ties at 15 inches O.C. Provide diagonal cross bracing of 3/8 inch diameter adjustable length truss rods. Attach gate hardware with rivets or by other means which will provide security against removal. Provide gate hardware as follows:
 1. Hinges: Pressed steel or malleable iron to suit gate size, non-lift-off type, and offset to permit 180 degree swing. Provide one pair (top and bottom) per gate leaf.
 2. Latch: Forked or plunger-bar type, to permit operation from either side of gate. Provide padlock eye as integral part of latch. Provide gate stops for pair of gates designed to accept drop rod or plunger bar.
 3. Keeper: Provide keeper for each gate leaf which will hold gate leaf in open position until manually released.
- B. Padlocks: Provide padlocks conforming to requirements of Fed. Spec. FF-P-106. Key gate padlocks alike and provide two keys per padlock.
- C. Concrete: As specified in Section 03300.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Do not begin fence installation prior to completion of Site Grading.
- B. Drill or dig holes for post footings in firm, undisturbed or compacted soil. Holes shall have a diameter equal to three times the diameter of the post. Excavate hole depths approximately three inches deeper than post bottom, with bottom of posts set not less than 36 inches in concrete base. Space posts a maximum of ten feet on center.
- C. Place concrete around posts in a continuous pour. Tamp concrete for consolidation. Check each post for vertical and top alignment. Crown top of post footings to shed water.
- D. Set keepers, stops, sleeves and other accessories into concrete as required.
- E. Install braces so posts are plumb when diagonal rods are under proper tension.
- F. Install tension wires before stretching fabric and tie to each post with ties or clips.
- G. Pull fabric taut and tie to posts, rails and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tensions after pulling force is released.
- H. Thread stretcher bars through fabric, and secure to posts with metal bands spaced not over 15 inches O.C.
- I. Install three strands of barbed wire parallel on each extension arm on security side of fence. Pull wire taut.
- J. Swing Gate Installation: Install gates plumb, level and secure for full opening without interference. Install ground-set items in concrete for anchorage, as recommended by the fence manufacturer and as detailed. Adjust hardware for smooth operation and lubricate where necessary.

- K. Install gates plumb, level and secure for full opening without interference. Install ground set items in concrete for anchorage, as recommended by fence manufacturer and as detailed. Adjust hardware for smooth operation and lubricate where necessary.
- L. Ground fence and gates as shown on the Contract Drawings.

3.02 ADJUSTMENT

- A. The Contractor and fence installer shall return to the project site approximately one (1) year after acceptance of the Contract by the County to inspect and adjust gates for smooth operation.

END OF SECTION

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SECTION 32 31 19
DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Decorative steel fences.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. ASTM D822/D822M - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- D. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction.
- E. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- D. Manufacturer's Warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Experienced with type of construction involved and materials and techniques specified and approved by fence manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Decorative Metal Fences and Gates:
 - 1. Alumi-Guard; PalmSHIELD horizontal: <https://palmshieldlouvers.com/>

2.02 SPECIALITY HARDWARE

- A. Hinges: Finished to match fence components.
 - 1. Closing: Manual.
 - 2. Material: Steel.
 - 3. Mounting: Center.
 - 4. Brackets: Round.
 - 5. Bearings: Plain.

- 6. Products:
 - a. D&D Technologies USA, Inc; SureClose, Model SHUT IT® ROUND BOLT-ON
BADASS: www.ddtech.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Latches: Finished to match fence components.
 - 1. Mechanism: Gravity.
 - 2. Locking: Mechanical.
 - 3. Material: Steel.

END OF SECTION

**SECTION 32 33 00
SITE AMENITIES****PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes: The work specified in this Section consists of clearing and grubbing operations, the disposal of spoil materials, and work associated with existing plantings designated to remain.
- B. This section includes the following items:
 - 1. Flagpoles
 - 2. Benches
 - 3. Beach Volleyball Rubber Border System
 - 4. Grill Inserts
 - 5. Signage

1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete: Footings and installation of anchor bolts that are to be provided by manufacturer.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Selection Samples: Two complete color charts representing manufacturer's full range of available colors.
- D. Shop Drawings: Complete erection drawings, showing layout, shop and field connections, column base details, and footing loads.
 - 1. Include location diagram for anchor bolts to be embedded in concrete, specifying maximum variation from plan location.
 - 2. Shop drawings and calculations signed and sealed by design engineer as applicable.

1.04 QUALITY ASSURANCE

- A. Design Engineer: Provide design by a professional engineer licensed in the State in which the project is located.
- B. Manufacturer Qualifications: Firm with at least 5 years experience in design and manufacture of pre-engineered shelters.
- C. Fabrication and installation of site improvements by experienced craftsmen with excellent record of performance on completed project of comparable size, scope, and quality.
- D. All materials, hardware and furnishings shall be new, first quality.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Coordinate delivery requirements with Owner and other installers.
- B. Store products in manner to prevent damage prior to installation.
- C. Where products need to be stored outdoors, store off the ground and place so that water will drain.

PART 2 PRODUCTS**2.01 FLAGPOLES**

- A. Furnish and install three (3) flagpoles (1 - 30' height, and 2 - 25' height) at locations indicated on the plans. Provide flagpoles manufactured by Concord Industries or approved equal.

Flagpole color to be Dark Bronze. Flagpoles shall be:

1. Independence Series
Concord
12661 Bradley Avenue
Sylmar, CA 91342
1-800-527-3802

2. Or approved equal.

B. Flagpole specifications are as follows:

Exposed Height (feet)	Shaft Diameter (inch)		Maximum Wall Thickness (inch)	Maximum Unflagged Windspeed (mph)	Recommended Flag Size (feet)	Flagged Windspeed (mph)	Concord Continental Catalog Part Number
	Base	Top					
25	6	3.5	0.156	195	5x8	120+	I25060156
25	6	3.5	0.188	222	5x8	120+	I25060188
30	6	3.5	0.156	195	6x10	120	I30060156
30	6	3.5	0.188	222	6x10	120+	I30060188
35	6	3.5	0.156	129	6x10	95	I35060156
35	7	3.5	0.156	184	6x10	120	I35070156
35	7	3.5	0.188	209	6x10	120	I35070188
40	7	3.5	0.156	138	8x12	95	I40070156
40	8	3.5	0.188	203	8x12	120	I40080188
45	8	3.5	0.188	166	8x12	110	I45080188
50	8	3.5	0.188	127	10x15	95	I50080188
50	10	4	0.188	185	10x15	115	I50100188
60	10	4	0.188	136	12x18	95	I60100188
60	10	4	0.250	167	12x18	110	I60100250
60	12	4.4	0.250	213	12x18	120	I60120250
70	10	4	0.312	145	15x25	95	I70100312
70	12	3.6	0.250	169	15x25	115	I70120250
80	12	4	0.375	174	20x30	115	I80120375

2.02 BENCHES

- A. Furnish and install benches with backs at locations indicated on the plans. Provide benches with 2-1/2" diameter 0.12" wall steel tubing with continuous weld end caps supports. Provide seat and back panels that are constructed of 1-1/4" diameter 0.12" wall steel tubing with 5/8" diameter, round, steel rod, welded to the frame insert panel. Benches shall have polyester powder coat finish, Color to be selected by owner. Benches shall be:

1. Presidio Backed Straight Seat, portable
Width 22-1/2" x Depth 30" x Length 72"
Landscapeforms
431 Lawndale Avenue
Kalamazoo, MI 49008
1-800-521-2548
2. Belson Outdoors Steel Players Bench, portable
Model 942S-P10
627 Amersale Drive
Naperville, IL 60563
1-800-323-5664
3. Or approved equal

2.03 BEACH VOLLEYBALL RUBBER BORDER SYSTEM

- A. FlexEdge Rubber Curb
 - 1. Base: Model #SEFLEXBVC by SportsEdge
 - 2. Components: Beach Volleyball Rubber Border System meeting the following criteria as the minimum standard:
 - a. Rubber Curb:
 - 1) 8.5"W x 10.5"H x 96"L
 - 2) Manufactured of 100% recycled rubber
 - 3) Manufactured of 90% post-consumer content
 - b. Pre-fabricated Corners:
 - 1) 8.5"W x 10.5"H x 12"L each side
 - 2) Manufactured of 100% recycled rubber
 - 3) Manufactured of 90% post-consumer content
 - c. Accessories:
 - 1) 18" Anchor Pins, steel with welded cap (Part #SEFLEXA18)
 - 2) 24" Anchor Pins, steel with welded cap (Part #SEFLEXA24)
 - 3) Betaseal Adhesive (Part #SEFLEXBST)
 - 4) UV Top Coat (Part #SEFLEXTC)

2.04 GRILL INSERTS

- A. Furnish and install 24"x30" stainless steel grates for each proposed grill.

2.05 SIGNAGE

- A. Furnish and install signage at front and rear entrance as indicated on plan drawings.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Coordinate installation of embedded anchors and plates so that locations will be within required tolerances.
- B. Clean surfaces thoroughly prior to installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 FLAGPOLES

- A. Install in accordance with manufacturer's instructions and specifications.

3.04 BENCHES

- A. Install in accordance with manufacturer's instructions and specifications.

3.05 BEACH VOLLEYBALL RUBBER BORDER SYSTEM

- A. Install as recommended by the manufacturer and as indicated on the drawings. The installing contractor shall ensure that the base is compacted and level to correct elevation.

3.06 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

**SECTION 32 39 13.19
DECORATIVE METAL BOLLARDS**

PART 1 GENERAL**1.01 SUMMARY**

- A. Section Includes:
 - 1. Metal bollard covers
 - 2. Decorative metal bollards.
 - 3. Accessories

1.02 SUBMITTALS

- A. Manufacturer's Product Data
 - 1. Comply with Section 01 33 00 – Submittal Procedures.
 - 2. Product Data: Provide for each type of bollard, component, finish, and accessory specified.
 - 3. Color Samples: Submit sample of color specified.
 - 4. Maintenance Data: Submit manufacturer's field touch-up, cleaning, and maintenance instructions.
 - 5. Warranty Documentation: Submit sample of manufacturer's warranty.

1.03 QUALITY ASSURANCE

- A. Comply with Section 01 43 00 – Quality Assurance.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Protect bollards and accessories during delivery, storage, and handling.

1.05 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship.
 - 1. Warranty Period: Five years from date of invoice, except as otherwise indicated.
 - a. Coatings: Two years, against peeling, cracking, or significant color change.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Manufacturer: Reliance Foundry Co. Ltd.
 - 1. Phone: 604-547-0460 or 1-877-789-3245
 - 2. Fax: 604-590-8875
 - 3. Website: <http://www.reliance-foundry.com/bollard>
 - 4. Email: info@reliance-foundry.com

DECORATIVE METAL BOLLARDS

- A. Bollard [Designer's Designation]:
 - 1. Model: Reliance Foundry; R-7539 [-AL].
 - 2. Height: 35-3/4 inches (90.8 cm)
 - 3. Diameter: 6 inches (15.2 cm) body; 10-1/4 inches (26 cm) base
 - 4. Design: Tapered and fluted, with round finial and ball top.
 - 5. Material:
 - a. Aluminum: ASTM B26; 20 percent recycled-material content.
 - 1) Weight: 31 lbs. (14 kg)
 - b. Ductile Cast Iron: ASTM A536, Grade 65-45-12; 30 percent recycled-material content.
 - 1) Weight: 75 lbs. (34 kg)
 - 6. Color Coating:
 - a. Type: Polyester powder coat over epoxy primer.
 - b. Color: Black textured semi gloss.
 - 7. Installation:

- a. Fixed, new concrete, anchor.
- b. Removable, new concrete, anchor.
- c. Removable, existing concrete, insert.

ACCESSORIES

- A. Padlock:
 - 1. Brass, supplied by bollard manufacturer, keyed alike.
- B. Chain:
 - 1. 5/16-inch galvanized steel chain, Grade 30, with quick-release type connections. Provide sufficient lengths to provide drape acceptable to Architect.
 - 2. Chain Eye: 5/16-inch diameter steel.
 - 3. Quick Links: Powder coated chain links with barrel nut closures.
 - 4. Finish: Powder coated to match bollard.

PART 3 EXECUTION**5.01 EXAMINATION**

- A. Examine paving or other substrates for compliance with manufacturer's requirements for placement and location of embedded items, condition of substrate, and other conditions affecting installation of bollards.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

- A. General: Comply with manufacturer's installation instructions and setting drawings.
- B. Do not install damaged, cracked, chipped, deformed or marred bollards. Field touch-up minor imperfections in accordance with manufacturer's instructions. Replace bollards that cannot be field repaired.

CLEANING & PROTECTION

- A. Protect bollards against damage.
- B. Immediately prior to Substantial Completion, clean bollards in accordance with manufacturer's instructions to remove dust, dirt, adhesives, and other foreign materials.
- C. Touch up damaged finishes according to manufacturer's instructions.

CLOSEOUT ACTIVITIES

- A. Provide executed warranty.

END OF SECTION

**SECTION 32 90 00
LANDSCAPING****PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes: The work specified in this Section consists of the various landscape plantings as well as the lawn making operations.
- B. Related Sections:
 - 1. Site Grading: Section 31 22 00
 - 2. Finish Grading: Section 31 22 00

1.02 REFERENCES

- A. American Association of Nurserymen, AAN American Standard for Nursery Stock.
- B. American National Standards Institute, ANSI Z60.1 Standard for Nursery Stock.
- C. American Society for Testing and Materials, ASTM C 602 Specification for Agricultural Liming Materials.
- D. Standardized Plant Names, Second Edition, American Joint Committee on Horticultural Nomenclature.

1.03 SUBMITTALS

- A. Test Reports: Submit laboratory test reports of the soil analysis and supplement recommendations to the Engineer for approval prior to adding any soil supplements to the topsoil.
 - 1. Laboratory reports shall recommend both grade and application rates of fertilizer and such other soil supplements as required.
 - 2. Take sufficient quantity of topsoil samples to give a representative analysis of on-site topsoil and topsoil from outside sources, if any.
- B. Soil Supplement Product Certification: Submit certificates certifying such products to have a guaranteed analysis in conformity with the Engineer approved laboratory soil supplement recommendations report.
- C. Plant Certifications: Submit plant material certificates certifying the plants to be typical of the species or variety and in conformity to the current edition of American Standard for Nursery Stock of the AAN.
- D. Seed Certification: Submit certificates or certifying tags indicating lawn seed mixture, seed purity percentage, seed germination percentage and weed seed content percentage to certify conformity with the Specifications.
- E. Sod Certification: Submit certificates certifying sod as complying with requirements of the Maryland Department of Agriculture.

1.04 QUALITY ASSURANCE

- A. Source Quality Control:
 - 1. Packaged Products shall indicate the manufacturer's guaranteed analysis on each package and arrive on site as originally packaged and unopened.
 - 2. For freshly dug plants, provide nursery grown stock acclimated to the soil and climatic conditions in the local area of intended planting.
 - 3. Provide plants grown under sound nursery practices for a period of two full growing seasons in a State certified nursery.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Handling:
 - 1. Prepare dug plants for handling and shipment with balled and burlapped (B&B) root systems. Perform B&B work in accordance with AAN Standards and in accordance with ANSI Z60.1 concerning diameter and depths of balls on B&B plants. B&B plants arriving at

- the site with broken, loose or fractured balls are subject to rejection.
- 2. Deliver packaged products to the site in unopened containers with labels intact and legible.
- 3. Deliver plant materials to the site in a protected condition to prevent wind damage and drying. Plant material exhibiting a heated or sweated condition due to tight packing or poor ventilation is subject to rejection.
- 4. Deliver plants with a securely attached waterproof tag legibly indicating the name and size in accordance with the AAN standards of practice. Provide at least one tagged plant in each bundle or lot. In all cases, botanical names shall take precedence over common names.
- 5. When handling sod during wet weather, allow sod to dry sufficiently to prevent tearing during handling and placing. During dry weather, water sod before lifting to insure its vitality and to prevent soil dropping off in handling.
- B. Storage:
 - 1. Store packaged products in such a manner to prevent moisture damage and other forms of contamination.
 - 2. Store balled or wrapped and potted plants in accordance with the AAN practices to prevent drying out. Store bare rooted plants by the heeling-in-method immediately after delivery, or permanently plant such bare rooted plants immediately after delivery.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Do not perform Work of this Section when soil or weather conditions are unsuitable. Unsuitable conditions include moisture saturated or frozen in place soil and precipitation of any kind present or occurring during the Work.
- B. Plant Setting Dates: The following dates shall govern except when environmental conditions warrant, the Engineer may extend the plant setting dates.
 - 1. Deciduous Trees (and Shrubs): October 15 to May 15.
 - 2. Evergreen Trees: Spring - March 1 to May 15; Fall - August 1 to September 15.
 - 3. Seedlings and Seedling Transplants: March 1 to May 15.
- C. Seeding Dates: The following dates shall govern except when environmental conditions warrant, the Engineer may extend the seeding dates.
 - 1. Spring: March 1 to June 1.
 - 2. Fall: August 1 to October 1.
- D. Sodding Dates: The following dates shall govern except when environmental conditions warrant, the Engineer may extend the sodding dates.
 - 1. Do not place sod between dates June 1 and August 15 inclusive nor times when ambient temperature is below 32 degrees F.
- E. Protection:
 - 1. After plant setting work, install stake and guy supports on those plants indicated as being staked to prevent uprooting by wind or otherwise. Do not locate stakes and guy supports where pedestrian safety would be endangered.
 - 2. Protect seeded areas from washouts by one of the methods specified in this Section. Should washouts and bare spots develop resulting from inadequate protection or otherwise, perform such reseeding as required until a healthy, complete coverage stand of grass is obtained.
 - 3. Protect sodded areas from becoming loose, torn or undermined by using stabilization products specified herein. Make repairs to sodded areas immediately and to the Engineer's satisfaction.

PART 2 PRODUCTS

2.01 SOIL SUPPLEMENT MATERIALS

- A. Agricultural Liming Materials: Products containing calcium and magnesium compounds capable of neutralizing soil acidity and containing not less than 80 percent of total carbonates.

Use liming material meeting requirements of ASTM Designation C602 and conforming to applicable state liming material regulations.

- B. Fertilizer: Commercial fertilizer of uniform composition, free-flowing and in conformity with applicable state fertilizer laws.
- C. Bone Meal: Horticultural grade, pulverized bone meal containing minimums of 4 percent nitrogen and 8 percent phosphoric acid.
- D. Peat: Commercially available material consisting of shredded sedge peat and reed peat or sphagnum moss peat, or combinations of such, from fresh water sites. Peats in advanced stages of decay (parent material not identifiable) not permitted. Use peat having a minimum organic content of 80 percent organic matter by weight, a pH value of 4.5 to 6.0 and a maximum ash content of 15 percent.

2.02 LAWN AND SEED MATERIALS

- A. Grass Seed: New crop seed, furnished in sealed packages with proof of correct mixture evidenced, age of seed indicated and compliance with applicable state regulations evidenced if required. Seeds and mixture as shown in specifications in the drawings.

2.03 PLANT MATERIAL

- A. Plant Stock: Provide plants of species indicated on the Drawings and true to type and name in accordance with the current edition of Standardized Plant Names, American Joint Committee of Horticulture Nomenclatures. Provide healthy plants free from insect infestations, typical of the species or variety and which conform to the current edition of American Standard for Nursery Stock of the AAN for grading requirements; and ANSI Z60.1 for plant quality and minimum root spread.
- B. Minimum Acceptable Plant Sizes: Measure plants before pruning with branches in normal position; plant size shall conform to measurements indicated on the Drawings. Plants larger in size than indicated may be used, but at no change in Contract Price. If larger plants are used, proportionately increase the root ball or spread of roots in accordance with AAN rules.
- C. Container Grown Plants: Provisions of ANSI Z60.1 shall also govern container grown plants. Provide container grown plants of at least one year but not more than two years growth in the same container.
- D. Collected Plants: Provide collected plants of species and sizes indicated on the Drawings and of such quality conforming to AAN Standards, except the root system or ball of collected plants shall be at least 25 percent larger than that specified for nursery grown stock.

2.04 PROTECTIVE MATERIALS

- A. Mulching Material:
 - 1. Plant Mulch: Tanbark, a by-product of the tanning process, or Hardwood and Pine Bark consisting of ground or shredded bark, a fibrous material free from foreign material and substances toxic to plant growth.
 - 2. Lawn Mulch: Straw Stalks of any threshed grain or tall hay grass stalks free from seed bearing stalks or roots harmful to lawn growth. Mulch material containing noxious weeds, decomposed material or brittle weed material is not acceptable.
 - a. Nonasphaltic Emulsion Mulch Binder: Provide either a water soluble product consisting of a blend of vegetable gum and gelling/ hardening agents, or a water soluble product consisting of hydrophylic polymers, viscosifiers, and sticking aids and gums. Asphalt emulsion binders are not acceptable.
- B. Stakes and Wires: Rough sawn straight-grained hardwood stakes, free of serious defect and of dimensions indicated on the Drawings. Use wires no smaller than No. 12 gauge galvanized steel with fabric reinforced rubber hose not less than 5/8-inch nor more than one inch O.D. of sufficient length to protect trees from damage by wire.
- C. Tree Wrap: Krinkle-kraft waterproof paper 30-30-30 in four inch widths minimum. Use lightly tarred medium or coarse sisal yarn twine to tie tree wrap.

PART 3 EXECUTION

3.01 PREPARATION

- A. Plant Pits: Prepare planting beds, plant trenches and plant pits to the depths required below finished grade according to the recommended practices of the AAN. However, the following minimum plant pit dimensions shall take precedence over the AAN if in conflict.
 - 1. Excavate plant pits with vertical sides and flat bottoms.
 - 2. Excavate plant pits large enough to allow a minimum of 12-inches beyond the circumference of the root system or ball and six to eight inches beneath the root system or ball.
 - 3. Excavate pits and trenches for bare root shrubs, vines or seedlings large enough to accommodate the root without crowding and to allow space for six inches minimum of backfill mix around the root system.
- B. Plant Beds: Prepare plant beds for ground cover by incorporating peat and the required soil supplements into the top 6 inches of existing topsoil. Incorporate peat into the topsoil in quantity equal to three inches of peat spread uniformly over the plant bed.
- C. Backfill Mix For Plant Pits: Prepare a mix consisting of one part peat to three parts excavated topsoil by volume and one pound of bone meal added for each cubic yard of excavated topsoil.
 - 1. Tillage: Perform tillage of finish graded soil over areas indicated for lawn regardless of type of lawn work performed. Use equipment and methods common to such work, and till soil to a two inch depth minimum.
 - 2. Soil Supplement Addition: The soil supplements for lawn areas, as required according to the Engineer approved laboratory test reports, may be incorporated into the soil during tillage operations.

3.02 INSTALLATION

- A. Plant Setting Operations: Set plants to insure that after settlement the plant stem projects from the soil as much as before transplanting. Set plants plumb and straight with allowance for settlement and in accordance with following:
 - 1. Ground Cover Plants: Set each plant in a slight depression for catching rainwater and top-off such depressions with two inches of mulch spread uniformly and compacted. Thoroughly water ground cover bed immediately following planting.
 - 2. Balled & Potted Plants: Set each plant in prepared circular pits deep enough to accommodate a bed of topsoil not less than six inches deep under the ball or pot of shrubs and 12-inches under the ball of trees. Remove burlap from the top third of root balls, and completely remove ropes, twine and wires from root balls. Completely remove containers from potted plants, however, the earth shall remain unbroken around roots. Place Backfill Mix in plant pits under and around root balls in six inch layers and tamp to eliminate voids. At the half-way point in backfilling, flood pit with water and continue backfilling after water dissipates. Backfill pits to grade, and build up a ring of soil three inches deep over edge of plant pit to facilitate maintenance watering. Place a two inch layer of plant mulch within the ring prior to watering.
 - 3. Bare Root Plants: Set plants with root system properly spread out and work Backfill Mix among the roots. Cut off clean any broken or frayed roots. Backfill in six inch layers to grade using water to settle each layer. Form a ring of soil three inches deep over edge of plant pit to facilitate maintenance watering.
 - 4. Plant Mulching: Immediately after plant setting and prior to watering, evenly apply mulch over planting areas not more than three inches deep.
 - a. Seeding: Sow seed mixtures when air current is low and not more than five days after soil supplements have been applied. Sow seeds according to the specifications in the drawings.
- B. Seed Cover: Embed seed mixtures according to the specifications in the drawings.
 - 1. Hydroseeding Option: The Contractor shall have the option to perform the seeding and soil supplement application by the hydroseeding method according to the specifications in

the drawings.

2. Lawn Mulching: Evenly apply mulch over seeded areas not more than 48 hours after seeding. Start mulching at windward side of relatively flat areas, or at the upper part of slopes. Spread mulch in a total coverage at a depth not less than 1-1/2-inches nor more than three inches and according to the specifications in the drawings.
3. Mulch Binding: Immediately following mulch spreading, apply mulch binder to anchor mulch to the soil. The number of passes over the mulch as needed to secure it firmly shall not exceed three passes with maximum applied binder not exceeding ten gallons per 1,000 square feet.
4. Sodding: Place sod on lightly irrigated soil during periods of high ambient temperature, otherwise lay sod according to the specifications in the drawings.
- C. Sodding Drainage Areas: Place sod strips at right angles to water flow. At the point where water flow starts, turn the upper edge of the strip sod into the soil and compact a layer of topsoil over the juncture so as to conduct water over the sod.
- D. Sodding Slopes: Place sod strip lengths parallel to the slope contours starting at the bottom of the slope. Securely stake sod with 1/2 x 1 x 8 to 12-inch wood stake placed one stake for each two square feet of sod. Drive stake flush with top of sod and with wide face parallel to slope contour.

3.03 PROTECTION INSTALLATION

- A. Wrapping: Immediately after planting, wrap the trunks of deciduous shade and flowering trees with Tree Wrap waterproof paper overlapping 1-1/2-inches between the lowest main branches and the ground line. Tie wrapping at five places along the trunk including top, middle and bottom.
- B. Staking Trees: Within three days after planting, stake trees as detailed at perimeter line of root ball and to sufficient depth to hold tree rigid. Drive stakes vertically and not twisted or pulled. Place wire ties as indicated with protection (hose) at points of contact with bark. Stake trees as follows:
 1. Stake trees up to two inches caliper with two stakes.
 2. Stake trees two inches caliper and larger with three stakes.
 3. Stake evergreen plants six feet and taller with two stakes.

3.04 PRUNING

- A. Prune new plant material to minimum necessary to remove injured twigs and branches and to compensate for loss of roots during transplanting, but never to exceed more than half of the branch structure. Pruning may be done before delivery of plants, but not before plants have been inspected and approved. Paint cuts over 3/4-inch in diameter with an approved tree-wound paint.

MAINTENANCE

- A. Maintenance operations shall begin immediately after seeding and planting is performed and shall continue throughout the construction time and guarantee period. In general, maintenance shall include weeding, applying mulch as needed, controlling insects and diseases and performing other particular operations as follows:
 1. Plants: Water the plant root systems at regular intervals and keep surrounding soil in condition for promotion of root growth. Maintain and adjust stake wires if necessary and rewrap tree trunks when necessary. Perform pruning, other than initial pruning, as necessary to remove dead leaders and branches. Replace plants that are dead, unhealthy or in a badly damaged condition with like species plants. Do not make replacements during seasons definitely unfavorable for planting.
 2. Seeded Areas: Keep seed moist continually for proper germination and water thereafter as necessary to prevent drying out or burning. Reseed areas not showing a prompt catch of grass, correct depressions and irregularities and reseed; repeat until a complete coverage is obtained. Cut seeded areas at required intervals to maintain grass at a maximum height of 2-1/2-inches.

3. Sod: Perform daily watering if necessary for the establishment of the sod; water thereafter at frequencies required to maintain growth. Cut sod at required intervals to maintain a maximum height of 2-1/2-inches.
- B. At conclusion of maintenance period, the Engineer shall make an inspection of the landscaping work to determine condition of acceptance. Make such additional repairs and replacements as required by the Engineer. Perform such work at no increase in Contract Price.

END OF SECTION

**SECTION 32 92 19
SEEDING****SEEDING****1.01 SUMMARY**

- A. Section Includes: Seeding of work site(s).

1.02 REFERENCES

- A. American Association of State Highways and Transportation Officials, AASHTO Emulsified Asphalt.

1.03 SUBMITTALS

- A. Seed Certification: Submit certificates or certifying tags indicating lawn seed mixture, seed purity percentage, seed germination percentage, and weed seed content percentage to certify conformity with Specifications.

1.04 QUALITY ASSURANCE

- A. Quality Control:
 - 1. Packaged products to indicate manufacturer's guaranteed analysis on each package and arrive on site as originally packaged and unopened.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged products to site in unopened containers with labels intact and legible.
- B. Store packaged products in a manner to prevent moisture damage and other forms of contamination.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Do not perform work of this Section when soil or weather conditions are unsuitable. Unsuitable conditions include moisture saturated or frozen in place soil and precipitation present or occurring during work.
- B. Seeding Dates: Following dates govern except when environmental conditions warrant, Engineer may extend seeding dates.
 - 1. Spring: March 1 to June 1.
 - 2. Fall: August 1 to October 1.
- C. Protection:
 - 1. Protect seeded areas from washouts by methods specified in this Section. Reseed washouts and bare spots that develop from inadequate protection or otherwise until a healthy, complete coverage stand of grass is obtained.
 - 2. Use temporary barricades to protect lawn areas from foot traffic or other areas until a healthy, total coverage stand of grass is obtained. Barricade materials subject to Engineer's approval.
- D. Application: Seed areas disturbed by construction.
 - 1. Seed Mixture No. 1: Use on lawns.
 - 2. Seed Mixture No. 2: Use on stockpile areas.
 - 3. Seed Mixture No. 3: Use on slopes 3:1 and greater.
 - 4. Mixture No. 4: Use on wetland areas.

PART 2 PRODUCTS**2.01 LAWN AND SEED MATERIALS**

- A. Grass Seed: New crop seed, furnished in sealed package with proof of correct mixture evidenced, age indicated, and compliance with applicable state regulations evidenced if required. Seeds and mixture as indicated on Drawings.

PART 3 EXECUTION**3.01 PREPARATION**

- A. Tillage: Perform tillage of finish graded soil over areas indicated for lawn regardless of lawn work type performed. Use equipment and methods common to lawn work and till soil to a 2 inch depth minimum.

3.02 PERFORMANCE

- A. Seeding: Sow seed mixtures when air current is low and not more than five days after soil supplements have been applied. Sow seeds in two applications using power seeders or mechanical seeders. Sow one half of seed mixture in one direction over designated areas and remainder at right angles to first sowing. Seeding rates as indicated on Drawings.
- B. Seed Cover: Imbed seed mixtures into topsoil 1/4 inch using a light drag or rake moving in directions parallel to contour lines. Immediately after dragging or raking, compact seeded areas using a cultipacker or similar design lawn roller, weighing 60 to 90 pounds per linear foot of roller. Roll at right angles to existing slopes.
- C. Contractor Option: Seeding and soil supplement application may be performed by the hydroseeding method. However, rates of application, methods, and equipment require Engineer's prior approval.
- D. Lawn Mulching: Evenly apply mulch over seeded areas not more than 48 hours after seeding. Start mulching at windward side of relatively flat areas, or upper part of slopes. Spread mulch in a total coverage to a depth not less than 1-1/2 inches nor more than 3 inches.
- E. Mulch Binding: Immediately following mulch spreading, apply mulch binder to anchor mulch to soil. Do not exceed three passes of binder for securing mulch with maximum applied binder not exceeding 10.0 gallons per 1,000 square feet.
- F. Contractor Option: Secure mulch by peg and string method in lieu of mulch binding. Drive stakes into ground on 3 foot centers or less and string binder twine between adjacent stakes in straight lines and criss-crossed diagonally over mulch. After twine is attached, drive stakes nearly flush to ground to draw twine down tight onto mulch.

3.03 MAINTENANCE

- A. Begin maintenance operations immediately after seeding and planting is performed and continue throughout construction time and guarantee period. In general, maintenance includes weeding, applying mulch as needed, controlling insects and diseases, grass cutting, and performing other particular operations as follows:
 - 1. Seeded Areas: Keep seed moist continually for proper germination and maintain watering to prevent drying out or burning. Reseed areas not showing a prompt catch of grass. Correct depressions and irregularities and reseed. Repeat until a complete coverage is obtained. Cut seeded areas at required intervals to maintain a maximum height of 2-1/2 inches.
- B. At conclusion of maintenance periods, Engineer will inspect seeding work to determine condition of acceptance. Make additional repairs and replacements as required by Engineer at no additional expense to Owner.

END OF SECTION

**SECTION 32 93 00
PLANTING****PART 1 GENERAL****1.01 SUMMARY**

- A. Section Includes:
 - 1. Requirements for landscape plantings including, but not limited to, the following:
 - a. Furnishing and placing topsoil.
 - b. Furnishing and planting landscape plantings.
 - c. Selective pruning.
 - d. Mulching.
 - e. Fertilizing.
 - f. Watering.
 - g. Providing maintenance for deciduous trees, shrubs, perennials, and grasses.
 - h. Clean up of extraneous landscaping materials.
- B. Related Sections:
 - 1. Section 32 91 19: Topsoil

1.02 REFERENCES

- A. American Nursery and Landscape Association (ANLA)/American National Standards Institute (ANSI):
 - 1. ANSI Z60.1, American Standard for Nursery Stock.
- B. American Joint Committee on Horticultural Nomenclature (AJCHN):
 - 1. AJCHN Standardized Plant Names.
- C. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO T 89, Standard Method of Test for Determining the Liquid Limit of Soils.
- D. Association of Analytical Communities International (AOAC):
 - 1. AOAC Official Methods of Analysis of AOAC International.
- E. Pennsylvania Department of Transportation Specifications (PENNDOT):
 - 1. PENNDOT Publication 408, Specifications.

1.03 SUBMITTALS

- A. Submit the following information to the Engineer for approval in accordance with the requirements of Division 1 specifications:
 - 1. Product Data:
 - a. Proof of non-availability as justification for substitutions per Subparagraph 2.03B.1.
 - 2. Shop Drawings:
 - a. Proposed planting schedule per Subparagraph 1.07A.1.
 - 3. Quality Assurance/Control Submittals:
 - a. Test Reports.
 - b. Certificates.
 - 1) Certificates of inspection per Subparagraph 1.04B.2.a.
 - 2) Other necessary data substantiating that the materials comply with the requirements specified per Subparagraph 1.04B.2.b.
 - 4. Samples:
 - a. Decorative Stone.
 - 5. Manufacturers' Instructions:
 - a. Maintenance instructions per Subparagraph 1.09D.1.
 - 6. Closeout Submittals:
 - a. Warranty per Paragraph 1.08C.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Provide materials and perform the work of this Section to comply with the requirements of those industry standards cited and the applicable provisions of Section 808 of PENNDOT Publication 408, except as may be amended herein.
- B. Certifications:
 - 1. Analysis and Standards:
 - a. For standard products, include the manufacturer's certified analysis of the contents with the package.
 - b. For other materials, provide analysis of the contents by a recognized laboratory performed in accordance with methods established in the AOAC Official Methods of Analysis of AOAC International, wherever applicable.
 - 2. Plant and Planting Material Certifications:
 - a. Submit certificates of inspection as required by governmental authorities.
 - b. Submit other necessary data substantiating that the materials comply with the requirements specified.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the regulations applicable to landscape materials.
 - 1. Include certificates of inspection required by governing authorities with shipments of landscape materials.
- B. Temporary Storage:
 - 1. When temporary storage or heeling-in of plants is required prior to shipping the plant stock, provide and prepare a suitable heeling-in ground or well-ventilated and cool storage shed located near the planting site.
- C. Protect materials from deterioration during shipment, delivery, and while stored at the Site
 - 1. Handle and pack each species or variety of plant in an approved manner as required by soil and climatic conditions at the time of digging, and with due regard to shipping conditions and the time to be consumed in transit and delivery.
 - 2. If accepted planting stock is not planted immediately, properly heel-in or store it.
 - a. Stock left out of the ground and unprotected overnight, left with roots exposed to heat or freezing, or otherwise unprotected during transit, unloading, heeling-in, or planting will be rejected.
 - 3. Do not remove container-grown stock from containers until planting time.
- D. Deliver packaged materials in unopened containers showing the weight, analysis, and name of its manufacturer.
 - 1. Deliver commercial fertilizer to the Site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis.
 - a. Any commercial fertilizer that becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.
- E. Deliver plant materials to the site in a protected condition to prevent wind damage and drying.
 - 1. Provide plants that have been freshly dug at the time of delivery.
 - 2. Plant material exhibiting a heated or sweated condition due to tight packing or poor ventilation is subject to rejection.
- F. Provide data on the landscape material labels substantiating that the plants, trees, shrubs, and planting materials comply with specified requirements.
 - 1. Deliver plants with a securely attached waterproof tag legibly indicating the plant's name and size in accordance with ANSI Z60.1.
 - a. In all cases, give precedence to botanical names over common names.
 - 2. Provide at least one tagged plant in each bundle or lot.
- G. Deliver trees and shrubs after preparations for planting have been completed, and plant them immediately.
 - 1. Do not prune trees and shrubs prior to delivery unless otherwise approved by Engineer.

2. Prior to digging evergreen trees, apply anti-transpirant to the trees.
3. Provide protective covering for trees and shrubs during shipment.
4. Do not drop balled and burlapped stock during delivery or handling.
5. Do not bend or bind-tie trees or shrubs in such manner as to damage their bark, break their branches, or destroy their natural shape.
6. If planting is delayed more than 6 hours after their delivery, set trees and shrubs in the shade, protect them from weather and mechanical damage, and keep their roots moist by covering them with mulch, burlap, or other acceptable means of retaining moisture.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. The following seasonal constraints govern when the Work of this Section can be performed, except that when environmental conditions warrant, the Engineer may extend the specified dates.
 - a. Allowable Plant Setting Dates:
 - 1) Deciduous Trees and Shrubs: October 15 to May 15.
 - 2) Evergreen Trees:
 - (a) Spring: March 1 to May 15.
 - (b) Fall: August 1 to September 15.
 - 3) Seedlings and Seedling Transplants: March 1 to May 15.
 2. Do not perform the Work of this Section when soil or weather conditions are unsuitable.
 - a. Unsuitable conditions include moisture saturated or frozen in place soil and precipitation of any kind present or occurring during the Work.
 3. The Work of this Section may include dormant or cold weather planting procedures for appropriate species, including staking plant materials and installing protective mulch on plant pit locations to protect the soil against freezing prior to winter plantings.
 - a. Plant dormant deciduous trees suitable for such seasonal operations, in order that landscaping can be in place at the earliest possible time.
 - B. Existing Conditions:
 1. Plant trees and shrubs after the final grades are established and prior to the planting of lawns unless otherwise acceptable to Engineer.
 - a. Maintain the grade stakes until it is mutually agreed to by the parties concerned to remove them.
 - b. If the planting of trees and shrubs is to occur after lawn work, protect the lawn areas and promptly repair damage to lawns resulting from planting operations.
 2. Perform the Work of this Section in a manner that avoids damaging in-place utilities.
 - a. Hand excavate as required.

1.07 SCHEDULING

- A. Planting Schedule:
 1. Submit a proposed planting schedule to the Engineer that indicates the dates for performing each type of landscape work in various areas of the Site during normal seasons for such work.
 - a. Once accepted, only revise schedule dates as approved in writing by the Engineer, and after submitting documentation of the reasons for the changes.
 2. Proceed with, and complete landscape work as rapidly as portions of the Site become available, working within seasonal limitations for each kind of landscape work required.
 - a. Plant or install materials during the normal planting seasons for each type of plant material required.
 3. Correlate the planting schedule with specified maintenance periods to provide maintenance from the date of Substantial Completion.

1.08 WARRANTY

- A. Warrant trees and shrubs for a period of one year after the date of acceptance or until the specified maintenance period specified in Paragraph 1.09A ends, whichever is later, against

defects.

1. Defects include death and unsatisfactory growth, except for defects resulting from neglect by the Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond the Contractor's control.
 2. The date of acceptance is defined as the date for the inspection requested by the Contractor after the last planting is installed and mulched, and at which time all conditions are acceptable to the Engineer.
 3. Although periodic requests for payment will be accepted, their individual approval and subsequent payment does not activate the warranty period until all plants are in place and inspected by the Engineer.
- B. Provide a warranty that does not limit plant replacement to "one time"; replace plants as many times as necessary in a single location until acceptance.
- C. Submit the warranty in writing as part of the closeout submittals for the Contract.

1.09 MAINTENANCE

- A. Maintenance Period:
1. Begin maintenance operations immediately after seeding is performed and continue them throughout construction and the warranty period.
- B. Maintenance Requirements:
1. Maintenance includes, but is not limited to, weeding, applying mulch as needed, controlling insects and diseases, and performing other particular operations as specified.
 - a. Maintain all mulched landscaped areas as specified throughout the warranty period, including rescuing and replacing mulch that has sloughed off and weeding mulched areas.
 - b. Maintain and adjust stake wires if necessary.
 - c. Perform pruning, other than initial pruning, as necessary to remove dead leaders and branches.
- C. Watering:
1. Thoroughly water plants at least bi-weekly and in a satisfactory manner during the construction period until acceptance.
 - a. Water plant root systems at regular intervals and keep the surrounding soil in condition to promote root growth.
 2. Provide all necessary water, tank trucks, hoses, and appurtenances.
- D. Maintenance Instructions:
1. Prior to the expiration of the required maintenance period, submit typewritten recommended procedures to be established by Owner to maintain landscape work for one full year.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Plant Materials:
1. Provide plants true to type and name in accordance with the latest edition of AJCHN Standardized Plant Names nomenclature.
 - a. Properly label each plant with its type and name.
 - 1) Where a formal arrangement or consecutive order of trees or shrubs are shown on the Contract Drawings, select stock for uniform height and spread, and label it with numbers to assure symmetry in planting.
 - b. Provide the quantity of trees, shrubs, and plants of the size, genus, species, and variety shown and scheduled for landscape work and that comply with the recommendations and requirements of ANSI Z60.1 and recognized horticultural sources.
 - c. Unless otherwise specified, provide Grade No. 1 plants in accordance with ANSI Z60.1.

2. Provide nursery-grown stock unless otherwise indicated or specified.
 - a. Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practice and free of disease, injurious insects, eggs, larvae, and defects such as mechanical wounds, broken branches, decay, knots, sun-scald, injuries, abrasions, disfigurement, or any other defect..
 - b. Provide plants having well-branched, vigorous, and balanced root and top growth.
 - c. Provide deciduous trees having straight trunks with well-branched tops and a single leader.
 - d. Provide plants that have been growing in a climate comparable to that of the Site for at least two years.
3. "B and B" Plants:
 - a. If plants are designated herein or on the Contract Drawings as "B and B", provide balled and burlapped plants as follows:
 - 1) Form a ball from the original and undisturbed soil in which the plant grew.
 - 2) Wrap the ball with burlap or similar approved material, and tightly lace it to hold the ball firm and intact.
 - 3) Provide "B and B" plants having a ball diameter and depth in accordance with ANSI Z60.1 and sufficiently large to include the necessary root system.
4. When containers are indicated or specified, furnish and plant plants in approved decomposable containers if possible.
 - a. Remove non-decomposable containers as the plant is placed in ground.
5. Minimum Acceptable Plant Sizes:
 - a. Provide plants of sizes conforming to the measurements indicated on the Contract Drawings or specified.
 - 1) Measure plants before pruning with the branches in normal position.
 - 2) Plants larger in size than indicated may be used if acceptable to the Engineer and if the sizes of root balls are increased proportionately, but at no additional cost to the Engineer.
 - (a) If larger plants are used, proportionately increase the root ball or spread of roots in accordance with ANSI Z60.1 rules.
6. Provide freshly dug trees and shrubs.

2.02 ACCESSORIES

- A. Anti-transpirant:
 1. Provide an organic, non-toxic, biodegradable anti- transpirant spray that forms a clear, protective coating on foliage to help plants retain moisture
 2. Provide products as manufactured by the following firms:
 - a. Wilt Pruf Products, Inc., P. O. Box 469, Essex CT 06426-0469, Telephone (800) 972-0726.
 - b. Or approved equal.
- B. Backfill:
 1. Provide backfill for trees, shrubs, and root pruning trenches that consists of 80 percent topsoil and 20 percent peat moss, or in other words 4 parts topsoil to 1 part peat moss.
- C. Backfill mix:
 1. Provide backfill mix consisting of 4 parts topsoil, 1 part sphagnum peat, and 1 pound of bone meal for each cubic yard of topsoil.
 2. Mix the backfill mix in bulk in a preparation area, and do not individually place and mix it within the plant pits.
- D. Guy Stakes:
 1. Provide wooden guy stakes, free of knots or other structural defects that would cause breakage while the stake is being pounded into place.
 - a. Dimensions: 51mm [2 in] by 51mm [2 in] by 2.44M [8 feet] in length, minimum.
- E. Guy Wire:

1. Provide twelve-gauge minimum, multi-stranded, galvanized steel wire for guying plants covered with rubber hose where it would otherwise come into contact with the plant as shown in the Contract Drawings.
- F. Gypsum:
 1. Provide gypsum as commercially available for planting uses.
- G. Herbicides:
 1. Pre-emergent herbicide:
 - a. Provide pre-emergent surface-applied herbicide capable of providing control of key grasses and broadleaf weeds.
 - b. The standard of quality is Surflan pre-emergent herbicide as manufactured by Dow AgroSciences LLC, 9330 Zionsville Road, Indianapolis, IN 46268-1189, Telephone (800) 258-3033.
 2. Post-emergent herbicide:
 - a. Provide post-emergent herbicide designed for aquatic use with no restrictions on water use, specifically domestic use, after application.
 - b. The standard of quality is Rodeo as manufactured by Monsanto Company, 800 North Lindbergh Boulevard, St. Louis, MO 63167, Telephone (314) 694-1000.
- H. Mulch:
 1. Plant Mulch:
 - a. Provide brown, coarse textured tanbark, a by-product of the tanning process, or hardwood and pine bark consisting of ground or shredded bark, a fibrous material free from foreign material and substances toxic to plant growth and having the following properties.
 - 1) Acid reaction: Four to five of that of shredded oak tree bark.
 - 2) Moisture Content: 15 to 40 percent natural.
 - 3) Particle Size: In the range from 13mm [1/2-inch] to 51mm [2-inch] diameter.
 - 4) Grade: Processors Number 1.
 2. Mulch Binder:
 - a. Provide nonasphaltic emulsion mulch binder consisting of either a water soluble product consisting of a blend of vegetable gum and gelling/hardening agents, or a water soluble product consisting of hydrophilic polymers, viscosifiers, and sticking aids and gums.
 - b. Asphalt emulsion binders are not acceptable.
- I. Soil Supplements:
 1. Provide soil supplements in accordance with the requirements of Section 32 92 00.
- J. Topsoil:
 1. Provide topsoil in accordance with the requirements of Section 32 91 19.

2.03 SOURCE QUALITY CONTROL

- A. The Engineer may inspect trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size and quality.
 1. The Engineer has the right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work.
- B. Inform the Engineer of the source of supply for plant material for this Contract so that he has the opportunity to select the materials at the source.
 1. Not less than 14 Days prior to installing plantings, submit complete and detailed information concerning the source of supply for each item of plant material on the planting list that appears on the Contract Drawings.
 2. Make all planting stock available for inspection in the nursery before it is dug.
- C. Do Not Make Substitutions:

1. If specified landscape material is not obtainable, submit proof of non-availability to the Engineer, together with a proposal for the use of equivalent material.

PART 3 EXECUTION

3.01 PREPARATION

- A. Utilities:
 1. Determine the locations of underground utilities and mark the locations with stakes or flags.
- B. Excavation:
 1. When conditions detrimental to plant growth, such as rubble fill, adverse drainage conditions, or obstructions, are encountered during excavation notify the Engineer and obtain direction before planting.
- C. Shrub Bed Preparation:
 1. For the shrub masses shown on the Contract Drawings, provide a continuous bed for each mass planting.
 - a. Strip the bed of turf, and cultivate the entire area by incorporating peat and any required soil supplements into the top 152mm [6 inches] of the existing topsoil.
 - 1) Cultivate the area by rototilling or plowing and discing so that the entire surface is tilled.
 - b. Incorporate a quantity of peat into the topsoil equal to 76mm [3 inches] of peat spread uniformly over the plant bed.
 - c. For shrub, ground cover, and other planting beds in areas where extensive weed elimination is necessary, take the following additional measures to prepare the beds prior to disturbing the planting bed areas:
 - 1) Apply a pre-emergent herbicide to the areas per the herbicide manufacturer's instructions.
 - (a) Take care to assure the pre-emergent herbicide is placed only in the area of the plant bed.
 - 2) Apply a frill or injection method application of a post-emergent herbicide to woody vegetation of a size larger than 25mm [1-inch] caliper per the herbicide manufacturer's instructions.
 - (a) Apply this to all woody stumps remaining from previous clearing operation.
 - (b) Paint the frill application on a fresh cut stump area.
 - 3) Apply a spray application of a post-emergent herbicide to the proposed plant bed area per manufacturer's instructions.
 - (a) Take care so that overspray does not extend beyond the bed areas.
 - (b) Verify that plants to be eliminated are in an active growing state prior to applying the spray.
 - 4) After a 7-Day waiting period, determine if a repeat application of the post-emergent herbicide is required.
 - (a) If weeds and the existence of vegetation in the area of the plant bed are evident, apply a second application.
 - 5) After a 7-Day waiting period beyond the final post-emergent herbicide application, dig out woody plant stumps larger than 25mm [1 inch] caliper, including the roots, and dispose of them off-site.
 - 6) Remove any existing vegetation not killed by the herbicide application by hand digging, and removed it off-site.
 - 7) Cultivate the beds as specified in Subparagraphs 3.01C.1.a and 3.01C.1.b.
 - D. Plant Pit Preparation:
 1. Prepare planting beds, plant trenches, and plant pits to the depths required below finished grade according to the recommended practices of ANSI Z60.1.
 2. Excavate plant pits with vertical sides and flat bottoms.

- a. Construct plant pit diameters at least twice the diameter of the plant root ball with at least 152mm [6 inches] of open excavation between the root ball and the vertical wall of the pit in all directions.
 - b. Refer to the planting details on the Contract Drawings for further information.
- 3. For pits for larger plants, such as deciduous shade trees and evergreens, provide sufficient depth to allow placing the root ball on the subgrade prior to backfilling.
 - a. Construct plant pit diameters at least twice the diameter of the plant root ball with at least 305mm [12 inches] of open excavation between the root ball and the vertical wall of the pit in all directions.
 - b. Refer to the planting details on the Contract Drawings for further information.
- 4. Plan digging operations, particularly those on slopes, in order that actual planting operations will follow within 24 hours.
 - a. In the case of winter season planting, do not excavate the plant pit and allow it to freeze.
 - 1) Perform digging operations so that plants can be properly installed and backfilled before the pit or the excavated material freezes.
 - 2) Replace the mulch immediately to further protect the pit and root ball from freezing.

3.02 INSTALLATION

- A. Plant Setting Operations:
 - 1. Perform planting operations in conformance with planting details shown on the applicable Contract Drawings.
 - 2. Set plants plumb and straight with allowance for settlement and in accordance with following:
 - a. Set plants to insure that after settlement the plant stem projects from the soil as much as before transplanting.
 - b. Set plants no shallower or deeper than they stood in the nursery, and excavate pits as specified in Paragraph 3.01D to the correct depth to set the plants at their proper height.
 - 3. Setting Ground Cover Plants:
 - a. Set each plant in a slight depression for catching rainwater, and top-off such depressions with 76mm [3 inches] of mulch spread uniformly and compacted.
 - b. Thoroughly water the ground cover bed immediately following planting.
 - 4. Setting Balled and Potted Plants:
 - a. Set each plant in prepared circular pits deep enough to accommodate a bed of topsoil not less than 152mm [6 inches] deep under the ball or pot of shrubs and 305mm [12 inches] under the ball of trees.
 - b. Handle balled and burlapped plants by the earth ball, and not by the plant itself.
 - 1) After placing balled and burlapped plants in their pits without removing the burlap, lay the burlap back from the ball.
 - 2) Remove burlap from the top third of root balls, and completely remove ropes, twine, and wires from root balls.
 - c. Completely remove containers from potted plants; however, keep the earth unbroken around roots.
 - d. Place backfill mix in plant pits under and around root balls in 152mm [6-inch] layers and tamp to eliminate voids.
 - 1) At the halfway point in backfilling, flood the pit with water and continue backfilling after the water dissipates.
 - (a) Place a 76mm [3-inch] layer of plant mulch within the ring prior to watering.
 - 2) Backfill pits to grade, and build up a ring of soil 76mm [3 inches] deep over the edge of the plant pit to facilitate maintenance watering.
 - 5. Immediately after plant setting and prior to watering, evenly apply mulch over planting areas not more than 76mm [3 inches] deep.

B. Backfilling:

1. Planting areas are considered to have sufficient topsoil for preparing beds; however, furnish and place the topsoil required within each plant pit for backfill mix.
 - a. Place the backfill in 152mm [6-inch] increments of depth.
 - b. Work the backfill mix around plant balls in the pits and firmly tamp and/or puddle it as backfilling progresses
 - c. Take care to fill all voids in order to eliminate air pockets.
 - d. If necessary, and always in the case of shade trees, hold each plant in a vertical position while the backfill soil is being placed.
 - e. Remove sticks, sod, clods, or other material that could decompose and form air pockets in the planting media.
2. On level ground and on relatively gentle slopes, leave a shallow basin, the diameter of the plant pit, around each plant.
3. On steep slopes, pull sufficient soil to the lower side of the plant to form a shallow basin to catch and hold water.

C. Fertilization:

1. After placing backfill, prior to final watering, and before mulching, apply fertilizer to all plants at the following rates:
 - a. Evergreen Trees: 0.02kg per meter [1/8 pound per foot] of height.
 - b. Shade Tree: 0.36kg per centimeter [2 pounds per inch] of caliper.
 - c. Deciduous Shrub: 0.03kg per meter [1/4 pound per foot] of height.
 - d. Evergreen Shrub: 0.02kg per meter [1/8 pound per foot] of height.
 - e. Flowering Tree: 0.18kg per centimeter [1 pound per inch] of caliper.

D. Applying Plant Mulch:

1. Remove weeds and deleterious materials from the area before spreading plant mulch.
2. Mulch plant beds and pits as follows:
 - a. Mulch plants after they are planted with tanbark to a uniform depth of 76mm [3 inches].
 - 1) Except in the case of winter planting, place mulch within 2 days after planting
 - (a) In the case of winter planting, place mulch immediately.
 - 2) Mulch tree pits to the outer edge of the earth berm.
 - 3) Mulch the shrub plantings, which are masses, with mulch covering the entire area within the limits of the plant mass.
 - 4) Adjust grades, allowing for the thickness of the mulch by cutting or filling.
 - b. Rake the surface smooth and even over the prepared surface.
 - c. After leveling the mulch, thoroughly soak it with water to the full depth of the mulch.

E. Pruning:

1. Prune new plant material as necessary to remove injured twigs and branches and to compensate for loss of roots during transplanting, but never prune more than half of the original branch structure.
 - a. Only prune damaged or broken main roots of new materials with a clean oblique cut immediately above the point of damage.
 - b. Conform pruning operations to the best horticultural practices with due respect to natural form and growth characteristics of the individual species.
2. Prune the tops of all deciduous stock at the time of planting or immediately thereafter.
 - a. Preserve a single terminal leader when pruning deciduous trees.
 - b. Paint cuts over 19mm [3/4-inch] in diameter with an approved tree-wound paint.
3. Prune existing trees indicated to remain to remove all dead and interfacing branches.
 - a. Remove lower branches to provide a minimum clearance of 1.52M [5 feet] from finished grade
 - b. Paint cuts over 19mm [3/4-inch] in diameter with an approved tree-wound paint.

3.03 REPAIR/RESTORATION

- A. If a plant dies or deforms after acceptance but during the warranty period, remove and replace it immediately; or, in the case of plants requiring proper seasonal planting, replace it in the next appropriate season, even if that season falls beyond the warranty period.
 - 1. If a large portion of a plant dies back causing a permanent or long-term deformity, replace it.
 - 2. Replace plants as many times as necessary in a single location during the warranty period.
 - 3. Replace all plants that are dead, unhealthy, or in a badly damaged condition with plants of the same exact type, species, and size originally specified.
 - 4. Do not make replacements during seasons definitely unfavorable for planting.
 - 5. Remove rejected trees or shrubs immediately from the Site, at no cost to the Engineer.
 - 6. Any delay on the part of the Contractor in removing and replacing unsatisfactory materials is cause for the Engineer to have such work performed and to back charge the Contractor for that work.
- B. If damage to the structures, grounds, equipment, and/or their contents develops within the stipulated warranty period and is due to the use of material or workmanship which are inferior, defective, or not in accordance with this Contract, make good all unsatisfactory conditions or damage, and make good any work or materials or grounds which are disturbed in fulfilling the requirements of the warranty.
 - 1. Make such additional repairs and replacements as required by the Engineer at no additional cost to the Engineer.

3.04 FIELD QUALITY CONTROL

- A. Provide planting stock that conforms to the requirements of the ANSI Z60.1, and to the Laws of the State of Pennsylvania.
 - 1. Any plants furnished with fine hair roots omitted, or with main roots cut, will be immediately rejected.
 - 2. "B and B" plants arriving with broken or loose balls, or having "manufactured" earth in lieu of the original and undisturbed soil in which the plant grew will be rejected.
- B. Provide planting stock declared and certified to be free from disease and insect pests of all kinds.
 - 1. Accompany each shipments, invoices, or orders of plants with all necessary inspection certificates, and give them to the Engineer upon arrival at the point of delivery.
- C. Final inspection and acceptance of all planting stock will be made at the planting Site prior to the plants being placed in their permanent position.
 - 1. At the conclusion of the maintenance period, the Engineer will make an inspection of the landscaping work to determine its condition for acceptance.

3.05 CLEANING

- A. As the landscape work is completed during the Contract and at intervals as directed by the Engineer, clear the site of all extraneous materials, including quantities of subsoil, rock, other spoils remaining from excavation after planting, and rubbish or debris; and leave all planting sites in a clean, safe, neat, sightly condition.

3.06 PROTECTION

- A. After plant setting work, install stake and guy supports on those plants indicated as being staked to prevent uprooting by wind or otherwise.
 - 1. Staking Trees:
 - a. Within three days after planting, stake trees as follows:
 - 1) Stake trees up to 51mm [2 inch] caliper with 2 stakes.
 - 2) Stake trees over 51mm [2 inch] caliper with 3 stakes.
 - 3) Stake evergreen plants 1.83M [6 feet] tall and taller with 2 stakes.
 - b. Stake trees at the perimeter line of the root ball as detailed on the Contract Drawings.

- c. Drive stakes vertically, and not twisted or pulled, and to a sufficient depth to hold the tree rigid.
 - d. Replace or pound flush with the top of the soil stakes with a broken or jagged top.
- 2. Guy Wire:
 - a. Do not allow guy wire to come in contact with the plants.
 - b. Cover guy wire with rubber hose as shown in the Contract Drawings where such contact points would otherwise occur.
- 3. Do not locate stakes and guy supports where pedestrian safety would be endangered.
- 4. At the end of the one-year warranty period, remove all guying materials.
- B. Protect seeded areas from washouts by one of the methods specified in this Section.
 - 1. Should washouts and bare spots develop resulting from inadequate protection or otherwise, perform such reseedling as required until a healthy, complete coverage stand of grass is obtained.
- C. Use temporary barricades to protect lawn areas from foot traffic or other uses until a healthy, total coverage stand of grass is obtained.
 - 1. Barricade materials subject to Engineer's approval.

END OF SECTION

**SECTION 33 41 00
SUBDRAINAGE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Under-Slab Drainage Systems.
- B. Filter aggregate and fabric and bedding.

1.02 REFERENCE STANDARDS

- A. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe drainage products, pipe accessories, and geotextile.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Project Record Documents: Record location of pipe runs, connections, cleanouts and principal invert elevations.

PART 2 PRODUCTS**2.01 PIPE MATERIALS**

- A. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 6 inch inside diameter; with required fittings.
- B. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

2.02 ACCESSORIES

- A. Pipe Couplings: Solid plastic.
- B. Filter Fabric: Water pervious type, black polyolefin. Provide _____ manufactured by _____.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

3.02 PREPARATION

- A. Hand trim excavations to required elevations. Correct over-excavation with _____.
- B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.03 INSTALLATION

- A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
- B. Place drainage pipe on clean cut subsoil.
- C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- D. Loosely butt pipe ends. Place joint cover strip 12 inches wide, around pipe diameter centered over joint.
- E. Place pipe with perforations facing down. Mechanically join pipe ends.
- F. Install pipe couplings.
- G. Install filter aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 12 inches.
- H. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.

- I. Place aggregate in maximum 4 inch lifts, consolidating each lift.

3.04 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspection and testing.

3.05 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION

SECTION 33 42 11
STORMWATER DRAINAGE STRUCTURES, PIPE AND FITTINGS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Section Includes: Drainage pipe and structures for stormwater. Stormwater management structures and pipes are specified on the Drawings.

1.02 REFERENCES

- A. American National Standards Institute:
1. ANSI A21.10, Gray-Iron and Ductile-Iron Fittings, 2 through 48 in., for Water and Other Liquids.
 2. ANSI A21.11, Rubber Gasket Joints for Cast Iron and Ductile Pressure Pipe and Fittings.
 3. ANSI A21.50, Thickness Design of Ductile-Iron Pipe.
 4. ANSI A21.51, Ductile-Iron Pipe, Centrifugally Cast, in Metal Molds or Sand-Lined Molds for Water or Other Liquids
- B. American Society for Testing and Materials:
1. ASTM A 82, Cold-Drawn Steel Wire for Concrete Reinforcement.
 2. ASTM A 185, Welded Steel Wire Fabric for Concrete Reinforcement.
 3. ASTM A 536, Ductile Iron Castings
 4. ASTM C 33, Standard Specifications for Concrete Aggregates.
 5. ASTM C 76, Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 6. ASTM C 150, Portland Cement.
 7. ASTM C 443, Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
- C. American Water Works Association
1. AWWA C100, Cast-Iron Pipe Fittings.
 2. AWWA C110, Gray-Iron and Ductile-Iron Fittings. 3 inch through 48 inch, for Water and Other Liquids.
 3. AWWA C111, Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
 4. AWWA C150, Thickness Design of Ductile-Iron Pipe.
 5. AWWA C151, Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or Other Liquids.
 6. AWWA C500, AWWA Standard for Gate Valves, 3 through 48 in. NRS, for Water and Sewer Systems.

1.03 SUBMITTALS

- A. Shop Drawings and Product Data: Furnish completely dimensioned shop drawings, layout drawings, catalog cut or other data as required to provide a complete description of piping and piping specialties.
- B. Certificates:
1. Manufacturer's sworn certification that pipe will be manufactured in accordance with specified reference standards for each pipe type.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Transport, handle and store pipe materials and other products specified in a manner recommended by respective manufacturers to prevent damage and defects.

1.05 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Keep trenches dewatered until pipe joints have been made and concrete cradle and encasement, if any, have cured.
 2. Under no circumstances lay pipe in water or on bedding containing frost.

3. Do not lay pipe when weather conditions are unsuitable, as determined by Engineer, for pipe laying work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete Work Products: Formwork, Reinforcement, and Cast-In-Place Concrete per requirements of Division 3 - Concrete.
- B. Reinforced Concrete Pipe: Class III, unless indicated otherwise on the Drawings, conforming to requirements of ASTM C76. Pipe manufactured free of honeycomb with hard, dense surface inside and outside to roughness coefficient (Kutters 'n') not exceeding 0.013.
 1. Pipe Joints: Tongue and groove or bell and spigot type.
 2. Joint Gaskets: Compression type conforming to requirements of ASTM C443.
 3. Cement Concrete: ASTM C150.
 4. Aggregate: ASTM C33.
 5. Steel Reinforcement: ASTM A82 Wire and ASTM A185 Wire Fabric.
- C. Inlets: Components and materials per requirements specified in Section 305 of the Baltimore County Standard Specifications for Construction and Materials.
- D. Catch Basin Frame and Cover: Gray iron castings as specified in Section 305 of the Baltimore County Standard Specifications for Construction and Materials.
- E. End Sections (Concrete): Provide end sections in Section 305 of the Baltimore County Standard Specifications for Construction and Materials.

PART 3 EXECUTION

3.01 PREPARATION

- A. Inspection: Prior to start of storm drainage construction, inspect each section of pipe for defects before actual use. Pipe already laid and later found defective will not be accepted.
 1. Inspect precast manhole components in accordance with requirements of ASTM C478 regarding repairable defects and defects subject to rejection by Engineer.
 2. In no instance lay pipe or set or construct manhole bases in excavations containing water or on subgrade containing frost. In all instances keep excavations water-free until concrete pours of whatever nature have cured. Keep pipe and manhole interiors cleared of debris as construction progresses.

3.02 CONSTRUCTION

- A. Earthwork: Perform earthwork for buried site drainage and wastewater piping and associated concrete structures as specified in Section 31 00 00.
- B. Concrete Work: Perform concrete work incidental to the Site Drainage construction as specified in Division 3 - Concrete.
- C. Site Drainage Piping Installation:
 1. Following trench preparation, install bedding shown on the Drawings, and lay pipe proceeding up-grade true to lines and grades given.
 2. Rest each pipe section on bedding for the full length of its barrel.
- D. Pipe Joining:
 1. Tongue and Groove or Bell and Spigot Joints: Install in accordance with manufacturers instructions and in accordance with ASTM C443.
- E. Inlet Construction: Construct catch basins as specified in Section 305 of the Baltimore County Standard Specifications for Construction and Materials.
 1. Construct reinforced concrete bases as detailed on Drawings. Concrete work to conform to Division 3 - Concrete.
 2. Terminate pipe in inlet bases flush with interior surface of base.
 3. Form concrete in bottom of inlet to guide drain and wastewater through basin.

4. Do not complete inlet until grading is finished and connections and tie-ins are made at proper grade and alignment.

END OF SECTION

GEOTECHNICAL SUBSURFACE INVESTIGATION REPORT

Gwynn Oak Park Improvements Baltimore County, Maryland



PREPARED FOR:

**Gannett Fleming, Inc
7133 Rutherford Road, Suite 300
Baltimore, MD 21244**

PREPARED BY:



**AB CONSULTANTS, INC.
9450 ANNAPOLIS ROAD
LANHAM, MARYLAND 20706**

September 16, 2022



AB CONSULTANTS, INC.

9450 Annapolis Road
Lanham, Maryland 20706

Engineers

Planners

Surveyors

Ph: (301) 306-3091
Fax: (301) 306-3092
www.abconsultantsinc.com
Support Services

September 16, 2022

Attn: Mr. Jeffrey M. Stamm, P.E
Gannett Fleming, Inc.
7133 Rutherford Road, Suite 300
Baltimore, MD 21244

**REF: Report of Subsurface Investigation and Studies for
Gwynn Oak Park Improvements
Baltimore County, Maryland
AB Job No. 2021147-04**

Dear Mr. Stamm:

AB Consultants, Inc. (ABC) is pleased to submit this soil report containing the results of the geotechnical investigation for the above-referenced project. To obtain information of the subsurface conditions, a total of five (5) 11- to 15-foot-deep soil borings were drilled and two (2) infiltration tests were performed. The purpose of this study was to explore the subsurface conditions for the proposed parking lot, pavilion, and Stormwater Management (SWM) facilities at Gwynn Oak Park located in Gwynn Oak, Maryland. The following report sections discuss the results of field and laboratory studies, design recommendations and construction methods for the proposed improvements.

All samples obtained from soil test borings will be retained in our laboratory for a period of thirty (30) days from the date of this report. They will be available for inspection during this period. After that time, the samples will be discarded.

It has been a pleasure serving you on this project. If you have any questions regarding this report, or if we can be of further service in any way, please contact us.

Very truly yours,
AB Consultants, Inc.

Fu Guo, P.E.
Project Engineer

Andinet Tolla, P.E.
Project Manager

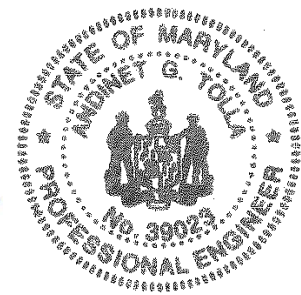


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1.0 INTRODUCTION

1.1 General

This report presents the results of the subsurface exploration findings, laboratory test results and geotechnical recommendations for the proposed parking lot, pavilion, and Stormwater Management (SWM) facilities at Gwynn Oak Park located at 6010 Gwynn Oak Avenue, Gwynn Oak, Maryland. The study was accomplished by conducting field and laboratory tests at the subject site. The results of these tests constitute the basis for determining pertinent design parameters for the proposed improvements. This subsurface study was conducted for Gwynn Oak Park Improvements and has been performed in general accordance with our revised letter proposal dated February 23, 2021, and subsequent conversations.

1.2 Scope of Work

The investigation of existing subsurface soil conditions at the site consisted of the following:

- Planning and executing subsurface exploration programs to evaluate soil and ground conditions for the proposed improvements.
- Performing soil laboratory tests on soil samples obtained from the borings.
- Performing field infiltration tests.
- Providing a geotechnical report that includes a summary of field studies, laboratory test results and geotechnical recommendations to assist in the design.

1.3 Site Location

The project site is located within the Gwynn Oak Park property located at 6010 Gwynn Oak Avenue, Gwynn Oak, Maryland.

2.0 FIELD ACTIVITIES AND SUBSURFACE EXPLORATION

2.1 Soil Borings

To obtain information of the subsurface conditions, a total of five (5) soil borings were drilled at the project site on August 29, 2022. Borings were drilled to depths ranging from 11 to 15 feet below existing grade. Due to spoon and auger refusal, boring

B-1 was terminated at 11 ft below the existing ground surface. Soil borings were staked out in the field by ABC and Gannett Fleming; in addition, all field drilling operations were managed and supervised by ABC. A site location map and boring plan are included in Appendix B and C, respectively.

2.2 Subsurface Investigation

Borings for this project were drilled utilizing a B-61 series truck-mounted drill rig. Test borings were advanced using hollow-stem augers and soil samples were obtained using the Standard Penetration Test (SPT) procedure in accordance with ASTM D1586. SPT samples were obtained from each boring at depth intervals of 2.5 feet for the top ten feet, and at 5-foot intervals, thereafter. A representative portion of each split spoon sample was placed in a glass jar and transported to our laboratory. In addition, two (3) bulk sample was collected.

In the split-barrel sampling procedure, a 2-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer, free falling a distance of 30 inches. The blows required to advance the sampling spoon to a specified distance are reported as the penetration resistance values. The values are shown on the boring logs at the depths of their occurrence. The N-value is the sum of standard penetration resistance values that advanced through the last 12 inches of sampling. The N-value is an indication of the relative density of in-place granular soils and, to a lesser degree of accuracy, the consistency of cohesive soils.

Groundwater levels were monitored in all soil borings. Samples obtained from the borings were inspected by a geotechnical engineer and the field logs were edited accordingly. The final logs indicating the encountered subsurface conditions are included in Appendix E.

2.3 On-site Infiltration Test and Results

Two (2) infiltration tests were performed at the project site; borings for infiltration tests were drilled within a 5-foot radius of the soil sample borings. The infiltration test holes were drilled with a 6-inch diameter auger to an approximate depth of 5 feet below existing grade. Five-inch diameter PVC casings were inserted into the test holes and water was then introduced for an overnight pre-soaking period. The infiltration tests were performed the following day by refilling the PVC casings with water to the pre-soak level

and then monitoring water levels at one-hour time periods. This procedure was then repeated (refilling the casings each time) three additional times, for a total of four observations. Field in-situ infiltration test data is included in Appendix F and the results are summarized in the table below.

SUMMARY OF IN-SITU INFILTRATION TEST RESULTS			
Boring No.	Approximate Test Hole Depth (ft)	Sample Description at Bottom of Test Hole	Average Infiltration Rate (in./hr)
B-4	5	Sandy Silt	0.12
B-5	5	Clayey Sand	5.0

3.0 LABORATORY TESTING PROGRAM

3.1 Laboratory Testing Program

Laboratory tests were performed on selected representative samples. Natural moisture contents were performed on all soil samples, and the results are included in the boring logs. Atterberg limits, sieve analysis and modified proctor tests were conducted on selected samples. Atterberg limits results are shown in the boring logs at their corresponding sample depths; gradation curves and proctor results are presented in Appendix E.

3.2 Laboratory Results

Results of the modified proctor laboratory test are summarized in the following table. Other pertinent soil data are presented in the boring logs and Appendix E.

RESULTS SUMMARY OF MODIFIED PROCTOR TEST								
Boring No.	Sample Depth (ft)	Atterberg Limits			Passing #200 Sieve (%)	Modified Proctor Test		Classification
		LL	PL	PI		Max. Dry Density (pcf)	Opt. Moist. Content (%)	
B-3	1 to 6	42	26	16	66.2	113.9	16.9	CL / A-7-6

4.0 GENERAL SITE AND SUBSURFACE CONDITIONS

4.1 Site Condition

The field study was performed in an open field area located at the northwest quadrant of the intersection of Gwynn Oak Avenue and Gwynndale Avenue in Gwynn

Oak, Maryland. The site is bounded by Gwynn Falls to the north, east, and west and Gwynn Oak Avenue to the south. Playground, parking lot, pavilion, volleyball field, and shed are found in the study site. In addition, single family residential houses are found south of the project site. The study area is relatively slopping down from south to north.

4.2 Site Geology

According to the Maryland Geological Map published by *The Maryland Geologic Survey (1968)*, the site appears to be located within the Baltimore Gabbro Complex of the Eastern Piedmont Plutonic Rocks Series. This rock formation consists of hypersthene gabbro with subordinate amounts of olivine gabbro, norite, anorthositic gabbro, and pyroxenite. Igneous minerals and textures are well preserved in some rocks with other rocks exhibiting varying degrees of alteration and recrystallization.

4.3 Subsurface Soil Conditions

Various soil types were grouped into the major zones noted on the boring logs. A brief explanation of the terms and notes used in the logs is included with this report. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual. Detailed soil descriptions and depth of various soil strata are given in the boring logs, together with SPT blow counts and depth. The encountered soils in this project site are summarized as follows:

- Topsoil: Topsoil was encountered in all borings with thicknesses ranging from 2 to 8 inches. Topsoil is defined as the more highly organic, weathered surficial soils horizon capable of supporting vegetation.
- Stratum I: *Sandy Clay*: Brown and reddish-brown sandy clay was encountered underneath the Topsoil in Borings B-3 and B-5. This soil type extended to depths of 5 and 8 feet below existing grade at these borings. N-values for this type of soil ranged from 9 to spoon refusal (>50 blows per foot (bpf)).
- Stratum II: *Sandy Silt to Silt*: Greenish gray, orange brown, and brown sandy silt to silt with sand was encountered underneath Topsoil in Borings B-2, and B-4; this soil type extended to completion depth of Boring B-2 and to 7.5 ft in Boring B-4. N-values for this type of soil ranged from 7 to 34 bpf.

- Stratum III: *Silty Sand*: Greenish-gray, brown, gray reddish brown, and orange brown silty sand with mica was encountered in all borings and extended to various depth ranging from 3 ft to completion depths. N-values for this type of soil ranged from 11 to spoon refusal.
- Stratum IV: *Silty Gravel (Possible Decomposed Rock)*: Brown and gray silty gravel with sand encountered in Boring B-1 and extended to completion depth of the boring. N-values for this type of soil was spoon refusal.

4.4 Groundwater Observations

The boreholes were observed for the presence and level of groundwater while drilling and immediately after completion of drilling operations. As noted on the boring logs, groundwater was not encountered in any of the borings. Water level observations are presented at the lower left-hand corner of the boring logs and a summary is presented in the table below. Fluctuations in the level and quantity of groundwater will occur due to variations in rainfall, temperature, soil permeability and other factors not evident at the time of the water level measurements recorded on the boring logs.

5.0 ANALYSIS AND RECOMMENDATIONS

5.1 Pavilion Foundations

Based on the encountered subsurface soils, surrounding area and anticipated structural loads, recommendations including foundation systems, ground improvements techniques, floor slab and seismic considerations are provided herein. Foundations for structures must satisfy two (2) basic and independent design criteria: (a) the maximum bearing pressure transmitted to the soils should not exceed the allowable bearing pressure based on an adequate factor of safety with respect to soil or rock shear strength; and (b) foundation movements resulting from consolidation, shrinkage or swelling of the supporting soils should be within tolerable limits for the structure. Construction factors such as installation of foundation units, excavation procedures, surface and groundwater conditions must also be considered.

Based on information revealed from soil borings, the engineering properties of encountered soils at or around the proposed building addition are summarized in the following table. Soil parameters were based on laboratory results, empirical correlation from the SPT and published information.

SUMMARY OF ENCOUNTERED SOIL PROPERTIES						
Boring No.	Depth (ft)	Sample Description	US CS	Range of N-Value	Range of Effective Unit Weight, γ (pcf)	Range of Friction Angle, ϕ (deg.)
B-1	0.5 to 8	Silty Sand	SM	18 to >51	115 to 120	28 to 32
	8 to 11	Clayey Sand	GM	>51	120 to 125	32 to 26
B-2	0.5 to 3	Silty Sand	SM	15	110 to 115	26 to 30
	3 to 15	Silt to Sandy Silt	ML	9 to 25	105 to 110	20 to 24

5.1.1 Shallow Spread Foundation

Based on the preliminary information, it is understood that two pavilions are proposed. At the time of our study, details of proposed structures are not available. However, the final finish floor elevations are anticipated to be consistent with the existing contours and structure loads are anticipated to be low. No major cut or fill are expected.

As revealed from the borings in the proposed building area, N-values in the upper portion of borings are varied. It our opinion that shallow foundation can be considered. Shallow footings are anticipated to be placed in a properly prepared subgrade. Footings found in existing soil or engineering fills can be sized based on a maximum net allowable bearing pressure of 3,500 psf and 2,500 lbs per sq. ft. and with a minimum footing dimension of 24 inches, or other dimensions approved by structural engineer at Boring B-1 and B-2, respectively. Shallow foundations should be placed at a minimum of 2.5 ft below grade or lowest final grade, whichever is deeper.

Positive surface drainage should be established at the start of work, be maintained during construction and following completion of the project to prevent surface water ponding and subsequent saturation of subgrade soils. Prolonged exposure or saturation of subgrade soils by ponding or runoff water may result in significant changes in strength and compressibility characteristics. Saturated subgrade soils should be excavated and material shall be undercut a minimum of 24 inches below subgrade elevation and replace with suitable material or AASHTO #57 stone wrapped with non-woven geotextile fabric.

Wall foundations, maximum net allowable bearing pressure of 2500 psf. can be considered.

During the construction period the bearing capacity at the final footing elevations should be verified in the field by the geotechnical engineer to ensure the bearing capacity at the bottom of each footing excavation is adequate for the design loads. Localized unsuitable materials may be encountered during foundation verification and subgrade improvement are expected.

5.1.2 Floor Slab

Floor slabs should be supported on approved, firm natural soils, or on new compacted fill. The slab subgrade should be prepared in accordance with the procedures outlined in Sections 6.1 and 6.2 of this report. In particular, the slab subgrade should be proof-rolled to delineate any soft or loose areas requiring undercutting and/or stabilization. It is recommended that slabs be supported on a 6-inch thick, clean sand or gravel layer, placed on a properly prepared subgrade. Impervious sheeting should be placed between the slab and granular course to act as a vapor barrier. The placement of a 6x6 wire mesh reinforcement is also recommended. For the design of the concrete slab, a Modulus of Subgrade Reaction (k) of 150 pci can be used.

5.1.3 Seismic Considerations

Moderate amount of low-level earthquake activities have been recorded in the Mid-Atlantic Region and in the State of Maryland where numerous faults exists. In general, the faults in the State of Maryland epicenter is dependent on medium of propagation of the seismic waves – lesser in rocks than in are regarded as **inactive**. Based on subsurface conditions from the sample borings, the following information was and utilized to determine seismic site classification.

Range of N-values	15 to <50
Soil profile	stiff to dense
Shear wave velocity	600 to 12000 ft/sec
Undrained shear strength for cohesive soils	1000 to 2000 psf

Based on the International Building Code criteria, a seismic site classification of Class D is determined. For further structural design parameters, refer to International Building Code 2012, Section 1613 and ASCE 7.

5.2 Pavement Considerations

It is our understanding that the site will primarily be used for light vehicle parking, and therefore, heavy traffic loads are not anticipated for this project. Traffic data and anticipated loading were not available at the time of this study.

Based on the information obtained from the parking lot soil boring (B-3), a subgrade material primarily consisting of Sandy Clay was encountered. As such, these soils are considered fair subgrade material with anticipated California Bearing Ratio (CBR) values 7. Localized unsuitable materials may be encountered during site grading operations and subgrade improvements may be required. Excavations should be backfilled with suitable fill material which meet County and/or design requirements.

Based on the field investigation, laboratory test results and our understanding of the project, the flexible pavement section summarized in the table below is suitable for this project.

FLEXIBLE PAVEMENT SECTION SUMMARY	
Pavement Section	Thickness
Surface Coarse - Hot Mix Asphalt Superpave 12.5 mm, PG 64S-22	2 inches
Base Coarse - Hot Mix Asphalt Superpave 19.0 mm, PG 64S-22	4 inches
Graded Aggregate Base	6 inches
Total Thickness	12 inches

5.3 SWM Facility Considerations

Details of the proposed SWM facilities were not provided at the time of this study. The infiltration design criteria established by the Maryland Department of the Environment (MDE) Water Management Administration advises that infiltration practices not be recommended to be utilized: (a) in regions where the bottom of the infiltration facility is in existing or newly placed fill, or (b) in materials that exhibit infiltration rates less than 0.52 inches per hour, or (c) where the groundwater table or bedrock is within 4 feet of the bottom of the infiltration facility. Moreover, bio-swales/bio-retention practices are not recommended to be utilized where the groundwater table is within 2 feet of the proposed facility bottom. For surface sand filters (F-1) and bio-retention (F-6) practices, a minimum infiltration rate is not required if these facilities

are designed with a “day-lighting” underdrain system; otherwise, these facilities require a 0.52 inch per hour rate.

5.3.1 SWM Facility Findings

Based on the boring data, laboratory tests, field infiltration test results and our visual classification of the recovered soil samples, the encountered subsoils at the site are classified in accordance with the U.S. Department of Agriculture (USDA) classification system; the classification and engineering properties based on the USDA system are summarized in the following table.

SUMMARY OF SWM CONSIDERATIONS					
Boring No.	Depth Below Existing Grade (ft)	USDA Textural Classification	USDA Minimum Infiltration Rate (in/hr)	On-Site Infiltration Rate (in/hr)	Hydrologic Soil Grouping
B-4	5	Sandy Clay Loam	0.17	0.12	C
B-5	5	Sandy Loam	1.02	5	B

Considering the USDA classification, boring information, on-site infiltration test results and groundwater observations, the considerations and feasibility of SWM facilities at the proposed locations and depths are summarized in the following table and discussed below.

- At Boring B-4, sandy clay loam with low infiltration rate was encountered and extended to 7.5 ft below existing ground elevation. As such, the use of infiltration practices at this location is not feasible. An alternate system, such as a “day-lighting” underdrain system, may need to be considered.
- At Boring B-5, sandy loam with a high infiltration characteristic was encountered at 5 ft below existing grade and extended to completion depth of the borings. In accordance with MDE design criteria, infiltration practices at this location is feasible, if the facility bottom is installed a minimum of 5 feet below existing grade. Note: clay soil that exhibits low infiltration rate was encountered within the upper 5 feet of this boring, if the facility is considers within this layer, the bio-retention facility shall be designed with a “day-lighting” or underdrain system.

It is recommended that during construction of the SWM facility, the soil encountered at and below the planned elevation, to be verified along with their infiltration characteristics.

6.0 SITE GRADING AND CONSTRUCTION CONSIDERATIONS

6.1 Site Grading

Once approved erosion and sediment control measures are installed, site preparation operations may be initiated. Site preparation and grading is expected to include clearing within the limits of construction and the removal of existing pavement. Design and construction should include provisions for temporary storage, hauling, and disposal of stripped materials at an approved off-site location.

Following stripping and any cut, and before any fill is placed, the subgrade should be proof-rolled with a pneumatic roller, loaded tandem-wheel dump truck, or other similar equipment, and verified by a geotechnical engineer. Areas identified during the proof-rolling process as soft, or exhibiting “pumping” tendencies, shall be undercut, processed and recompacted, or removed and replaced with suitable fill, whichever is appropriate.

6.2 Suitable Fill Material

Fill and backfill materials for general areas should be free of organics, debris and/or rock fragments in excess of 3 inches, in any dimension. In the top 18 inches of fill, the maximum particle size should be limited to approximately 1.5 inches. In accordance with ASTM D2487 Unified Soil Classification, imported select fill should consist of silty gravel (GM), clayey gravel (GC), gravelly sand (SP), silty sand (SM), clayey sand (SC), or low-plasticity sandy clay (CL) with a liquid limit and plasticity index of less than 40 and 15, respectively, or an approved alternate.

6.3 Compaction Requirement

Fill soils should be compacted to a minimum of 92% maximum Modified Proctor dry density (ASTM D1557), with a moisture content range of $\pm 2\%$ of its optimum. Fill should be placed in nominal 8-inch-thick loose lifts. Each lift of fill should be properly compacted, tested and approved prior to placing subsequent lifts.

7.0 CONSTRUCTION CONSIDERATIONS

Positive surface drainage should be established at the start of work, be maintained during construction and following the completion of the project to prevent surface water ponding and subsequent saturation of subgrade soils. Prolonged exposure or saturation of subgrade soils by ponding or runoff water may result in significant changes in strength and compressibility characteristics. Saturated subgrade soils should be excavated and replaced with suitable materials.

Depending upon weather conditions during and prior to construction, groundwater may be encountered in the excavation areas. Any seepage into the construction excavation could be controlled by pumping from sump pits. During site preparation, surface runoff should be directed away from the construction areas.

8.0 GENERAL COMMENTS

The soil classifications presented in this report are based upon the data obtained from the soil borings performed at indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur across the site. The nature and extent of such variations may not become evident until construction. If variations do occur, the conclusion and recommendations of this report should then be reviewed an ABC geotechnical engineer in light of the new information.

This report has been prepared for the exclusive use of our client for the specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the ABC geotechnical engineer of record.

APPENDIX

- A. General Notes
- B. Vicinity Map
- C. Boring Plan
- D. Boring Logs
- E. Lab Test Results
- F. Field Infiltration Test Results

A. GENERAL NOTES

Drilling and Sampling Symbols



N = Standard penetration, blows per foot of a 140 lbs hammer for 30" drop

RQD = Rock Quality Designation

LL = Liquid Limit

PL = Plastic Limit

PI = Plasticity Index

Cohesionless Soils

If the sand or silt content of a soil is great enough, the soil becomes non-cohesive or semi-cohesive. The soil classification becomes SAND or SILT with the other soil constituents being modifying.

Based on N-Value

0 to 4 Blows.....Very Loose

5 to 9 Blows.....Loose

10 to 29 Blows.....Medium Dense

30 to 59 Blows.....Dense

Over 60 Blows.....Very Dense

Cohesive Soils

If clay content is sufficient so that clay dominates soil properties, then CLAY becomes the major soil constituent as modifier. Other minor soil constituents may be added according to classification breakdown for cohesion less soils: i.e. silty clay, trace of some sand, trace of gravel.

Based on N-Value

0 to 3 Blows.....Very Soft

4 to 5 Blows.....Soft

6 to 16 Blows.....Firm

16 to 30 Blows.....Stiff

30 to 60 Blows.....Very Stiff

Over 61 Blows.....Hard

Based on Penetrometer Value

Below 0.25.....Very Soft

0.25 to 0.49.....Soft

0.50 to 0.99.....Firm

1.00 to 1.99.....Stiff

2.00 to 3.99.....Very Stiff

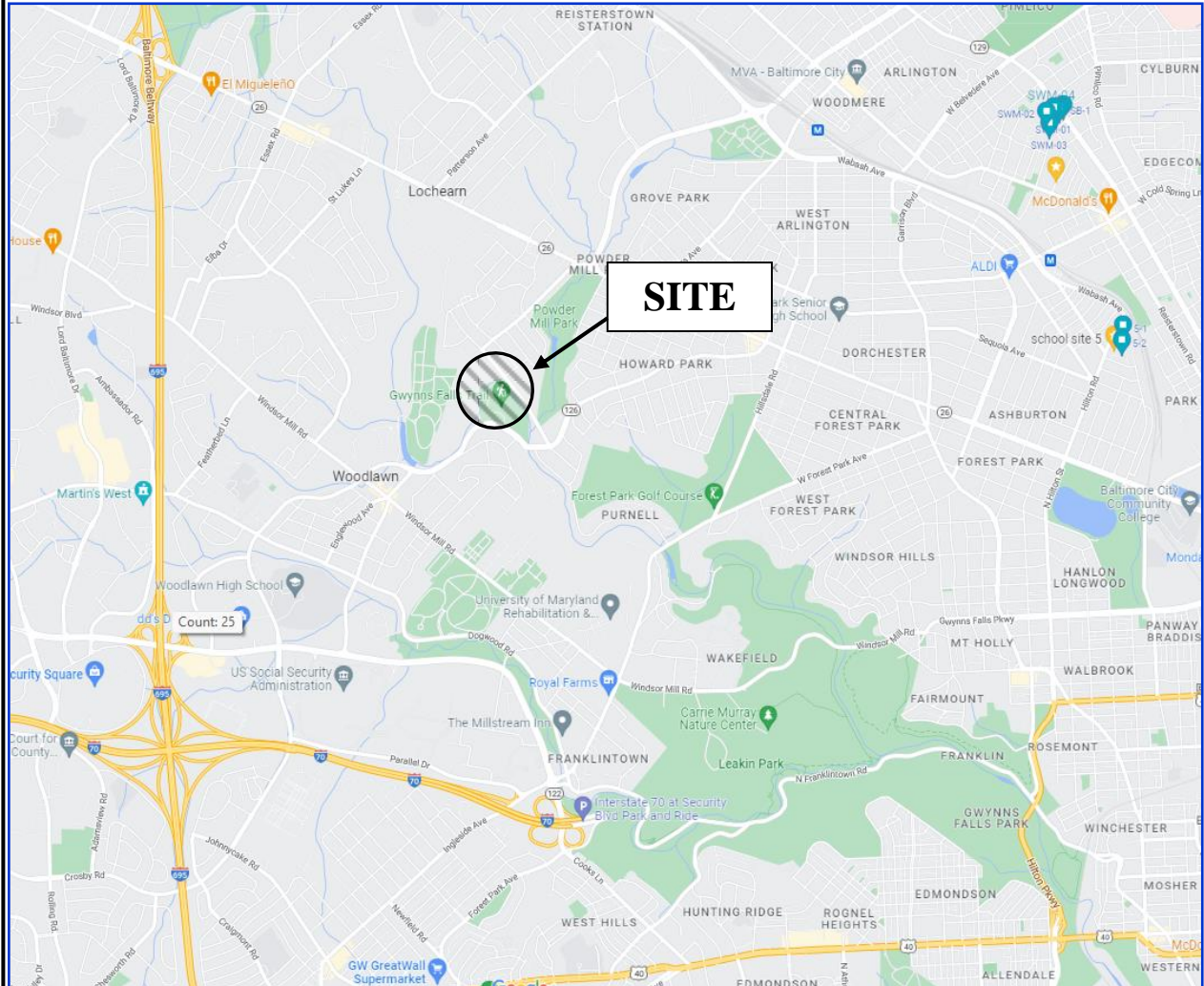
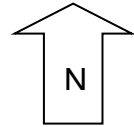
Over 4.00.....Hard

Quantity Modifiers

<u>Term</u>	<u>% of Dry Weight</u>
trace	0 to 10
little	11 to 20
some	21 to 35
and/with	36 to 50

Particle Size Identifications

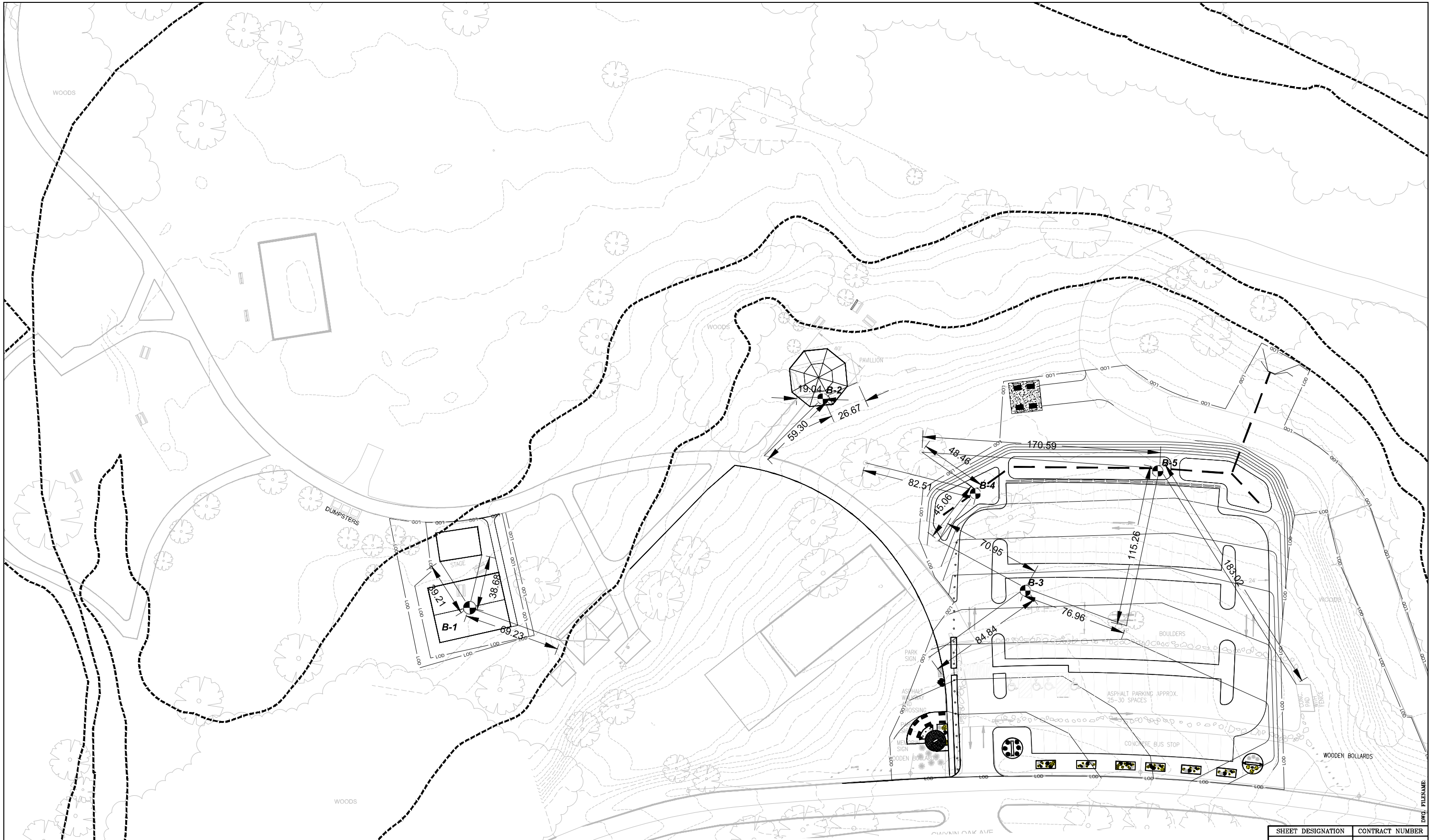
Boulder	Over 8 inch diameter
Cobbles.....	3 inch to 8 inch
Gravel.....	Coarse.....1 inch to 3 inch
	Medium.....1/2 inch to 1 inch
	Fine.....4.75 mm to 1/2 inch
Sand.....	Coarse.....2 mm to 4.75 mm
	Medium.....0.425 mm to 2 mm
	Fine.....0.075 mm to 0.425 mm
Silt/Clay.....	Below 0.075 mm



B. VICINITY MAP
Gwynn Oak Park Improvements
Gwynn Oak, Maryland

JOB NO.: 2021147-04
SCALE: N.T.S.
DATE: 9/15/22

C. BORING PLAN



SEAL	PROFESSIONAL CERTIFICATION		AS-BUILT / REVISION		BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHIT	DRAWING SCALE		PROPERTY MANAGEMENT	
	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 NO. _____, EXPIRATION DATE _____		CONTRACT COMPLETION BOX				PWA NO	KNW	11NW19	PLAN SCALE:	AS SHOWN	APPROVED BY:	DIRECTOR
			BUREAU OF ENGINEERING AND CONSTRUCTION				R.O.W NO.		11NW20	PROFILE SCALE:	VERT: 1" = 1'	DATE:	
			TRAFFIC				ROW		12NW20	DATE: 1" = 1'			
GANNETT FLEMING		DGN BY: _____	REVIEWED BY:									APPROVED BY:	CHIEF
AS-BUILT PER RECORD PRINT		OWN BY: _____	DATE REVIEWED:									DATE:	
BY: _____		CHKD BY: _____											
DATE: _____													

BALTIMORE COUNTY OFFICE OF BUDGET AND FINANCE – PROPERTY MANAGEMENT

GWYNN OAK PARK

PAVILLION & PARKING EXPANSION

SUBDIVISION: DR 5.5

6010 GWYNN OAK AVENUE, GWYNN OAK, MD 21207

ELECTION DIST. NO.: 2 C 1

SHEET DESIGNATION	CONTRACT NUMBER
	CONTRACT NO
	JOB ORDER NUMBER
	JOB ORDER NO
	SHEET OF #
	DRAWING NUMBER
	FILE NO.: 8



D. BORING LOGS

Project No. 2021147-04

LOG OF BOREHOLE B-1

Sheet 1 of 1

CLIENT:

Gannett Fleming, Inc.

PROJECT:

Gwynn Oak Park Improvements

ARCHITECT/ENGINEER:

SITE:

Baltimore County, Maryland

SURFACE ELEV.:	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.4 5" Topsoil											
Dry to Moist, Very Dense to Medium Dense, Brown, SILTY SAND (SM) with mica			10-50/3"	1	SS	3/9 33%	17				
			4-7-11 N=18	2	SS	12/18 67%	23				
			14-14-12 N=26	3	SS	18/18 100%	17			43	
8.0			12-21-50 N=71	4	SS	10/18 56%	8			9	
Dry, Very Dense, Brown and Gray, SILTY GRAVEL (GM), with sand (Possible Decomposed Rock)			50/2"	5	SS	2/2 100%	4				
-Auger and spoon refusal @ 11 ft											
11.0											
End of Boring @ 11 ft											
Borehole was backfilled after water level reading											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved-in 7.5 ft	@ 0 hr



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 8/29/22

FINISHED: 8/29/22

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: WM

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 2021147-04 GWYNN OAK PARK IMPROVEMENTS.GPJ AB CONS.GDT 9/16/22

CLIENT:

Gannett Fleming, Inc.

PROJECT:

Gwynn Oak Park Improvements

ARCHITECT/ENGINEER:

SITE:

Baltimore County, Maryland

SURFACE ELEV.:	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil											
Dry, Medium Dense, Dark Brown, SILTY SAND (SM)			10-7-8 N=15	1	SS	6/18 33%	10				
3.0											
Moist, Medium Dense, Orange Brown, SILT (ML), with sand			7-10-15 N=25	2	SS	10/18 56%	27			81	
		5									
			8-8-9 N=17	3	SS	8/18 44%	48				
8.0											
Moist, Loose, Brown and Greenish Gray, SANDY SILT (ML), with mica and trace of clay			1-2-7 N=9	4	SS	18/18 100%	43				
		10									
			3-3-4 N=7	5	SS	12/18 67%	51				
15.0											
		15									
End of Boring @ 15 ft											
Borehole was backfilled after water level reading											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved-in 9.5 ft	@ 0 hr



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DRILL RIG: B-61

DRILLER: WM

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 2021147-04 GWYNN OAK PARK IMPROVEMENTS.GPJ AB CONS.GDT 9/16/22

Project No. 2021147-04

LOG OF BOREHOLE B-3

Sheet 1 of 1

CLIENT:

Gannett Fleming, Inc.

PROJECT:

Gwynn Oak Park Improvements

ARCHITECT/ENGINEER:

SITE:

Baltimore County, Maryland

SURFACE ELEV.:	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.5 6" Topsoil											
Moist, Stiff to Very Stiff to Hard, Brown, SANDY CLAY (CL), with gravel			12-15-10 N=25	1	SS	6/18 33%	22			72	
			5-8-23 N=31	2	SS	6/18 33%	40				
		5	50/3"	3	SS	3/18 17%	18				
8.0			12-8-4 N=12	4	SS	8/18 44%	33			48	
Moist, Medium Dense, Brown and Greenish Gray, SILTY SAND (SM), with gravel and clay		10	4-5-6 N=11	5	SS	8/18 44%	30				
15.0		15									
End of Boring @ 15 ft											
Borehole was backfilled after water level reading											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved-in 9 ft	@ 0 hr



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DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: WM

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 2021147-04 GWYNN OAK PARK IMPROVEMENTS.GPJ AB CONS.GDT 9/16/22

CLIENT:

Gannett Fleming, Inc.

PROJECT:

Gwynn Oak Park Improvements

ARCHITECT/ENGINEER:

SITE:

Baltimore County, Maryland

SURFACE ELEV.: 0.4 5" Topsoil	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
Dry to Moist, Stiff to Firm, Brown and Greenish Gray, SANDY SILT (ML)		5	16-12-15 N=27	1	SS	8/18 44%	16				LL = NP PL = NP PI = 0
		5	10-9-10 N=19	2	SS	8/18 44%	30				
		7.5	6-13-21 N=34	3	SS	10/18 56%	15			51	
Dry, Medium Dense, Greenish Gray, SILTY SAND (SM)		10	10-13-14 N=27	4	SS	8/18 44%	13				
		15	15-14-10 N=24	5	SS	8/18 44%	8				
End of Boring @ 15 ft Borehole was backfilled after water level reading											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved-in 8.5 ft	@ 0 hr



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DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: WM

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 2021147-04 GWYNN OAK PARK IMPROVEMENTS.GPJ AB CONS.GDT 9/16/22

CLIENT:

Gannett Fleming, Inc.

PROJECT:

Gwynn Oak Park Improvements

ARCHITECT/ENGINEER:

SITE:

Baltimore County, Maryland

SURFACE ELEV.:	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.7	8" Topsoil										
	Moist, Firm, Reddish Brown, SANDY CLAY (CL), with mica		2-3-6 N=9	1	SS	8/18 44%	26				
			4-5-7 N=12	2	SS	10/18 56%	30				
5.0		5									
	Moist, Medium Dense, Reddish Brown, SILTY SAND (SM), with trace of clay		3-5-7 N=12	3	SS	10/18 56%	26			40	
			6-4-8 N=12	4	SS	18/18 100%	52				
		10									
12.0											
	Moist, Medium Dense, Orange Brown and Gray, SILTY SAND (SM)		12-7-8 N=15	5	SS	12/18 67%	36				
15.0		15									
	End of Boring @ 15 ft										
	Borehole was backfilled after water level reading										

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved-in 8 ft	@ 0 hr



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FINISHED: 8/29/22

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: WM

ASS'T DRILLER:

LOGGED BY:

APPROVED:

E. LAB TEST RESULTS

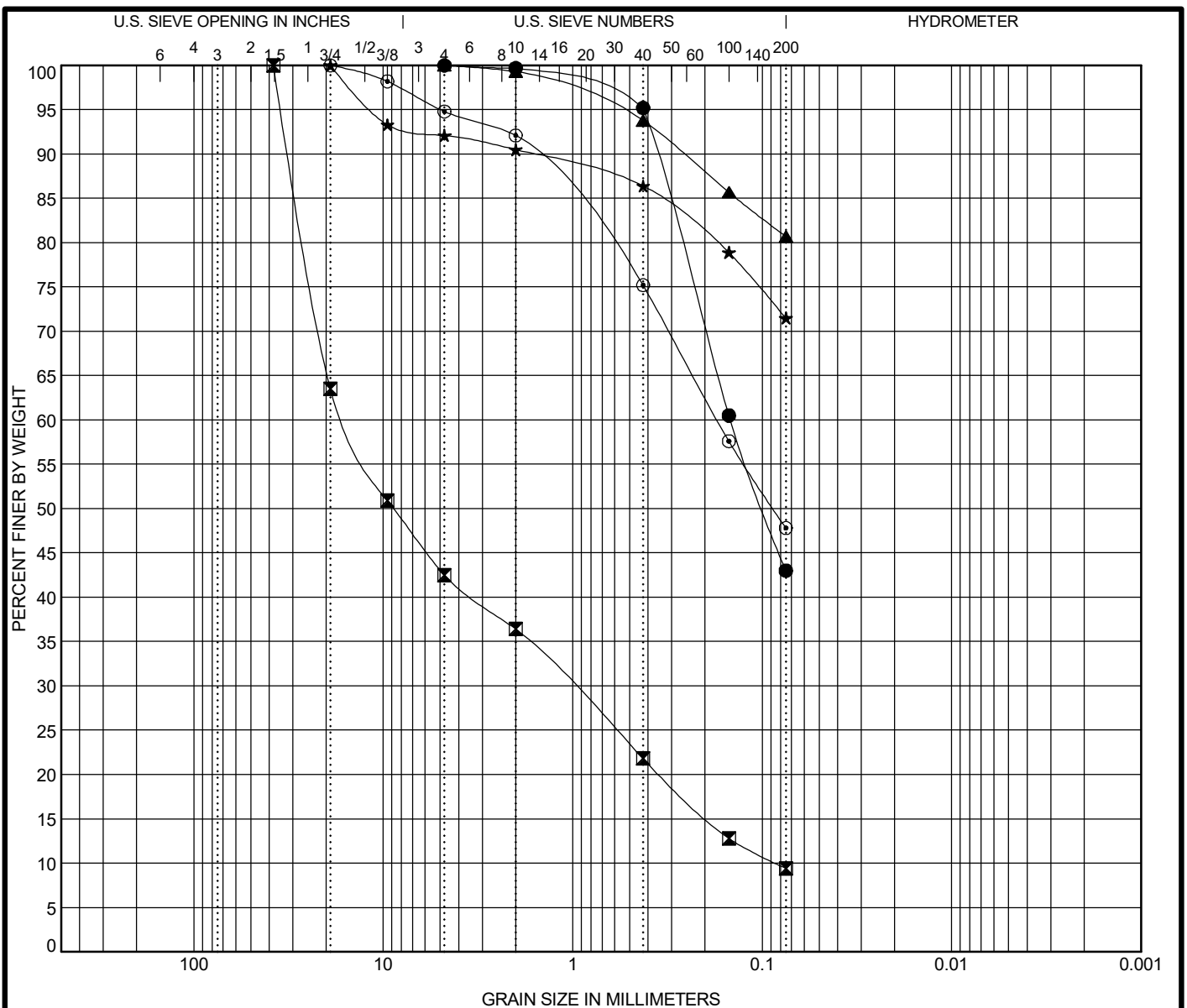
Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
B-1	1.0							16.6			
B-1	3.5							22.5			
B-1	6.0				4.75	43		17.0			
B-1	8.5				38	9		8.0			
B-1	11.0							4.2			
B-2	1.0							10.2			
B-2	3.5				4.75	81		27.4			
B-2	6.0	NP	NP	NP				48.0			
B-2	8.5							43.3			
B-2	13.5							50.6			
B-3	1.0				19	72		22.2			
B-3	3.5							40.3			
B-3	6.0							17.8			
B-3	8.5				19	48		32.8			
B-3	13.5							30.4			
B-4	1.0							15.7			
B-4	3.5							30.0			
B-4	6.0				19	51		15.4			
B-4	8.5							12.9			
B-4	13.5	NP	NP	NP				7.9			
B-5	1.0							26.0			
B-5	3.5	56	28	28				30.3			
B-5	6.0				19	40		26.1			
B-5	8.5							52.2			
B-5	13.5							35.8			

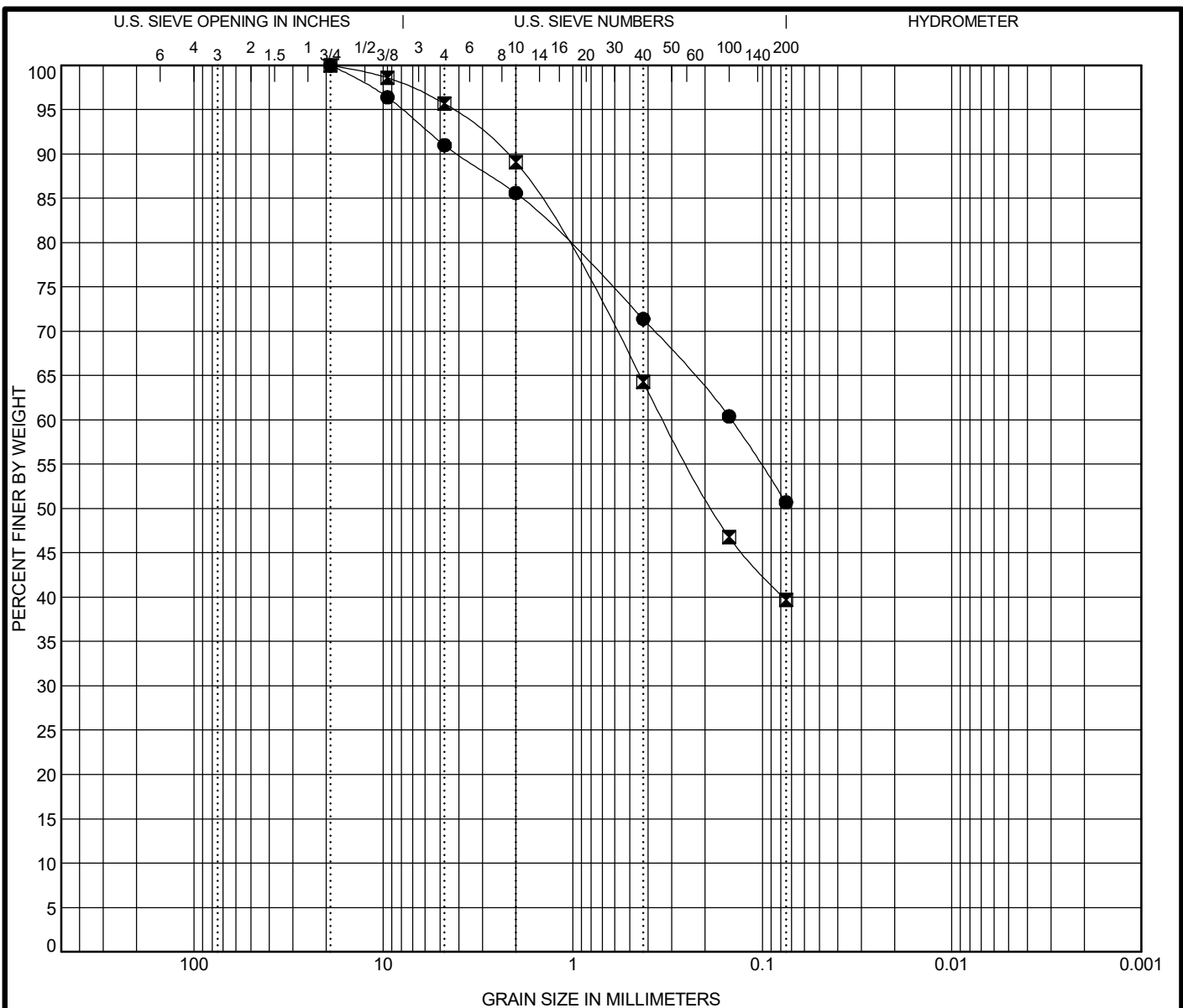


AB Consultants Inc
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

Summary of Laboratory Results

CLIENT: Gannett Fleming, Inc.
PROJECT NO.: 2021147-04
PROJECT: Gwynn Oak Park Improvements
SITE:
Baltimore County, Maryland





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

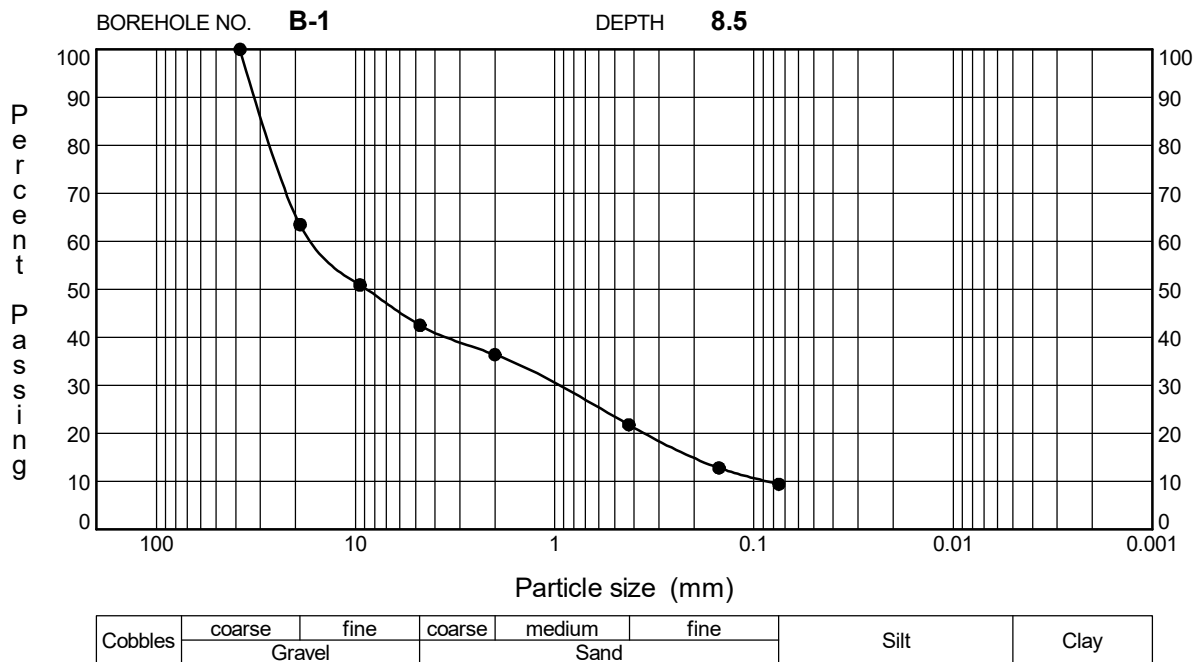
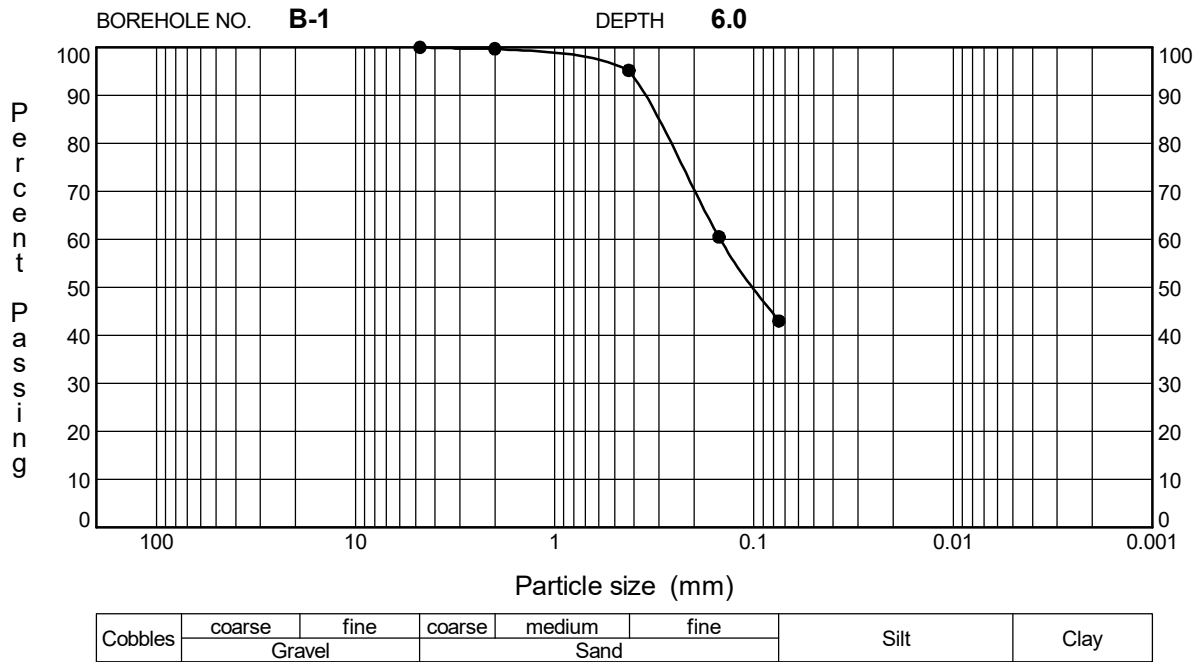
Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	B-4	6.0										
☒	B-5	6.0										
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-4	6.0	19	0.146			9.0	40.3	50.7			
☒	B-5	6.0	19	0.329			4.3	56.0	39.7			



AB Consultants Inc
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

GRAIN SIZE DISTRIBUTION

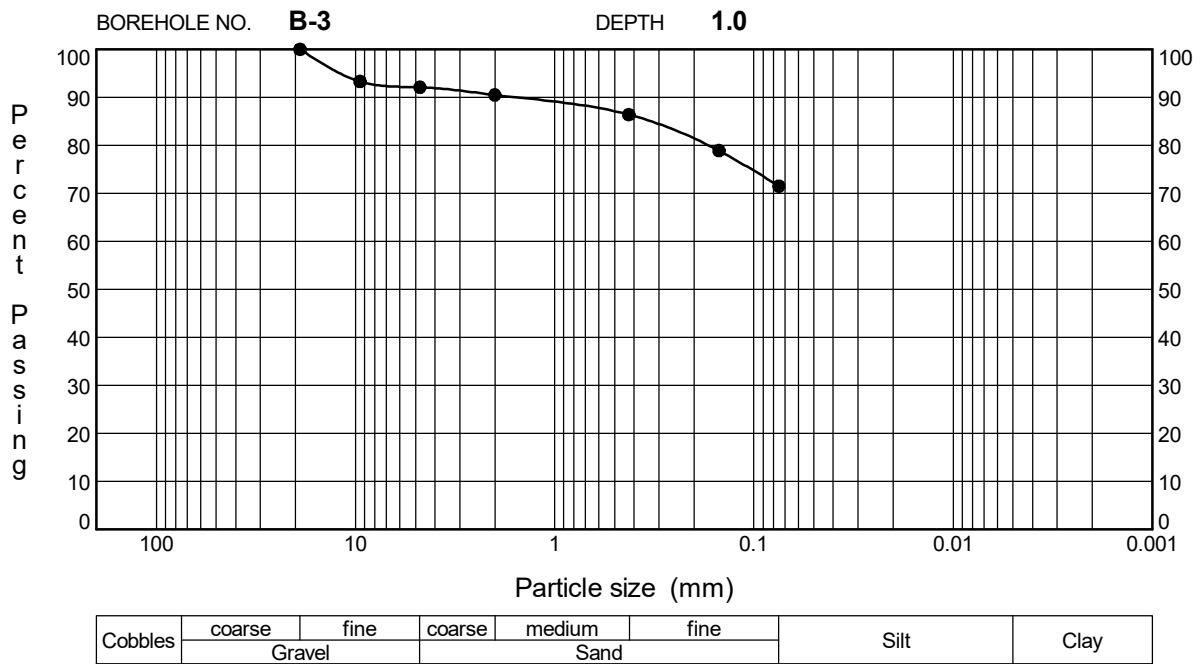
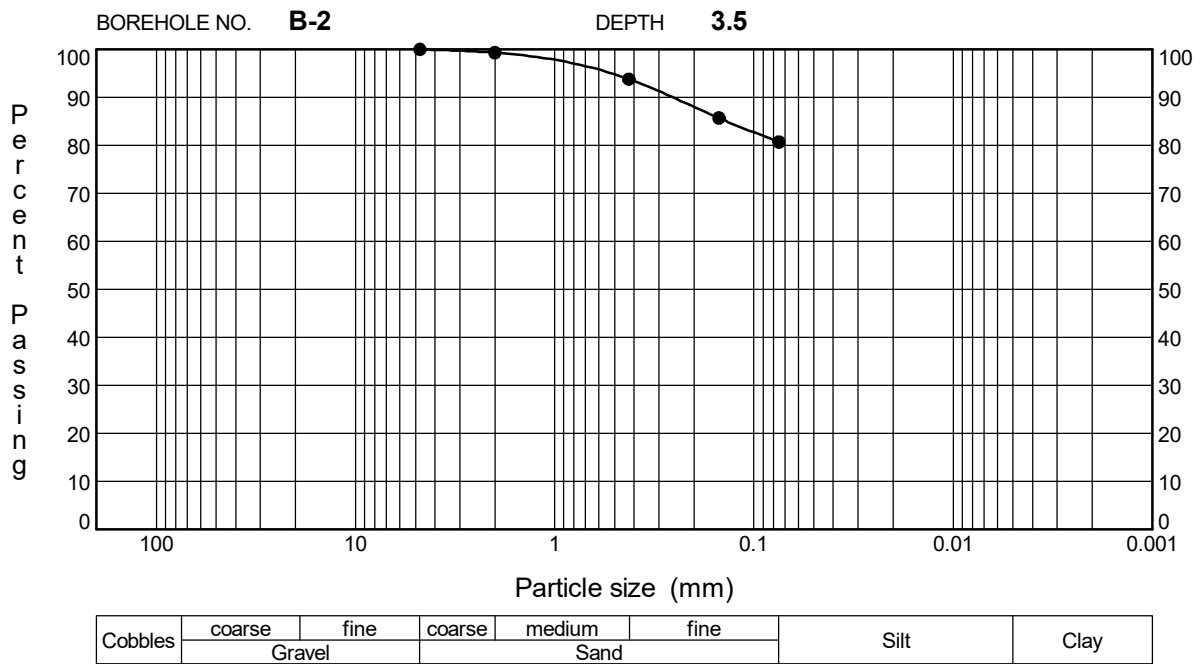
CLIENT: Gannett Fleming, Inc.
PROJECT NO.: 2021147-04
PROJECT: Gwynn Oak Park Improvements
SITE: Baltimore County, Maryland



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 9450 Annapolis Road
 Lanham, MD 20706
 Phone: 301-306-3091
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GRAIN SIZE DISTRIBUTION

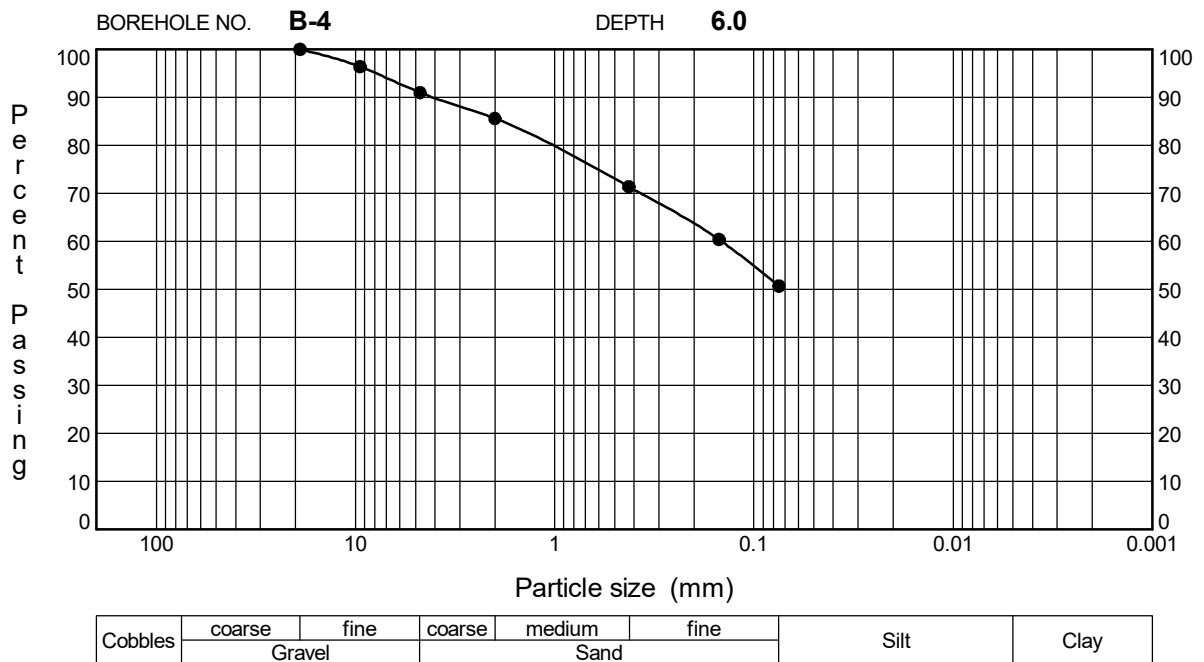
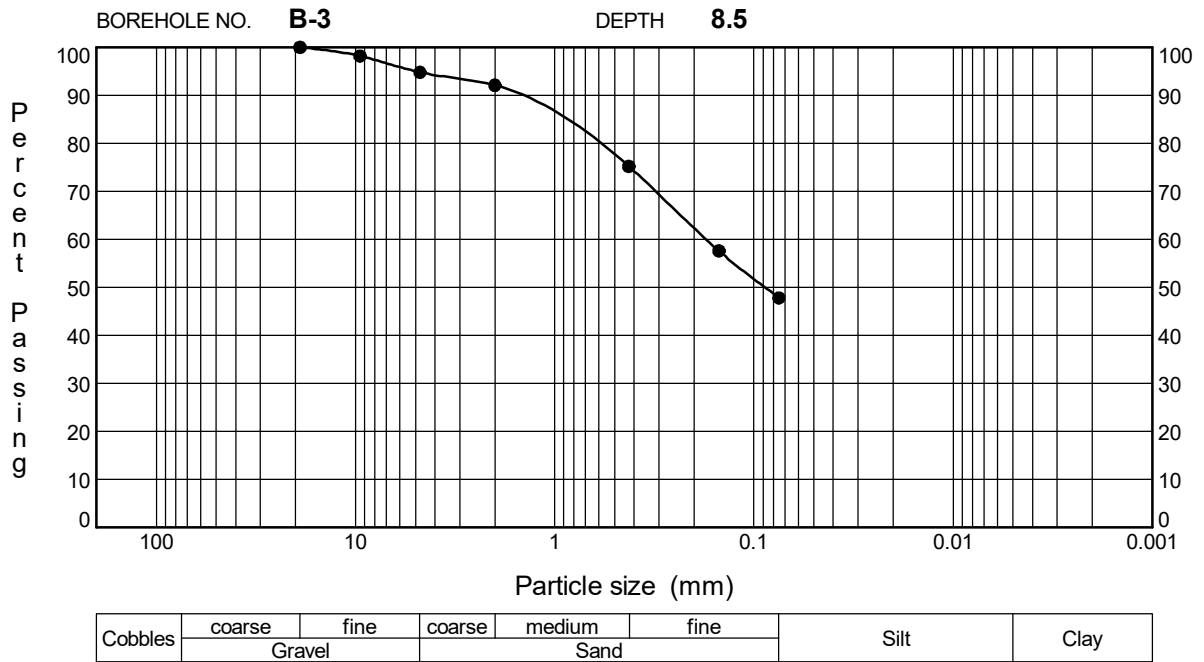
CLIENT: Gannett Fleming, Inc.
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GRAIN SIZE DISTRIBUTION

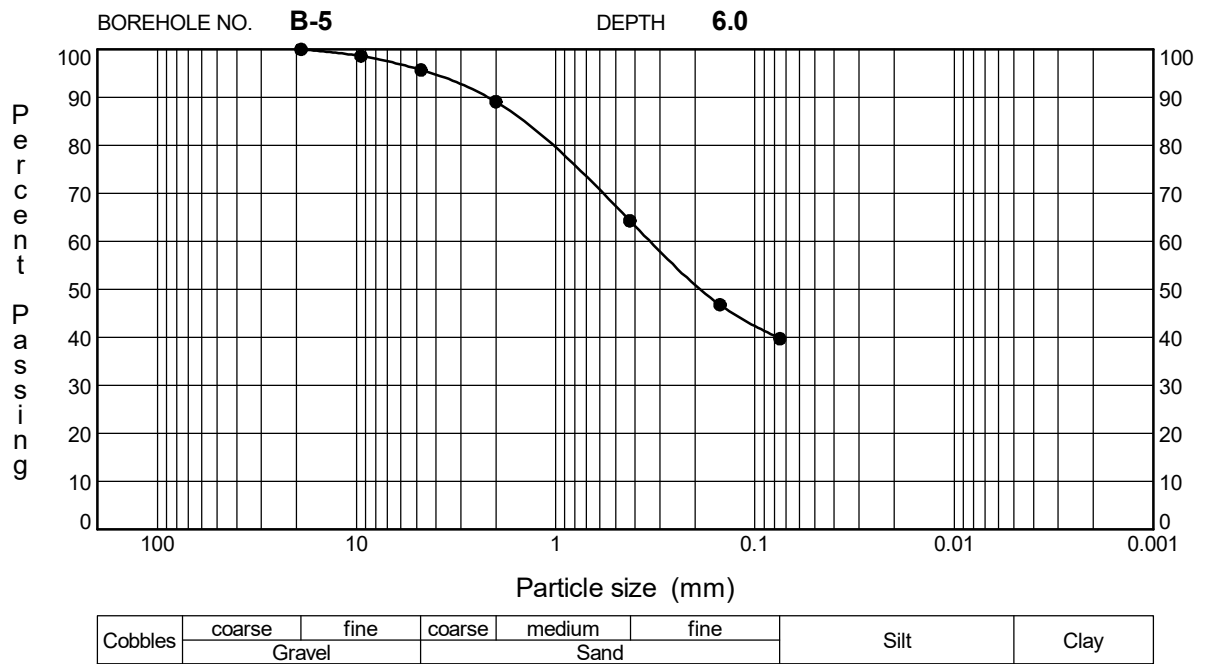
CLIENT: Gannett Fleming, Inc.
 PROJECT NO.: 2021147-04
 PROJECT: Gwynn Oak Park Improvements
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 PROJECT NO.: 2021147-04
 PROJECT: Gwynn Oak Park Improvements
 SITE:
 Baltimore County, Maryland

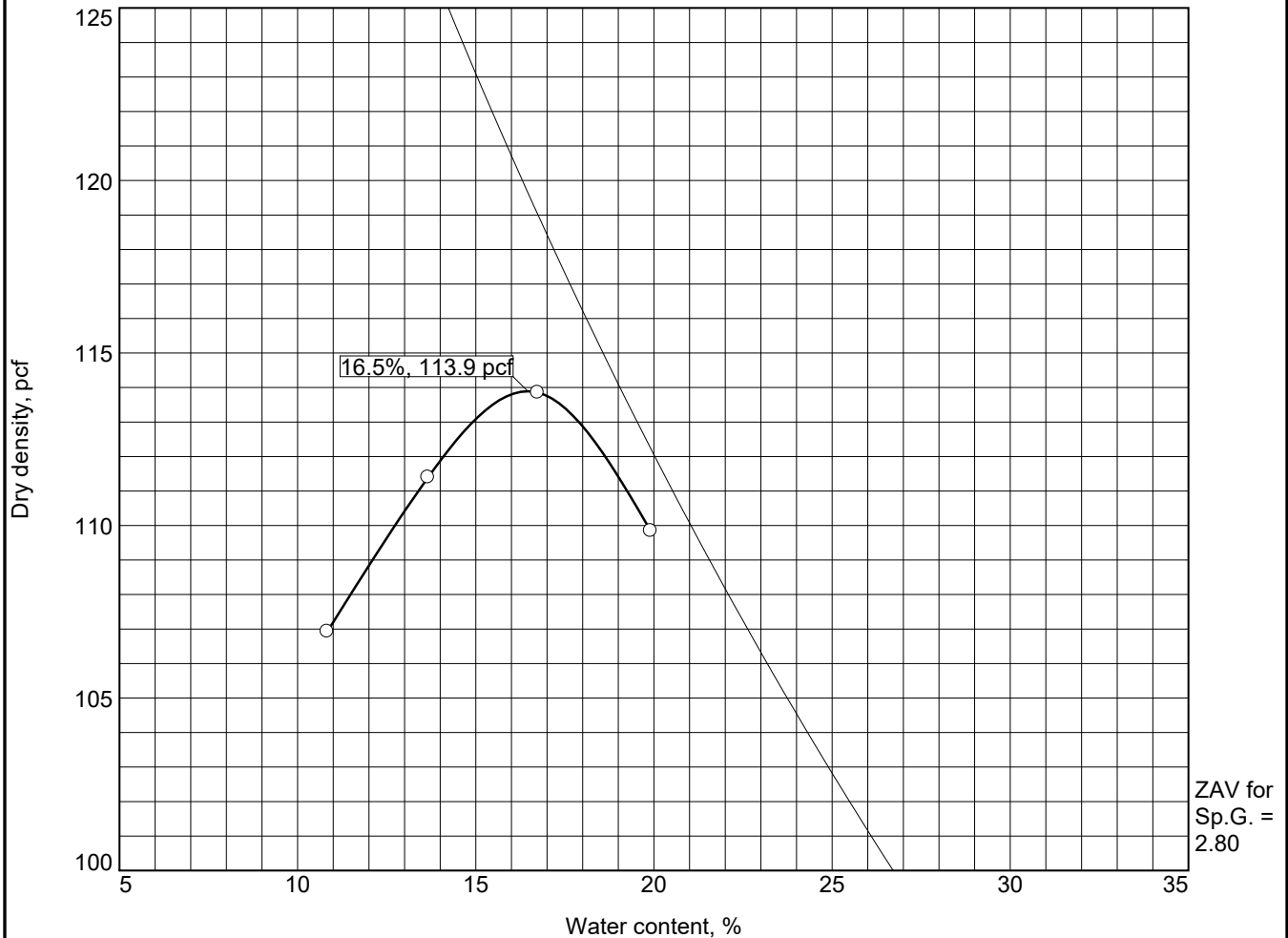


AB Consultants Inc
 9450 Annapolis Road
 Lanham, MD 20706
 Phone: 301-306-3091
 Fax: 301-306-3092

GRAIN SIZE DISTRIBUTION

CLIENT: Gannett Fleming, Inc.
 PROJECT NO.: 2021147-04
 PROJECT: Gwynn Oak Park Improvements
 SITE:
 Baltimore County, Maryland

COMPACTION TEST REPORT



Test specification: ASTM D 1557-12 Method B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
1 to 6 ft	CL	A-7-6(10)	23.6	2.8	42	16	4.4	66.2

TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 113.9 pcf Optimum moisture = 16.5 %		Brown sandy lean clay
Project No. 2021147-04 Client: Gannett Fleming Inc. Project: Gwynn Oak Park Improvement Location: B-3 Sample Number: Bag		Remarks:
<div> AB Consultants, Inc.</div>		

Figure

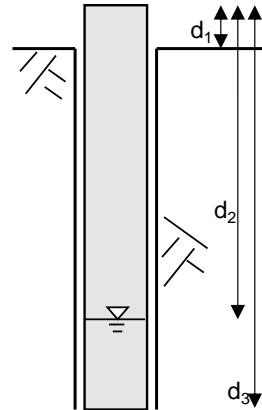
F. FIELD INFILTRATION TEST RESULTS

ON-SITE INFILTRATION TEST

JOB NO.: 2021147-04
 PROJECT: Gwynn Oak Park Improvements
 LOCATION:

DRILLED BY: WM
 DATE: 8/29/2022

HOLE NO.: B-4
 HOLE DEPTH: 4.750 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 7/19/2022
 PIPE DIAMETER: 5"
 PIPE MATERIAL: PVC
 TESTED BY: FG/AH
 TESTED DATE: 8/30/2022



Measurements (in.)
 15
 51 6/16
 72

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 20 10/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:20AM	9:20AM	60	47 14/16	48	0.120	0.12
9:20AM	10:20AM	60	48	48 2/16	0.120	0.12
10:20AM	11:20AM	60	48 2/16	48 4/16	0.120	0.12
11:20AM	12:20PM	60	48 4/16	48 6/16	0.120	0.12

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.12 in./hr
 Recommended Infiltration Rate: 0.12 in./hr
 Report Reviewed and Prepared By: FG

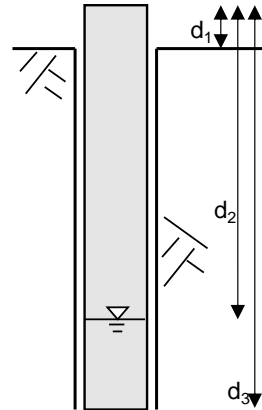
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 2021147-04
 PROJECT: Gwynn Oak Park Improvements
 LOCATION:

DRILLED BY: WM
 DATE: 8/29/2022

HOLE NO.: B-5
 HOLE DEPTH: 4.833 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 7/19/2022
 PIPE DIAMETER: 5"
 PIPE MATERIAL: PVC
 TESTED BY: FG/AH
 TESTED DATE: 8/30/2022



Measurements (in.)
 16
 74
 74

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:15AM	9:15AM	60	50 14/16	55 15/16	5.040	5.04
9:15AM	10:15AM	60	50 3/16	54 12/16	4.560	4.56
10:15AM	11:15AM	60	49 13/16	54 15/16	5.160	5.16
11:16AM	12:16PM	60	49 13/16	54 10/16	4.800	4.80

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 4.89 in./hr
 Recommended Infiltration Rate: 5.00 in./hr
 Report Reviewed and Prepared By: FG

REMARKS:

**U.S. Environmental Protection Agency (EPA)
National Pollutant Discharge Elimination System (NPDES)**

CONTRACTOR'S RESPONSIBILITIES

For all County contracts with a "total disturbance" of one (1) acre or more, as that term is defined by the Maryland Department of the Environment (MDE), the County will make application on behalf of the Contractor to MDE for the NPDES permit.

At the contract pre-construction meeting, or such other time as the County deems advisable, the County will provide the Contractor with (a) the NPDES permit, (b) a NPDES Transfer of Authorization Form, (c) a NPDES Notice of Termination Form, and (d) a copy of the NPDES permit requirements. The Contractor shall read and review these documents completely, including, but not limited to, Part IV of the NPDES permit outlining the requirements for monitoring, record keeping, and reporting.

The Contractor shall sign and return the NPDES Transfer of Authorization Form to the County within two (2) calendar days of receipt. **Failure to do so may result in a breach of the contract, in the County's sole discretion, and enforcement of all rights and remedies available to the County.**

Upon full and final completion of the contract, as determined by the County, the Contractor shall complete and submit the NPDES Notice of Termination Form to MDE and provide a copy to the County. **Failure to do so may result in a breach of the contract, in the County's sole discretion, and enforcement of all rights and remedies available to the County.**

Any costs or expenses to comply with the NPDES permit, and any related MDE or EPA regulations, shall not be a separate pay item under the contract but shall be included by the Contractor in the "Other Items" portion of its bid. **No additional compensation to the Contractor shall be considered or provided by the County with regards to the NPDES permit or the related requirements.**

SPECIAL PROVISIONS

Builder's Risk Insurance

- A. The Contractor shall, at his/her own cost, insure the work and keep it insured at all times during the period of construction, and until final acceptance of it by the County against loss of damage covered by an "All Risk" Builders Risk type of policy. The amount of insurance shall be the 100% estimated replacement cost of the work.
- B. The policies shall be made payable to the County and the Contractor, as their interest may appear, and the policies shall be left in the possession of the Engineer, prior to the start of construction.

S E C T I O N I I I

Permits



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000024

Permit Type: Commercial Environmental

Sub Type: Grading

Date Issued: 04/19/2025

Expiration Date: 04/18/2027

Property Information

Property Address: 6010 GWYNN OAK AVE

City, State, Zip: GWYNN OAK, MD, 21207

Tax ID: 1800011174

District: 02

Existing Use:

Proposed Use:

Is this property located in a Floodplain: YES

Sprinkler to be Installed?:

Plumbing Work?:

Electrical Work?:

Lot Size and Setbacks

Size:

Set Backs - Front Yard:

Set Backs - Rear Yard:

Set Backs - Right Side Yard:

Set Backs - Left Side Yard:

Owner Information

Owner: Baltimore County Maryland

Owner Address: 400 WASHINGTON AVE, Baltimore, MD, 21204

Tenant:

Applicant: Bill Sherd

C. Pete Gutwald, AICP, Director

E. John Bryan, Building Engineer

***Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.**



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000024

Permit Type: Commercial Environmental

Sub Type: Grading

Date Issued: 04/19/2025

Expiration Date: 04/18/2027

Building Permit Contractor

Name of Contractor: TBD

Phone Number:

Address:

City, State, Zip: , ,

Is Owner Contractor?:

Building Permit Information

Description of Work: Grade 178,331SF for expansion of the parking area adjacent to Gwynn Oak Ave , updates to the pavilion, and associated site improvements. Permit expires 2 years from date of issue. No construction to begin until pre-construction meeting. Failure to comply will result in penalties. Schedule your pre-construction meeting in your portal.

C. Pete Gutwald, AICP, Director

E. John Bryan, Building Engineer

*Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000023

Permit Type: Commercial Environmental

Sub Type: Storm Water

Date Issued: 03/06/2025

Expiration Date: 03/05/2027

Property Information

Property Address: 6010 GWYNN OAK AVE

City, State, Zip: GWYNN OAK, MD,

Tax ID: 1800011174

District: 02

Existing Use:

Proposed Use:

Is this property located in a Floodplain: YES

Sprinkler to be Installed?:

Plumbing Work?:

Electrical Work?:

Lot Size and Setbacks

Size:

Set Backs - Front Yard:

Set Backs - Rear Yard:

Set Backs - Right Side Yard:

Set Backs - Left Side Yard:

Owner Information

Owner: Baltimore County Maryland

Owner Address: 400 WASHINGTON AVE, Baltimore, MD, 21204

Tenant:

Applicant: Bill Sherd

C. Pete Gutwald, AICP, Director

E. John Bryan, Building Engineer

***Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.**



Baltimore County, Maryland
Department of Permits, Approvals, and Inspections
BUILDING PERMIT

Permit Number: CEN25-000023

Permit Type: Commercial Environmental

Sub Type: Storm Water

Date Issued: 03/06/2025

Expiration Date: 03/05/2027

Building Permit Contractor

Name of Contractor: TBD

Phone Number:

Address:

City, State, Zip: , ,

Is Owner Contractor?:

Building Permit Information

Description of Work: Storm water management for 3.37 acres drainage area. Permit expires 2 years from date of issue. No construction to begin until pre-construction meeting. Failure to comply will result in penalties. Schedule your pre-construction meeting in your portal.

A handwritten signature in black ink, appearing to read "C. Gutwald".

C. Pete Gutwald, AICP, Director

A handwritten signature in black ink, appearing to read "E. John Bryan".

E. John Bryan, Building Engineer

*Please log into your account to get up-to-date information regarding the permit process and related inspections. Refer to the Permit Number when making inquiries.



Maryland

Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary
Adam Ortiz, Deputy Secretary

2/27/2025

Baltimore County

400 Washington Avenue

Suite 65

Towson, Maryland 21204

RE: Authorization of Application Number: **20CPC09BD/MDRCC09BD**

Dear **Mr. Greg Doran**,

This letter confirms, that as of **2/27/2025**, your authorization for coverage under the General Permit for Stormwater Associated with Construction Activity (MDRC/20-CP) was granted for discharges into:

Use IV: Gwynns Falls (02130905)

In signing the Notice of Intent (NOI) you have certified that the Operator named here:

Baltimore County

intends to abide by the terms of the MDRC/20-CP permit for:

Gwynn Oak Park Pavilion and Parking Expansion

for a total disturbed area of: **4.09 acres**

at a property located at:

**6010 Gwynn Oak Ave
Gwynn Oak, Maryland 21207**

in:

Baltimore County

This coverage will continue under the terms of the General Permit until the permit is renewed by MDE (see 20CP Part I.F). You must print the full permit text to be kept on file and onsite with this letter. The permit text can be printed from:

https://mde.maryland.gov/programs/Water/wwp/Pages/gp_construction.aspx. Staff on-site must be thoroughly familiar with the content of the permit and where a copy is available on-site. A summary of the permit requirements and provision are provided below.

The stormwater discharges associated with construction and associated support activity are authorized under this authorization provided that appropriate stormwater controls are designed, installed, and maintained (see 20CP Parts III.A and III.B). In addition to stormwater associated with construction activity (see 20CP Part I.C.2) of the permit specifies the allowable non-stormwater discharges under this authorization. Any discharges not authorized by the General Permit may require additional permit coverage (see 20CP Part I.E).

If the current E&SC plan approval covers only part of the entire site, be advised that this registration does not authorize discharges from the other portions for the site until the appropriate E&SC approval authority approves the E&SC plan for those portions.

Discharges must be controlled as necessary to meet applicable water quality standards (see 20CP Part III.B). The narrative surface water quality criteria in Maryland's water quality standards include floating debris, oil, grease, scum, sludge, and other floating materials in amounts sufficient to cause the receiving water(s) to be unsightly; change the existing color to produce objectionable color for aesthetic purposes, or interfere directly or indirectly with designated uses; or elevate temperature which interfere directly or indirectly with designated uses.

In addition to the Technology-Based and Water Quality-Based Limits, the permit requirements include:

- "Site Inspection, Monitoring and Records", categorized as Person(s) Responsible for Inspecting Site (see 20CP Part III.C.1), Frequency of Inspections (see 20CP Part III.C.2), Increase in Inspection Frequency for Sites Discharging to Sensitive Waters (see 20CP Part III.C.3), Reductions in Inspection Frequency (see 20CP Part III.C.4), Areas That Must Be Inspected (see 20CP Part III.C.5), Requirements for Inspections (see 20CP Part III.C.6), Inspection Report (see 20CP Part III.C.7) and Records On-site (see 20CP Part III.C.8).
- "Corrective Actions", categorized as Conditions Triggering Corrective Action (see 20CP Part III.D.1), Corrective Action Deadlines (see 20CP Part III.D.2), and Corrective Action Report (see 20CP Part III.D.3).
- "Staff Training Requirements", categorized as Prior to the commencement of construction activities (see 20CP Part III.E.1), Regarding subcontractors or outside service providers (see 20CP Part III.E.2), Specific training related to scope of jobs (see 20CP Part III.E.3), and Easy access to documents (see 20CP Part III.E.4).
- "Stormwater Pollution Prevention Plan (SWPPP)", categorized as when a SWPPP is required (see 20CP Part III.F.1), the onsite availability of your SWPPP (see 20CP Part III.F.3) and when your SWPPP must be updated (see 20CP Part III.F.4).

You are required to submit any Modifications to this coverage, Transfers of Authorization, or Notices of Termination via the ePermits portal found at <https://egov.maryland.gov/mde/npdes/Account/Login>. If your contact information changes, update it through the ePermits portal. If you have any questions, please call the administrative team for the General Permit at (410) 537-3019.

Lastly, please remember to contact the compliance program to schedule a preconstruction meeting two (2) weeks prior to starting construction. If the compliance program contact name isn't on your approved E&SC plan, refer to the regional office Compliance Program Contacts listed on the following web page: <https://mde.maryland.gov/programs/water/Compliance/Pages/index.aspx>.

Sincerely,



Matthew Perry
Industrial Stormwater Permits Division
Wastewater Pollution Prevention & Reclamation Program

General Permit for Stormwater Associated with Construction Activity Addendum

Cause(s) of the impairment: Bacteria, Ions, Nutrients, PCBs, Pesticides, Sediments, Trash.

SECTION I V

Proposal

**This Section to be
Completed by Time of Bid**

SECTION-IV
PROPOSAL

DESCRIPTION OF WORK

Bid Opening via Teleconference WebEx: Thursday, June 26, 2025 @ 11:00 a.m. EST.
WebEx Phone Number 1-415-655-0001, Access Code Number 2308 358 6967##.

Begin Work Within Fifteen (15) Days After NOTICE TO PROCEED

Calendar Days for Completion: Two Hundred Sixty-Six (266)

Liquidated and Other Damages: FIFTEEN HUNDRED DOLLARS (\$1500.00 PER CALENDAR DAY)

Cost Group “D” (\$1,000,001 to \$2,500,000) (Prequalified contractors with a Cost Group restriction must bid within the dollar amount stated on their Certificate of Prequalification)

Work Classification: M1 or I1

TO BALTIMORE COUNTY, MARYLAND: The work consists of the construction of an enlarged parking area to replace the existing parking lot, a new outdoor pavilion, replacement of an existing pavilion, rehabilitation of an existing performance stage, upgrades to park to improve access for persons with disabilities, new planting beds, new trash enclosures and various additional improvements. **Gwynn Oak - District 2c4.**

The following listed Drawing Number(s) are collectively the “Drawings”, and are hereby incorporated in the Contract.

<u>Workday Number</u>	<u>Drawing Number(s)</u>
123070882	2022-2241 thru 2299

A pre-bid meeting will be held on Wednesday, June 4, 2025 at 1:00 p.m. EST via WebEx. *Phone-In (Audio Only)* – 1-415-655-0001, Meeting Number 2304 526 9895##. *Video Conference* – Meeting Number 2304 526 9895 ,**Password: WaySPJYU327**, go to <https://signin.webex.com/join>, or for the WebEx link go to www.baltimorecountymd.gov/departments/public-works/engineering/contracts/current-solicitations

NOTE: No successful bidder may withdraw their bid within NINETY (90) days after the opening thereof.

The Contractor hereby declares that it has carefully examined the solicitation, plans and specifications, form of contract, Special Provisions and Drawings (collectively the “Contract Documents”). The Contractor also hereby declares that it has carefully examined the September 2023 “Standard Specifications for Construction and Materials” and “Standard Details for Construction”, collectively the “Applicable County Law” and any and all Department of Public Works and Transportation revisions thereto as of the date of advertisement. The Contract Documents, the Applicable County Law and the Department of Public Works and Transportation revisions thereto are collectively the “Specifications” and are incorporated herein. Copies of any and all Department of Public Works and Transportation revisions including but not limited to the General Conditions Building Projects, are available online at www.baltimorecountymd.gov/departments/public-works/standards. Also, the Contractor has, to its satisfaction, examined the locality of the proposed work and agrees to furnish all labor, tools, materials, machinery, equipment, and other means of construction called for in the manner provided in the Specifications for the prices shown on the next page(s) and as evidenced by Contractor’s signature on the last page thereof.

SCHEDULE OF PRICES

NOTE: The Bidder shall fill out this Proposal, write in the unit prices in clear numerals, and make the extensions.

For complete information concerning these items, see Specifications and contract forms.

CONTRACT PROPOSAL

Gwynn Oak Park Pavilion & Parking Expansion - 6010 Gwynns Oak Avenue, Gwynn Oak, MD 21207

CONTRACT NUMBER: 22166 GX0

WORKDAY NUMBER: 123070882

JOB ORDER NUMBER: N/A

CALENDAR DAYS: 266

CONTRACTOR: _____
ADDRESS: _____
PHONE: _____

BID ITEM	COMM. CODE		DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL AMOUNT
1	0	0000	GWYNN OAK PARK PAVILION & PARKING LOT EXPANSION	LS	1		\$
TOTAL COST FOR CONTRACT							\$

TOTAL COST FOR CONTRACT IN WORDS

OFFICER SIGNATURE

TITLE

PROPOSAL AFFIDAVIT

1. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

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

2. PROPOSAL CERTIFICATION

THE UNDERSIGNED HEREBY ACKNOWLEDGES receipt of the following Addenda (list by number and date):

Accompanying this Proposal is a Bid Bond in an amount of 5% of the bid, the exact amount to be determined by the difference between the low bid and the next lowest bid, if two or more bids are received, or 5% of the bid if one bid is received. This guarantees payment to Baltimore County of the amount thus determined as liquidated damages in case of default in any matter specified as required before award or in any matter resulting in failure to execute and deliver an Agreement, together with Payment and Performance Bonds, after award.

3. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies (as is defined in Section 16-101(f) of the State Finance and Procurement Article of the Annotated Code of Maryland), has been convicted of, or has had probation before judgment imposed pursuant to Section 6-225 of the Criminal Procedure Article of the Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows [indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the Business]:

4. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of a criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract, fraud, embezzlement, theft, forgery, falsification or destruction of records, or receiving stolen property;

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

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

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

(5) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsection (1), (2), (3), or (4) above;

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

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

5. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows [list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceeding, the name(s) of the person(s) involved and their current positions and responsibilities with the Business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension]:

6. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

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

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

7. SUB-CONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, has knowingly entered into a contract with a public body under which a person debarred or suspended 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.

8. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the Business, nor any of its officers, directors, members or partners, nor any of its employees, have in any way:

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

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

(3) Colluded with anyone to obtain information concerning the bid that would give the Business an unfair advantage over others.

9. POLITICAL CONTRIBUTION DISCLOSURE AFFIRMATION

I FURTHER AFFIRM THAT:

The Business affirms that it is aware of, and will comply with, the provisions of Sections 14- 101 through 14-108 of the Election Law Article of the Annotated Code of Maryland, which require that every person who makes, during any 12-month period, one or more contracts, with one or more Maryland governmental entities involving cumulative consideration, or at least \$200,000.00, shall file with the State Board of Elections certain specified information to include disclosure of attributable political contributions in excess of \$500 during defined reporting periods.

10. CERTIFICATION OF CORPORATION REGISTRATION AND TAX PAYMENT

I FURTHER AFFIRM THAT:

(1) The Business is a _____(State) (Corporation), (LLC), (Partnership), (Sole Proprietor/Individual), (Other:_____), that it **is** registered in accordance with the Corporations and Associations Article of the Annotated Code of Maryland, that it **is** in good standing in the State of Maryland, and that it **has** filed all of its annual reports, together with filing fees, with the Maryland State Department of Assessments and Taxation, and that the name and address of its resident agent filed with the State Department of Assessments and Taxation is:

Name: _____

Address: _____

(If none, so state)

(2) Except as validly contested, the Business has paid, or has arranged for payment of, all taxes due the State of Maryland and Baltimore County, and has filed all required returns and reports with the Comptroller of the Treasury, the State Department of Assessments and Taxation, and the Employment Security Administration, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

11. CONTINGENT FEES

I FURTHER AFFIRM THAT:

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

12. NONDISCRIMINATION IN EMPLOYMENT STATEMENT

I FURTHER AFFIRM THAT:

During the performance of any contract awarded of which this affidavit is a part:

(1) The Business will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test. The Business will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test. Such action shall include, but not be limited to the following: employment, promotion, upgrading, demotion or transfer, rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Business agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the owner setting forth provisions of this nondiscrimination clause.

(2) The Business will, in all solicitations or advertisements for employees placed by or on behalf of the Business, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin, marital status, sexual orientation, genetic information, or disability unrelated in nature and extent so as to reasonably preclude the performance of the employment, or because of the individual's refusal to submit to a genetic test or make available the results of a genetic test.

(3) The Business shall send to each labor union or representative of workers with which the Business has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the owner, advising the said labor union or workers' representative of these commitments, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Business shall furnish, if requested by the County, a compliance report concerning our employment practices and policies in order for the County to ascertain compliance with the special provisions of this affidavit concerning nondiscrimination in employment.

(5) In the event of the Business's noncompliance with the nondiscrimination clause of this affidavit, the contract may be canceled, terminated, or suspended in whole or in part, and the Business may be declared ineligible for further County work.

(6) The Business shall include the special provisions outlined herein pertaining to nondiscrimination in employment in every subcontract, so that such nondiscrimination in employment provisions shall be binding on each subcontractor or vendor.

13. FOREIGN CONTRACTS

I FURTHER AFFIRM THAT:

The Business affirms that it is aware of, and will comply with, the provisions of Sections 10-2-110 Article 10. Finance, Title 2 – Purchasing, Baltimore County Code 2003, which requires that prior to the award of a contract for services under the provisions of this title, and during the entire term of a contract award, the bidder or vendor shall disclose to the County whether any services covered by the bid or contract, including any subcontracted services, will be performed outside the United States. The disclosure shall be made to the Office of Budget and Finance, Purchasing Bureau.

14. MINORITY BUSINESS ENTERPRISE AND FEMALE CONTRACTORS

THIS BUSINESS INTENDS to affirmatively seek out and consider minority business enterprises to participate in this contract as subcontractors and/or suppliers of materials and services.

THE UNDERSIGNED UNDERSTANDS AND AGREES: that any and all subcontracting of supplies and services in connection with this contract, whether undertaken before or after award of contract, will be in accordance with the Minority Business Enterprise and Female Contractor requirement included in the Bid Proposal package and incorporated herein as if fully set forth; and

THE UNDERSIGNED ALSO UNDERSTANDS AND AGREES that no subcontracting will be approved until Baltimore County has reviewed and approved the affirmative actions taken by this firm.

15. REQUIREMENTS FOR EXECUTING AFFIDAVIT & PROPOSAL

The Affidavit must be signed in ink in order for the bid to be accepted and that the Proposal must be typewritten or filled out in ink.

THE UNDERSIGNED ALSO UNDERSTANDS that:

Proposals submitted by an INDIVIDUAL must be signed by an individual.

Proposals submitted by a PARTNERSHIP must be signed by the partner who is legally authorized authority to bind the partnership. Attach a copy of the Partnership Agreement and a duly certified resolution evidencing the authority of the partner so signing on behalf of the partnership.

Proposals submitted by a CORPORATION must be signed by a legally authorized officer of the corporation and attested to by the Corporate Secretary. Attach a copy of the Articles of Incorporation, By-Laws and a duly certified Board Resolution evidencing the authority of the officer so signing on behalf of the corporation.

Proposals submitted by a LIMITED LIABILITY COMPANY must be signed by a legally authorized member of the company and attested to. Attach a copy of the Operating Agreement, Articles of Organization and a duly certified resolution evidencing the authority of the member so signing on behalf of the limited liability company.

NOTE: The contractor may file with the County a list of the names of those officers, partners or members, as applicable, having legal authority to execute documents on behalf of and legally bind the contractor, duly certified, as applicable and legally required, together with the aforesaid corporate documents, which shall remain in full force and effect until such time as the County Department of Public Works and Transportation, Construction Contract Administration is advised in writing to the contrary.

16. ACKNOWLEDGMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the County and may be distributed to units of (1) Baltimore County; (2) the State of Maryland; (3) other counties or political subdivisions of the State of Maryland; (4) other states; and (5) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this bid or proposal shall be construed to supersede, amend, modify or waive, on behalf of Baltimore County, or the State of Maryland or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the Business with respect to (a) this Affidavit, (b) the contract, and (3) other Affidavits comprising part of the contract.

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

WITNESS/ATTEST:

_____	By: _____
Date: _____	Name: _____
	Title: _____
	(Authorized Representative and Affiant)

BID BOND

Principal

Business Address of Principal

Surety

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

Five Percent of Bid Amount \$ _____ 5% of Bid

Penal Sum of Bond [shall be determined pursuant to latest revised Specification / G.P. 2.07 (2000 Ed.)]

Gwynn Oak Park Pavilion & Parking Expansion
Contract Name

22166 GX0
Contract Number/Proposal Item Number

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal, above named, and Surety, above named, and authorized to do business in the State of Maryland, are held and firmly bound unto the Obligee, above named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal is the apparent low bidder and complies with all specified matters required before award or if the aforesaid Principal is awarded the contract, the said Principal will, within the time required, execute and deliver to the Obligee a formal contract and good and sufficient payment and performance bonds in the form provided by the Obligee, then, this obligation to be void; otherwise the Principal and Surety will, upon demand, pay unto the Obligee the entire Penal Sum of this Bid Bond as liquidated damages.

THE SURETY FURTHER GUARANTEES No Proposal will be considered unless accompanied by a guaranty of the amount specified in the Proposal in the form of either a certified check, bank cashier's check or a Bid Bond on the form provided therein or an exact facsimile thereof. The Bid Bond must be executed by a Surety that is, as of the date of the Bid: (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. The Bid Bond must guaranty payment to the County of liquidated damages as follows: (a) if only one Bid is received, the guaranteed payment shall be five (5%) percent of the Bidder's Bid amount, (b) if two or more Bids are received, the guaranteed payment shall be the difference between the Bidder's Bid amount and the next lowest Bid amount, subject to the limitation that the guaranteed payment not be greater than five (5%) percent of the Bidder's Bid amount. This Bid Bond is required in case the successful Bidder, after issuance of notice of Award, fails to comply, timely and completely, with each of the requirements set forth under Section GP-3.04.

Signed and sealed _____
Date

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

In Presence of:

Individual Principal

Witness: _____

as to: _____ (SEAL)

Print Name: _____

Print Name: _____

Corporate Principal

In Presence of:

(Name of Corporation)

Witness: _____

By: _____

Print Name: _____

Print Name: _____ (SEAL)

Title: _____

Surety

(Name of Surety)

Business Address: _____

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal



First Source Hiring Agreement Overview

What is First Source Hiring?

Baltimore County's First Source Hiring Agreement requires that developers, contractors, and employers utilize good faith efforts toward employing economically disadvantaged Baltimore County residents in newly created positions on applicable projects. These efforts are supported by Baltimore County's workforce development system, a partnered network of business and economic development professionals, education and training providers, and human service agencies working together systematically to provide a ready supply of qualified workers to employers with hiring needs. The intent of First Source is to connect these individuals with new jobs that are generated by the County's investment in contracts or public works; or by business activity that requires approval by the County's Department of Economic and Workforce Development.

The goals of the First Source Hiring Agreement are to:

- Increase awareness of the resources, services and potential benefits available to help Baltimore County employers meet their workforce needs; and,
- Give economically disadvantaged individuals the first opportunity to apply for new jobs in Baltimore County.

Which businesses can participate in First Source Hiring?

1. Businesses who have leases with the County or on County property; or,
2. Businesses with County contracts for goods, services, and grants under \$300,000 which are projected to create new jobs/positions to fulfill contract terms

How can first source help your business?

Baltimore County Department of Economic & Workforce Development's (DEWD's) Business Services Team can help coordinate recruitment services with our workforce partners in collaboration with our three Baltimore County Career Center locations to assist with finding pre-screened, qualified candidates.

Available services may include but are not limited to:

- Posting and promotion of employment opportunities through our network of service providers
- Access to diverse talent pools from within Baltimore County's workforce system
- Access to Baltimore County Career Centers for coordinated recruitment/interviewing activities
- Referral of pre-screened, qualified candidates for employer consideration
- Assistance with using the Maryland Workforce Exchange - a statewide job database and candidate matching platform
- Information on earning tax credits and other employer benefits for new hires (if applicable)
- Workforce and Business Services staff to assist you throughout your recruitment efforts

I'd like to participate in First Source Hiring...Where do I start?

Step #1: Register your business with the [Maryland Workforce Exchange](#). This is an online database to track First Source Hiring job opportunities. As an employer, the Maryland Workforce Exchange can help you promote job openings, search for qualified candidates and share placement information.

Step #2: Businesses or non-profits who receive a non-construction or professional services contract from Baltimore County under \$300,000 are required to project the number of job openings they expect during the contract period. After registering your business with [Maryland Workforce Exchange](#), complete the **First Source Hiring Description Form** and email it to the Baltimore County Department of Economic and Workforce Development (DEWD) at firstsourcehire@baltimorecountymd.gov. If you have any questions about registering with MWE or completing the form, contact our office at 410-887-8000.

Step #3: Once you are registered in MWE and Baltimore County receives your **First Source Hiring Description Form** via email, you will be contacted by a member of the Business Development Team to assist with recruitment for your open positions.

Helpful Tips:

Businesses that qualify are asked to post their openings with Baltimore County's First Source Hiring network of service providers, and offer the County the first opportunity to refer qualified candidates to those positions. While the agreement does not require an employer to hire a specific candidate, it does ask that employers make a good faith effort to hire referrals from the County's workforce development system. We ask that employers would report basic information for any new hires by entering the placement data in the Maryland Workforce Exchange, or by completing an Employment Verification and Employer Survey Form (see FORM 2 attached) or via email at the completion of your recruitment activities.

_____ Company Name	_____ Contact Name
_____ Company Address	_____ City, MD
_____ E-mail Address	_____ Telephone
_____ Acknowledgment Signature	_____ Date

STATE OF MARYLAND
DEPARTMENT OF LABOR
DIVISION OF LABOR AND INDUSTRY
PREVAILING WAGE SECTION
1100 N. Eutaw Street, Room 607
Baltimore, MD 21201
(410) 767-2342

05/22/2025

REQUEST FOR ADVERTISEMENT AND NOTICE TO PROCEED

Heather Panowicz - Procurement Officer
Dept of Public Works and Transportation
111 West Chesapeake Ave Room 300B
Towson, MD 21204

Re: Gwynn Oak Park Pavilion
Project No: 22166 GX0

Enclosed please find the Prevailing Wage Determination and Instructions for Contractors for the project referenced above.

Upon advertisement for bid or proposal of this project, you are requested to submit to this office the date and name of publication in which such advertisement appeared.

Once awarded, you are further directed to submit to this office, the NOTICE TO PROCEED for the project, complete with the date of notice, the name of the general contractor, and the dollar amount of the project. In addition, we ask that a representative of the prevailing wage Unit be invited to attend the Pre-Construction Conference.

Any questions concerning this matter may be referred to PrevailingWage@dllr.state.md.us

Sincerely,

Enclosures
Wage Determination
Instruction for the Contractor

Prevailing Wage Unit

PREVAILING WAGE INSTRUCTIONS FOR THE CONTRACTOR & SUBCONTRACTOR

The contractor shall electronically submit completed copies of certified payroll records to the Commissioner of Labor & Industry, Prevailing Wage Unit by going on-line to <https://www.dlir.state.md.us/prevwage> and following the instructions for submitting payroll information (NOTE: A contractor must register prior to submitting on-line certified payroll information).

If you have technical questions regarding electronic submittal, contact the Department at dldlirprevailingwage-dlir@maryland.gov.

All certified payroll records shall have an accurate week beginning and ending date. The contractor shall be responsible for certifying and submitting to the Commissioner of Labor and Industry, Prevailing Wage Unit all of their subcontractors' payroll records covering work performed directly at the work site. By certifying the payroll records, the contractor is attesting to the fact that the wage rates contained in the payroll records are not less than those established by the Commissioner as set forth in the contract, the classification set forth for each worker or apprentice conforms with the work performed, and the contractor or subcontractor has complied with the provisions of the law.

A contractor or subcontractor may make deductions that are (1) required by law; (2) required by a collective bargaining agreement between a bona fide labor organization and the contractor or subcontractor; or (3) contained in a written agreement between an employee and an employer undertaken at the beginning of employment, if the agreement is submitted by the employer to the public body awarding the public work and is approved by the public body as fair and reasonable.

A contractor or subcontractor is required to submit information on-line on their fringe benefit packages including a list of fringe benefits for each craft employed by the contractor or subcontractor, by benefit and hourly amount. Where fringe benefits are paid in cash to the employee or to an approved plan, fund, or program, the contribution is required to be indicated.

Payroll records must be electronically submitted and received within 14 calendar days after the end of each payroll period. If the contractor is delinquent in submitting payroll records, processing of partial payment estimates may be held in abeyance pending receipt of the records. In addition, if the contractor is delinquent in submitting the payroll records, the contractor shall be liable to the contracting public body for liquidated damages. The liquidated damages are \$10.00 for each calendar day the records are late.

Only apprentices registered with the Maryland Apprenticeship and Training Council shall be employed on prevailing wage projects. Apprentices shall be paid a percentage of the determined journey person's wage for the specific craft.

Overtime rates shall be paid by the contractor and any subcontractors under its contracts and agreements with their employees which in no event shall be less than time and one-half the prevailing hourly rate of wages for all hours worked in excess of ten (10) hours in any one calendar day; in excess of forty (40) hours per workweek; and work performed on Sundays and legal holidays.

Contractors and subcontractors employing a classification of worker for which a wage rate was not issued SHALL notify the Commissioner of Labor & Industry, Prevailing Wage Unit, for the purpose of obtaining the wage rate for said classification PRIOR TO BEING EMPLOYED on the project. To obtain a prevailing wage rate which was NOT listed on the Wage Determination, a contractor or subcontractor can look on the LABOR webpage under prevailing wage.

Contractors and subcontractors shall maintain a valid copy of proper State and county licenses that permit the contractor and a subcontractor to perform construction work in the State of Maryland. These licenses must be retained at the worksite and available for review upon request by the Commissioner of Labor and Industry's designee.

****Each contractor under a public work contract subject to Section 17-219 shall:**

1. Post a clearly legible statement of each prevailing wage rate to be paid under the public work contract; and
2. Keep the statement posted during the full time that any employee is employed on the public work contract.
3. The statement of prevailing wage rates shall be posted in a prominent and easily accessible place at the site of the public work.

****Penalty - Subject to Section 10-1001 of the State Government Article, the Commissioner may impose on a person that violates this section a civil penalty of up to \$50.00 per violation.**

Under the Maryland Apprenticeship and Training Council requirements, consistent with proper supervision, training and continuity of employment and applicable provisions in collective bargaining agreements, a ratio of one journey person regularly employed to one apprentice shall be allowed. No deviation from this ratio shall be permitted without prior written approval from the Maryland Apprenticeship and Training Council.

Laborers may NOT assist mechanics in the performance of the mechanic's work, NOR USE TOOLS peculiar to established trades.

ALL contractors and subcontractors shall employ only competent workers and apprentices and may NOT employ any individual classified as a HELPER or TRAINEE on a prevailing wage project.

The State Apprenticeship and Training Fund (Fund) law provides that contractors and certain subcontractors performing work on certain public work contracts are required to make contributions toward apprenticeship. See §17-601 through 17-606, State Finance and Procurement, Annotated Code of Maryland. Contractors and subcontractors have three options where they can choose to make their contributions: (1) participate in a registered apprenticeship training program; (2) contribute to an organization that has a registered apprenticeship training program; or (3) contribute to the State Apprenticeship and Training Fund.

The Department of Labor (LABOR) is moving forward with final adoption of regulations. The regulations were published in the December 14, 2012 edition of the Maryland Register.

IMPORTANT: Please note that the obligations under this law will become effective on JULY 1, 2013. This law will require that contractors and certain subcontractors make contributions toward apprenticeship and report those contributions on their certified payroll records that they submit pursuant to the prevailing wage law.

The Department is offering outreach seminars to any interested parties including contractors, trade associations, and any other stakeholders. Please contact the Department at dldlprevailingwage-dllr@maryland.gov or (410) 767-2968 for seminar times and locations. In addition, information regarding this law will be provided at pre-construction meetings for projects covered by the Prevailing Wage law.

For additional information, contact:
Division of Labor and Industry
Maryland Apprenticeship and Training
1100 North Eutaw Street, Room 606
Baltimore, Maryland 21201
(410) 767-2246
E-Mail Address: matp@dllr.state.md.us.

STATE OF MARYLAND
DEPARTMENT OF LABOR
DIVISION OF LABOR AND INDUSTRY
PREVAILING WAGE SECTION
1100 N. Eutaw Street, Room 607
Baltimore, MD 21201
(410) 767-2342

The wage rates to be paid laborers and mechanics for the locality described below is announced by order of Commissioner of Labor and Industry.

It is mandatory upon the successful bidder and any subcontractor under him, to pay not less than the specific rates to all workers employed by them in executing contracts in this locality. Reference: Annotated Code of Maryland State Finance and Procurement, Section 17-201 thru 17-226.

These wage rates were taken from the locality survey of 2024 for Baltimore County, issued pursuant to the Commissioner's authority under State Finance and Procurement Article Section 17-209, Annotated Code of Maryland or subsequent modification.

****Note:** If additional Prevailing Wage Rates are needed for this project beyond those listed below, contact the Prevailing Wage Unit. Phone: (410) 767-2342, email: prevailingwage@dlr.state.md.us.

Name and Title of Requesting Officer: Heather Panowicz - Procurement Officer
Department, Agency or Bureau: Dept of Public Works and Transportation
111 West Chesapeake Ave Room 300B Towson, MD 21204

Project Number
22166 GX0

Location and Description of work:

Determination Number
62082

Baltimore County: Construction of two new pavilions and add additional parking areas

Date of Issue: May 22, 2025

BUILDING CONSTRUCTION

CLASSIFICATION	MODIFICATION REASON	BASIC HOURLY RATE	BORROWED FROM	FRINGE BENEFIT PAYMENT
BALANCING TECHNICIAN	CR	\$47.92		\$24.44
BRICKLAYER	CR	\$37.50		\$14.78
CARPENTER	CR	\$34.41		\$14.49
CARPENTER - SHORING SCAFFOLD BUILDER	CR	\$34.41		\$14.49
CARPET LAYER	CR	\$34.12		\$14.86
CEMENT MASON	SR	\$25.00	005	\$1.94
COMMUNICATION INSTALLER TECHNICIAN	SR	\$36.37	005	\$12.89
DRYWALL - SPACKLING, TAPING, & FINISHING	CR	\$34.41		\$14.49
ELECTRICIAN	CR	\$47.13		\$21.94
ELEVATOR MECHANIC	CR	\$56.36		\$45.50
FIRESTOPPER	CR	\$29.81		\$10.08

GLAZIER	CR	\$35.60		\$14.41
INSULATION WORKER	CR	\$40.02		\$19.92
IRONWORKER - FENCE ERECTOR	CR	\$40.02		\$19.92
IRONWORKER - ORNAMENTAL	CR	\$31.17	510	\$24.38
IRONWORKER - REINFORCING	CR	\$29.20	510	\$23.57
IRONWORKER - STRUCTURAL	CR	\$33.12		\$25.63
MILLWRIGHT	CR	\$38.61		\$17.21
PAINTER	CR	\$28.55		\$11.87
PAINTER-INDUSTRIAL	CR	\$35.55		\$15.28
PILEDRIIVER	SR	\$36.60	005	\$16.78
PLUMBER	CR	\$46.21		\$24.90
POWER EQUIPMENT OPERATOR - BACKHOE	CR	\$33.00	510	\$13.55
POWER EQUIPMENT OPERATOR - BROOM / SWEEPER	CR	\$32.23	510	\$14.62
POWER EQUIPMENT OPERATOR - BULLDOZER	CR	\$34.18		\$14.62
POWER EQUIPMENT OPERATOR - CONCRETE PUMP	CR	\$44.35		\$0.00
POWER EQUIPMENT OPERATOR - CRANE	CR	\$41.00		\$18.10
POWER EQUIPMENT OPERATOR - CRANE - TOWER	CR	\$41.00		\$18.10
POWER EQUIPMENT OPERATOR - DRILL - RIG	CR	\$33.16		\$14.15
POWER EQUIPMENT OPERATOR - EXCAVATOR	CR	\$34.18		\$14.62
POWER EQUIPMENT OPERATOR - FORKLIFT	CR	\$34.18		\$14.62
POWER EQUIPMENT OPERATOR - GRADALL	CR	\$34.00	510	\$13.55
POWER EQUIPMENT OPERATOR - GRADER	CR	\$34.18		\$14.62
POWER EQUIPMENT OPERATOR - GUARD RAIL POST DRIVER	CR	\$23.50		\$5.07
POWER EQUIPMENT OPERATOR - LOADER	CR	\$34.18		\$14.62
POWER EQUIPMENT OPERATOR - MECHANIC	CR	\$36.24		\$14.62
POWER EQUIPMENT OPERATOR - MILLING MACHINE	CR	\$30.58	510	\$13.55
POWER EQUIPMENT OPERATOR - PAVER	CR	\$32.10	510	\$13.55
POWER EQUIPMENT OPERATOR - ROLLER - ASPHALT	CR	\$32.10	510	\$13.55
POWER EQUIPMENT OPERATOR - ROLLER - EARTH	CR	\$28.60		\$14.62
POWER EQUIPMENT OPERATOR - SCREED	CR	\$30.00	510	\$11.80
POWER EQUIPMENT OPERATOR - SKID STEER (BOBCAT)	CR	\$32.23		\$14.62
POWER EQUIPMENT OPERATOR-VACUUM TRUCK	CR	\$37.50		\$14.85
RESILIENT FLOOR	CR	\$34.12		\$14.86
ROOFER/WATERPROOFER	SR	\$52.21	009	\$14.91
SHEETMETAL WORKER (INCLUDING METAL ROOFING)	CR	\$47.92		\$24.44
SPRINKLERFITTER	CR	\$42.32	510	\$26.05
STEAMFITTER/PIPEFITTER	CR	\$46.21		\$24.90
STONE MASON	CR	\$44.30	510	\$21.22
TILE & TERRAZZO FINISHER	CR	\$28.09		\$12.59
TILE & TERRAZZO MECHANIC	CR	\$33.41		\$14.24
TRUCK DRIVER - DUMP	CR	\$17.64	510	\$1.92
TRUCK DRIVER - FLATBED	CR	\$20.94		\$7.63
TRUCK DRIVER - LOWBOY	CR	\$29.68	510	\$10.51
TRUCK DRIVER - TACK/TAR TRUCK	CR	\$27.35	510	\$8.97

LABORER GROUP II

LABORER - ASPHALT RAKER	AD	\$22.63		\$4.88
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LABORER - COMMON	AD	\$22.63	\$4.88
LABORER - CONCRETE PUDDLER	AD	\$22.63	\$4.88
LABORER - CONCRETE TENDER	AD	\$22.63	\$4.88
LABORER - CONCRETE VIBRATOR	AD	\$22.63	\$4.88
LABORER - DENSITY GAUGE	AD	\$22.63	\$4.88
LABORER - FIREPROOFER - MIXER	AD	\$22.63	\$4.88
LABORER - FLAGGER	AD	\$22.63	\$4.88
LABORER - GRADE CHECKER	AD	\$22.63	\$4.88
LABORER - HAND ROLLER	AD	\$22.63	\$4.88
LABORER - JACKHAMMER	AD	\$22.63	\$4.88
LABORER - LANDSCAPING	AD	\$22.63	\$4.88
LABORER - LAYOUT	AD	\$22.63	\$4.88
LABORER - LUTEMAN	AD	\$22.63	\$4.88
LABORER - MORTAR MIXER	AD	\$22.63	\$4.88
LABORER - PLASTERER - HANDLER	AD	\$22.63	\$4.88
LABORER - TAMPER	AD	\$22.63	\$4.88
LABORERS GROUP I			
LABORER - AIR TOOL OPERATOR	AD	\$24.46	\$9.69
LABORER - ASPHALT PAVER	AD	\$24.46	\$9.69
LABORER - BLASTER - DYNAMITE	AD	\$24.46	\$9.69
LABORER - BURNER	AD	\$24.46	\$9.69
LABORER - CONCRETE SURFACER	AD	\$24.46	\$9.69
LABORER - HAZARDOUS MATERIAL HANDLER	AD	\$24.46	\$9.69
LABORER - MASON TENDER	AD	\$24.46	\$9.69
LABORER - PIPELAYER	AD	\$24.46	\$9.69
LABORER - SCAFFOLD BUILDER	AD	\$24.46	\$9.69

Incidental Craft Data: Caulker, Man Lift Operator, Rigger, Scaffold Builder, and Welder receive the wage and fringe rates prescribed for the craft performing the operation to which welding, scaffold building, rigging, operating a Man Lift, or caulking is incidental.

These **Informational Prevailing Wage Rates** may not be substituted for the requirements of pre-advertisement or onsite job posting for a public work contract that exceeds \$250,000 in value and either of the following criteria are met: (1) the contracting body is a unit of State government or an instrumentality of the State and there is any State funding for the project; or (2) the contracting body is a political subdivision, agency, person or entity (such as a county) and the State funds 25% or more of the project.

Modification Codes:

(AD) 17-209 Annual Determination from Survey Wage Data Received
(CH) 17-211 Commissioners' Hearing
(CR) 17-208 Commissioners' Review
(SR) 17-208 Survey Review by Staff

Each "Borrowed From" county is identified with the FIPS 3-digit county code unique for the specific jurisdiction in Maryland.

For additional information on the FIPS (Federal Information Processing Standard) code, see <http://www.census.gov/datamap/fipslist/AllSt.txt>

The Prevailing Wage rates appearing on this form were originally derived from Maryland's annual Wage Survey. The Commissioner of Labor & Industry encourages all contractors and interested groups to participate in the voluntary Wage Survey, detailing wage rates paid to workers on various types of construction throughout Maryland.

A mail list of both street and email addresses is maintained by the Prevailing Wage Unit to enable up-to-date prevailing wage information, including Wage Survey notices to be sent to contractors and other interested parties. If you would like to be included in the mailing list, please forward (1) your Name, (2) the name of your company (if applicable), (3) your complete postal mailing address, (4) your email address and (5) your telephone number to PWMAILINGLIST@dlr.state.md.us. Requests for inclusion can also be mailed to: Prevailing Wage, 1100 N. Eutaw Street - Room 607, Baltimore MD 21201-2201.

BALTIMORE COUNTY, MARYLAND
USE OF MINORITY BUSINESS ENTERPRISES AND WOMEN'S BUSINESS ENTERPRISES
IN
COUNTY CONTRACTS
MWBE Plan Package



Division of Diversity, Equity and Inclusion
The Jefferson Building
105 West Chesapeake Avenue
Towson, Maryland 21204
410-887-3407

www.baltimorecountymd.gov/go/mwbe



PROSPECTIVE BIDDERS/OFFERORS

Baltimore County Executive Order 2022-005 Use of Minority Business Enterprises and Women's Business Enterprises states:

SECTION 6. BID REQUIREMENTS.

- (A)(1) All bidders shall submit a list of all subcontractors contacted in preparation of their bid package or proposal.*
- (2) The list shall include the service to be performed, bid amount, and the race/ethnicity/gender of the business owner(s).*
- (B)(1) All bidders shall submit a list of all subcontractors to be used on a county contract in the bid package.*
- (2) This list shall include all subcontractors (both MWBE and non-MWBE) used, the service to be performed, the total amount to be paid, and the race/ethnicity/gender of the owner.*

If the solicitation includes a MWBE **subcontracting** goal, you **MUST** demonstrate “**Good Faith**” **effort** either by:

1. Complete and sign FORM A, FORM B (to include FORM B-Prime if MWBE Prime wishes to count towards the goal) and FORM C **listing all subcontractors** with the initial bid submission.
 - a. *All Forms must be completed and signed. However, FORM C **MUST** be completed and signed by both the prime and the MWBE subcontractor.*
- OR**
2. If you are unable to meet any portion of the goal, you **MUST** do one of the following:
 - a. If you are requesting a **partial waiver**, complete and sign FORM A with initial bid submission. FORM B (to include FORM B-Prime if MWBE Prime wishes to count towards the goal) and FORM C (**listing all subcontractors**). In addition, complete, sign and submit FORM D and FORM E **accompanied with all supporting documentation** for the portion of the goal that will not be achieved as specified on FORM A.
 - b. If you are requesting a **full waiver**, complete and sign FORM A indicating your intent to request a full waiver **accompanied with a completed and signed FORM C listing all subcontractors**, FORM D and FORM E **accompanied with all supporting documentation. This MUST be submitted with the initial bid as specified on FORM A.**
 - c. *All Forms must be completed and signed. FORM C and FORM D **MUST** be completed and properly signed by both the Prime AND the MWBE subcontractor(s).*

NOTE: The MWBE **subcontracting** goal applies to ALL prime/general contractors including certified and non-certified minority and women owned firms. **However, a Minority-owned or a Women-owned prime may self-perform up to 50% of MWBE subcontracting goal set in the solicitation. The MWBE primes that wish to count towards the goal must list themselves on all appropriate forms.**

12/2023

BALTIMORE COUNTY, MARYLAND

MWBE PARTICIPATION SUMMARY

Executive Order: Minority Business Enterprises and Women Business Enterprises (MWBE) shall have the maximum opportunity to participate in the performance of contracts financed in whole, or in certain circumstances, in part with County funds. Accordingly, on December 6, 2022, the County Executive adopted the EXECUTIVE ORDER No. 2022-005 addressing MWBE participation in County contracts. The December 6, 2022 Executive Order may be found on the Baltimore County website at www.baltimorecountymd.gov/go/mwbe.

Each Contract: The County shall establish a minimum MWBE participation amount for each contract, as applicable.

Bidder/Officer Responsibility: The bidder/officer shall ensure that MWBE participation occurs in accordance with the contract requirements and the County Executive's Executive Order. All bidder/officers shall ensure that MWBE have the maximum opportunity to compete for and perform County contracts, as applicable. Baltimore County, Maryland, and/or its bidder/officers and contractors shall not discriminate on the basis of race, color, national origin, disability or sex in the award and performance of any County contract.

Mobilization Payments: For subcontractors, project start-up costs can also be significant. A subcontractor that has limited resources and access to credit may find that start-up expenses inhibit its ability to bid County contracts. Under circumstances where mobilization payments are approved for the prime contractor, the subcontractor should be paid an amount equal to their participation percentage no later than five (5) business days before they are required to mobilize to perform the contracted work.

Mobilization costs represent pre-contract costs incurred by a contractor to prepare a job site before the actual commencement of the contract. These costs can include movement of personnel and equipment to the project site and for the establishment of the Contractor's offices, buildings, and other facilities necessary to begin work.

APPROVED MWBE LISTINGS

Published compilations of approved and certified MWBE, contractors, subcontractors, material suppliers, etc. include:

DIRECTORY OF MINORITY BUSINESS ENTERPRISE (MDOT):

<https://marylandmdbe.mdbecert.com>

MINORITY BUSINESS DIRECTORY OF THE CITY OF BALTIMORE:

<https://baltimorecity.diversitycompliance.com>

BIDDER/OFFEROR'S ACTIONS

Seeking Firms:

The bidder/officer will seek commitments by subcontract or otherwise from MWBE firms for supplies and/or services, any combined value of which equals or exceeds the required percentage of MWBE participation goal for the County contract. However a MWBE Prime that affirms its MWBE status on the Minority and/or Women Prime Participation Affidavit may count up to 50% of the goal.

Expenditures for Materials and Supplies:

A bidder/officer may count toward its MWBE contract requirements all expenditures for materials and supplies obtained from MWBE suppliers and manufacturers, provided that the MWBE firm is furnishing and installing the materials and is certified to perform these services. If the MWBE firm is only being used as a supplier, wholesaler and/or regular dealer or is not certified to install the supplies/materials, for purposes of achieving the MWBE participation goal, you may only count sixty percent (60%) of the value of the subcontract for these supplies/products (60% Rule). To apply the 60% Rule, first divide the amount of the subcontract for these supplies/products only (not installation) by the total Contract value. Then, multiply the result by sixty percent (60%) and insert the percentage in the Percent of Total Contract field of Form B Subcontractor Participation Schedule.

BALTIMORE COUNTY, MARYLAND **MWBE PARTICIPATION SUMMARY**

Information to be supplied: All bidder/offers shall submit the following information to the County at the time of bid submission:

1. The name of an employee designated as the bidder/offers's liaison to the County's Minority Business Enterprise Office.
2. The following forms shall be completed and submitted:
 - Certified MWBE Utilization and Fair Solicitation Affidavit (**Form A**): from among those names appearing in the Approved MWBE Listings (excepting Federal Highway Administration projects, which exclusively require DBE approved and certified by the Maryland Department of Transportation MBE Advisory Committee);
 - A Subcontractor Participation Schedule (**Form B**) completed by the prime contractor for each MWBE listed on the Form.
 - A MWBE Prime Participation Schedule (Form B-Prime) completed by a MWBE prime contractor if the firm wishes to self-perform up to 50% of the MBE/WBE goal.
 - A MWBE Disclosure and Participation Statement (**Form C**) completed and signed by the prime contractor and MWBE firm for each MWBE listed on the Form. Form C **must match** what is stated on Form B.
 - If applicable, MWBE Subcontractor Unavailable Certificate (**Form D**) completed and signed by the prime contractor and MWBE for each MWBE listed on the Form.
3. If applicable, MWBE Outreach Efforts - Compliance Statement (**Form E**) completed and signed by the Bidder/Offers. The prime shall submit a list of all subcontractors.
4. For DPW contracts, if the bidder/offers intends to fulfill the MWBE requirements by use of a joint venture, he/she must submit a Joint Venture Disclosure Affidavit (**Form D-EEO-006-A** and **B**) showing the extent of MWBE participation. If a bidder/offers intends to use a MWBE joint venture as a subcontractor to meet its MWBE requirements, the affidavit must be submitted through the bidder/offers by the proposed subcontractors and signed by all parties.
5. If the bidder/offers's proposed MWBE participation does not meet the MWBE contract requirements, information sufficient to demonstrate that the bidder/offers has made every effort to meet the requirements must be submitted. (See DETERMINATION OF BID RESPONSIVENESS hereafter)

RECORDS AND REPORTS

Returning Records: The bidder/offers must keep such records as are necessary to determine compliance with its MWBE utilization requirements:

1. The MWBE and non-minority contractors, type of work being performed, actual values of work and services.
2. Documentation of all correspondence, contacts, telephone calls, etc., to obtain MWBE services for the contract.
3. All prime contractors and MWBE sub-contractors are required to report monthly, by the 10th of each month, to the County through an online system called PRISM. If the contractor cannot submit his/her report on time, he/she will notify the County MWBE office and request additional time to submit the report. Failure of the contractor to report in a timely manner may result in a finding of noncompliance. The County in its sole discretion and/or upon written request may require additional reports regarding MWBE. In the event you are not able to enter your payments in PRISM, a spreadsheet is attached for your use. Please be sure to list the PO for each invoice/ payment reported and include in your submission any corresponding documentation (e.g. copies of invoices or cancelled checks).

Retaining Records: All MWBE records must be retained for 3 years following the expiration or any earlier termination of the contract and shall be available for inspection and photocopying by the County.

Investigation and Notification: Whenever the County believes the bidder/offers, contractor, or any subcontractor may not be operating in compliance with the MWBE requirements, the County may, in its sole discretion, conduct an investigation. If the County finds the bidder/offers, contractor, or any subcontractor is not in compliance with the MWBE requirements, the County may exercise any and all rights and remedies available to the County, under the contract, at law or equity, as deemed applicable and appropriate by the County in its sole discretion.

BALTIMORE COUNTY, MARYLAND **MWBE PARTICIPATION SUMMARY**

DETERMINATION OF BID RESPONSIVENESS

Request for Deviation: If the bidder/offeror is unable to procure from MWBE firms (by subcontract or otherwise), supplies and services, any combined value of which equals the required percentage of the total value of the contract, the bidder/ offeror may request, in writing, a deviation or waiver of the contract requirements. To obtain such a waiver, the bidder/ offeror must submit the following information at the time bids are due:

1. The request for waiver request shall include (1) a signed unavailability statement (Form D) executed by all MBEs and WBEs that the bidder/offeror solicited for participation and (2) Outreach Efforts/Compliance Statement (Form E) that demonstrates the bidder/offeror's good faith efforts to comply with the contract requirements, including copies of solicitation documentation to all potential subcontractors:
2. Emails, letters, facsimile transmittals and confirmations containing plans, specifications, and anticipated time schedule for portions of the work to be performed and meeting notes and agendas clearly identifying the certified MBE or WBE classification and dates that the bidder/offeror contacted each MWBE; and
3. Telephone logs containing names, addresses, dates, telephone numbers, work to be performed, anticipated time schedule and classification of certified MBEs and WBEs contacted.

Bid Rejection: The failure of any bidder/offeror (including the apparent low bidder/offeror) to provide a responsive MWBE Plan as required by the solicitation may result in the bidder/offeror being deemed non-responsive and the County's rejection of the bid.

Liquidated Damages If the County issues a notice of intent to awards contract to the apparent low bidder/offeror who provided a responsive MWBE Plan, but, if after said notice and before execution of Contract Documents, it is determined by the County that the apparent low bidder/offeror has failed to comply with the MWBE Plan, such failure may result in the recommendation by the appropriate Procurement Official to annul the award and forfeit the bidder/offeror's Proposal Guaranty to the County, not as a penalty, but as liquidated damages, it being acknowledged that actual damages will be difficult if not impossible to accurately measure. In addition, the County may proceed as it determines to be in its best interest, including but not limited to, the Notice of Award may be made to the next lowest responsive and responsible bidder/offeror or the work may be re-advertised.

Contract Breach: If, after execution of a County contract, the contractor becomes aware it may or will fail to fulfill the applicable MWBE requirements and/or may or will deviate from the contractor's bid response/contract terms, the contractor shall promptly advise the County of this in writing. Thereafter, the County will determine what action or remedy is appropriate on a case-by-case basis, in the County's sole discretion.

Approval Required for Changes: Any and all changes to the MWBE subcontractors or the type or amount of work to be performed by such subcontractors during the contract term must be mutually agreeable to the County and the contractor and shall be documented via a contract amendment, executed by legally authorized representatives of the County and the contractor.

Cooperation in Reviews: The bidder/offeror will cooperate with the County in any reviews of the contractor's procedures and practices with respect to MBE or WBE firms, which the County may from time to time conduct in its sole discretion.

Other: If the documents used to determine the contractor's efforts, achievement of, and/or the status of an MWBE requirement or fulfillment thereof contain false, misleading or misrepresented information, the contractor may be declared in breach of the contract and the County may take any and all actions and/or remedies available to the County under the contract, at law, or in equity. If an MWBE is disqualified by any public entity, including but not limited to, Baltimore City, the State or MDOT, at any time after award or during the term of the contract, the County may, in its sole discretion, require the prime contractor to promptly submit for County approval, the contractor's plans for fulfilling the required MWBE participation under the contract, and/or request such detail and additional information as the County, in its discretion deems appropriate.



PRIME CONTRACTOR MINORITY AND WOMEN PARTICIPATION AFFIDAVIT

A. AUTHORIZED REPRESENTATIVE

I HEREBY AFFIRM THAT:

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

B. AFFIRMATION REGARDING MINORITY AND WOMEN PARTICIPATION

I FURTHER AFFIRM THAT:

I am aware that, pursuant to the December 6, 2022 Executive Order of Baltimore County, Maryland, the following words have the meanings indicated.

(A) "Minority Business Enterprise" or "MBE" means a business enterprise that is owned, operated and controlled by one or more minority group members (African American, Hispanic American, Asian American, or Native American) who have at least 51% ownership and in which the minority group members have operational and managerial control, interest in capital and earnings commensurate with their percentage of ownership.

(B) "Women's Business Enterprise" or "WBE" means a business enterprise that is owned, operated and controlled by one or more women who have at least 51% ownership and in which the women have operational and managerial control, interest in capital and earnings commensurate with their percentage of ownership.

____ The Prime is a MBE ☐ or WBE ☐

☐ Maryland State Department of Transportation (MDOT) # _____

☐ City of Baltimore # _____

☐ Name Other Jurisdiction: _____ # _____

☐ The ownership of the Noncertified MWBE business consists of _____% minorities and _____% women (for a total of _____%), each of which has operational and managerial control, interest in capital and earnings commensurate with their percent ownership.

_____ % African American _____ % Hispanic American _____ % Women
_____ % Asian American _____ % Native American _____ % Disadvantaged (DBE)

____ The MWBE prime anticipates meeting up to 50% of the stated participation goal with its own workforce.

MWBE primes percentage must be stated on the MWBE PRIME PARTICIPATION SCHEDULE (FORM B-PRIME) to count towards the goal.

____ The prime anticipates ☐ does not anticipate ☐ utilizing subcontractors for _____% of the work of the contract requirements, of which it anticipates _____% will be MBEs and _____% will be WBEs.

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

Date: _____

By: _____

(Authorized Representative and Affiant's Name and Title)

BALTIMORE COUNTY, MARYLAND
Certified MWBE Utilization and Fair Solicitation Affidavit
(FORM A)

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

* * * * *

I acknowledge the goal for solicitation # _____ is a minimum of ____%. This goal must be met by any combination of the MWBE subcontractors. However, for instances where the Prime is counting up to 50% of the goal, the remaining goal balance must be met by any combination of the MWBE subcontractors.

- The goal breakdown is as follows:
 - ____% Minority/Women Prime
 - ____% for certified MBE-owned businesses and/or
 - ____% for certified WBE-owned businesses.

I have made a good-faith effort to achieve this MWBE solicitation requirement. If awarded the contract, I will comply with this MWBE contract requirement and will continue to use my best efforts to increase MWBE participation during the contract term.

PLEASE CHECK ONE BOX (EITHER 1, 2, OR 3)

1 ☐ Prime has met the MWBE contract requirements for this solicitation and contract. I submit the Subcontractor Participation Form B and Form C, along with this Affidavit, which details how the Prime will achieve the contract requirements. Submit a complete list of all additional subcontractors

Or

2 ☐ After having made a good-faith effort to achieve the MWBE requirements, the Prime can only achieve partial success. I submit the Subcontractor Participation Form B, Form C, Form D and Form E along with this Affidavit, which details how the Prime will partially achieve the contract requirements. Submit a complete list of all additional subcontractors

I request a partial waiver and will meet the following MWBE participation goals:

- Partial waiver of MWBE subcontract participation:
 - ____% Minority/Women Prime
 - ____% for certified MBE-owned businesses and/or
 - ____% for certified WBE-owned businesses.

Or

3 ☐ After having made a good faith effort to achieve the MWBE requirements for this contract, the Prime is unable to achieve the requirements and/or sub requirements for this contract. I submit the MWBE Participation Form D and Form E, along with this Affidavit, which details the steps the Prime has taken in an attempt to achieve the contract requirements. Therefore, I request a full waiver.

IF YOU HAVE CHECKED BOX 2 OR 3, THE FOLLOWING IS APPLICABLE:

- 1) If a bidder is unable to comply with the goals established in a bid for a project, the bidder may submit a request for a waiver at the time of bid submission. However, occasions for granting waivers will be limited.

BALTIMORE COUNTY, MARYLAND
Certified MWBE Utilization and Fair Solicitation Affidavit
(FORM A)

- 2) The request for waiver shall include documentation that demonstrates the bidder's good faith efforts to comply with the goals, including:
- a. Signed unavailability statements from all MBEs and WBEs that the bidder solicited for participation; and
 - b. Copies of solicitation documentation to include the scope of services to be performed by the subcontractors accompanied with the following:
 - i. Emails, letters, facsimile transmittals and confirmations containing plans, specifications, and anticipated time schedule for portions of the work to be performed and meeting notes and agendas clearly identifying the certified MBE or WBE classification and dates that the bidder contacted each; and
 - ii. Telephone logs containing names, addresses, dates, telephone numbers, work to be performed, anticipated time schedule and classification of certified MBEs and WBEs contacted.
 - iii. Responses from MWBE firms contacted to fulfill the goal.

As I have checked Box 2 or 3 of this Affidavit, I understand I must submit the following supporting documentation with the bid:

- *Subcontractor Participation Schedule* (Form B)
- *MWBE Subcontractor Disclosure and Participation Statement* (Form C)
- *MWBE Subcontractors Unavailable Certificate* (Form D) (if applicable)
- *MWBE Outreach Efforts – Compliance Statement* (Form E) (if applicable)

I acknowledge that the MWBE subcontractors/suppliers listed on the *Subcontractor Participation Schedule* (Form B) will be used to accomplish the percentage of MWBE participation that the Prime shall achieve. A fully executed Form C must match Form B.

In the solicitation of subcontract quotations or offers, MWBE subcontractors were provided the same information and amount of time to respond, as were non-MWBE subcontractors.

The solicitation process was conducted in such a manner so as to not place MWBE subcontractors at a competitive disadvantage to non-MWBE subcontractors.

I solemnly affirm under the penalties of perjury that this Affidavit is true to the best of my knowledge, information, and belief.

Bidder/Offeror Name

Phone Number

Address

Affiant Signature

Address (continued)

Printed Name & Title

E-mail address

Date

**BALTIMORE COUNTY, MARYLAND
SUBCONTRACTOR PARTICIPATION
SCHEDULE (FORM B)**

**This document must be completed and submitted with Bid/Proposal to
Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

Prime Name Bid/Proposal Name and Number 1. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SBE <input type="checkbox"/> N/A Provide if Applicable: <input type="checkbox"/> MDOT <input type="checkbox"/> Baltimore City # _____	Prime Address, Telephone Number and Email Project Location Base Bid \$ _____ Subcontractor Address Minority Status (If applicable): <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> African American <input type="checkbox"/> Asian American Pacific <input type="checkbox"/> Asian American Sub-continent <input type="checkbox"/> Supplier, Wholesaler and/or Regular Dealer - 60% Rule </div> <div> <input type="checkbox"/> Female <input type="checkbox"/> Native American <input type="checkbox"/> Hispanic American </div> </div>
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount 2. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: MBE <input type="checkbox"/> WBE <input type="checkbox"/> SBE <input type="checkbox"/> N/A <input type="checkbox"/> Provide if Applicable: <input type="checkbox"/> MDOT <input type="checkbox"/> Baltimore City # _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Subcontractor Address Minority Status (If applicable): <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> African American <input type="checkbox"/> Asian American Pacific <input type="checkbox"/> Asian American Sub-continent <input type="checkbox"/> Supplier, Wholesaler and/or Regular Dealer - 60% Rule </div> <div> <input type="checkbox"/> Female <input type="checkbox"/> Native American <input type="checkbox"/> Hispanic American </div> </div>
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount 3. Subcontractor Name and Tax ID Telephone Number _____ Email Address _____ Select One: MBE <input type="checkbox"/> WBE <input type="checkbox"/> SBE <input type="checkbox"/> N/A <input type="checkbox"/> Provide if Applicable: <input type="checkbox"/> MDOT <input type="checkbox"/> Baltimore City # _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Subcontractor Address Minority Status (If applicable): <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> African American <input type="checkbox"/> Asian American Pacific <input type="checkbox"/> Asian American Sub-continent <input type="checkbox"/> Supplier, Wholesaler and/or Regular Dealer - 60% Rule </div> <div> <input type="checkbox"/> Female <input type="checkbox"/> Native American <input type="checkbox"/> Hispanic American </div> </div>
NAICS Code(s), Work to be Performed and Subcontract Dollar Amount Subcontractor Total Dollar Amount \$ _____	Percent of Total Contract (See instructions on Page 1 of the MWBE PARTICIPATION SUMMARY for 60% rule) _____ % Total Subcontractor Percent of Entire Contract _____ %
Form Prepared by: Name/Date: _____ Title: _____ Email: _____	Reviewed and Accepted by Baltimore County Minority Business Enterprise Office Name _____ Title _____ Date _____

MBE or WBE Prime Participation Total	_____ %	\$ _____	
MBE Subcontracting Participation Total	_____ %	\$ _____	
WBE Subcontracting Participation	_____ %	\$ _____	
Total MWBE Participation	_____ %	\$ _____	
Total SBE Participation	_____ %	\$ _____	

BALTIMORE COUNTY, MARYLAND

**MWBE PRIME PARTICIPATION SCHEDULE
(Form B-Prime)**

PLEASE COMPLETE AND SUBMIT THIS FORM TO ATTEST EACH SPECIFIC ITEM OF WORK THAT YOU AS THE MWBE PRIME FIRM WILL PERFORM USING ITS OWN WORKFORCE PERTAINING TO THE PERCENTAGE STATED ON THE SUBCONTRACTOR PARTICIPATION SCHEDULE (FORM B) FOR PURPOSES OF MEETING THE MWBE PARTICIPATION GOALS.

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

Provided that _____ (Prime Contractor's Name) with Certification Number _____ is awarded the County contract in conjunction with Solicitation No. _____, such MWBE Prime Contractor intends to count the distinct, clearly defined portion of the work of the contract that the MBE/WBE Prime Contractor performs with its own forces toward fulfilling **up to fifty-percent (50%) of the MWBE participation goal**, at least \$ _____ which equals to _____% of the Total Contract Amount for performing the following products/services for the Contract:

NAICS CODE	WORK ITEM, SPECIFICATION NUMBER, LINE ITEMS OR WORK CATEGORIES (IF APPLICABLE). FOR CONSTRUCTION PROJECTS, GENERAL CONDITIONS MUST BE LISTED SEPARATELY.	DESCRIPTION OF SPECIFIC PRODUCTS AND/OR SERVICES	VALUE OF THE WORK

MWBE PRIME CONTRACTOR

Signature of Representative: _____

Printed Name and Title: _____

Firm's Name: _____

Federal Identification Number: _____

Address: _____

Telephone: _____

Email Address: _____

Certified Yes No No

Certifying Jurisdiction _____

Date: _____

MWBE PRIME CONTRACTOR

Minority Status:

☐ African American

☐ Hispanic American

☐ Women

☐ Asian American

☐ Native American

Reviewed and Accepted by Baltimore County Minority Business Enterprise Office

Name _____

Title _____

Date _____

BALTIMORE COUNTY, MARYLAND
MWBE SUBCONTRACTOR DISCLOSURE AND PARTICIPATION STATEMENT
(FORM C)

**This document must be completed and submitted with Bid/Proposal to Baltimore County.*

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

**NOTE: ANY INCONSISTENCY BETWEEN THIS FORM AND FORM B MWBE PARTICIPATION MAY
RENDER A BID/PROPOSAL NON-RESPONSIVE AND THE COUNTY WILL NOT CONSIDER YOU FOR
CONTRACT AWARD.**

Contract Name, Bid/Proposal Number: _____

Prime Contractor Name: _____

Name of MWBE Subcontractor: _____

Subcontractor Contact Name, Title _____

Subcontractor Email Address _____

☐ MDOT ☐ Baltimore City

_____ Certification Number

☐ MBE ☐ WBE ☐ SBE ☐ N/A

1. NAICS Code(s), Work/Services to be performed by MWBE Subcontractor: _____

**Percent of Total Contract (See instructions on Page 1 of the MWBE
PARTICIPATION SUMMARY for 60% rule)**

2. Subcontract Amount: \$ _____ or _____ % of the County contract cost.

3. Bonds - Amount and type required of Subcontractor if any: _____

4. MWBE Anticipated Commencement Date: _____ Completion Date: _____
Mobilization Cost Amount \$ _____

5. This is a MBE-Owned Business Firm: Yes _____ No _____

6. This is a WBE-Owned Business Firm: Yes _____ No _____

NOTE: If the Prime is notified that it will be awarded the above referenced contract, the undersigned MWBE subcontractor and Prime must enter into a subcontract for the work/service indicated above upon the Prime's execution of a contract for the above referenced project with Baltimore County, and provide a copy of the fully executed MWBE SUBCONTRACTOR PARTICIPATION NOTICE OF INTENT TO AWARD (FORM C-Subcontractor) accompanied with the anticipated Work Breakdown Schedule (providing the subcontractor's mobilization timeframe) to mwbe@baltimorecountymd.gov within 10 calendar days of receipt by the Prime of FORM C- Subcontractor from the County. The undersigned subcontractor is an MDOT or Baltimore City certified MWBE firm. The terms and conditions stated above are consistent with our agreements.

Signature of MWBE Subcontractor: _____ Date: _____

Prime's Printed Name and Title: _____ Email: _____

The terms and conditions stated above are consistent with our agreements.

Signature of Prime: _____ Date: _____

Revised 12/2024

BALTIMORE COUNTY, MARYLAND
MWBE –UNAVAILABILITY CERTIFICATE
(FORM D)

If applicable, this document must be completed and submitted with Bid/Proposal to Baltimore County.

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

1. It is hereby certified that the firm of _____
(Name of Minority firm)

located at _____
(Number) (Street)

(City) (State) (Zip)

was offered an opportunity to bid on the _____ contract.

2. The _____ (MWBE Firm), is either unavailable for the work/service or unable to prepare a bid for this project for the following reason(s):

Signature of Subcontractor MWBE Representative

Title

Date

MDOT/Baltimore City Certification #

Email Address #

Telephone #

3. PRIME'S SIGNATURE AND CERTIFICATION

I certify under oath that I contacted the Certified MWBE and they advised me that they are unavailable, unable to perform the work/services for the above-contract or failed to respond to repeated requests for a price proposal for the above-contract.

Signature of Prime

Title

Date

Rev 12/2024

BALTIMORE COUNTY, MARYLAND
MWBE - OUTREACH EFFORTS - COMPLIANCE STATEMENT
(FORM E)

****This document must be completed and submitted with Bid/Proposal to Baltimore County.***

NOTE: If you do not complete and submit this form with your bid or offer to the County, the County may, in its sole discretion, deem your bid or offer NON-RESPONSIVE and accordingly the COUNTY WILL NOT CONSIDER YOU FOR CONTRACT AWARD.

In conjunction with the bid or offer submitted in response to Solicitation Number _____, I state the following:

1. Bidder/Offeror identified opportunities to subcontract in these specific work categories:

2. Attached to this form are copies of the solicitation documentation in accordance with Section 6 (E) Bid Requirements of the Executive Order, used to solicit certified MWBEs for the subcontract opportunities accompanied with the signed MWBE Subcontractor Unavailability Certificate (Form D).

3. Bidder/Offeror made the following attempts to solicit MWBEs:

Signature – Bidder Offeror

Print or Type Name of Firm

Street Address

City State Zip Code

Date



JOHN A. OLSZEWSKI, JR.
County Executive

SEVETRA PEOPLES-BROWN
Executive Director
Chief of Diversity, Equity and Inclusion

To: Contractors/Consultants

From: Minority and Women Business Enterprise Office

Date: December 13, 2024

Subject: Compliance Reporting and Penalties

Baltimore County, Maryland (the "County") requires all Prime Contractors and all Subcontractors to submit payment reports by the 10th of each month through an online MWBE Compliance Portal (PRISM). The Portal can be found under Compliance Reporting for Primes and Subcontractors at www.baltimorecountymd.gov/go/mwbe. In the event you are not able to enter your payments in PRISM, a spreadsheet is attached for your use. Please be sure to list the PO for each invoice/ payment reported and include in your submission any corresponding documentation (e.g. copies of invoices or canceled checks).

The County has found that a number of companies are failing to file reports in a timely manner, which makes it difficult for the County to verify compliance. As a result, the County has determined to assess penalties for non-compliance, effective September 1, 2018, as follows:

- (a) For failure to file timely monthly reports:
 - a. Assessment of a late fee of \$10 per day per task, up to a maximum of \$1,500 per task; and/or
 - b. For multiple violations, termination of the contract for convenience or for default, with the contractor suspended from participating in County contracts for five (5) years.
- (b) For failure to meet MWBE requirements:
 - a. Assessment of a penalty of up to 10% of the contract value; and/or
 - b. Termination of the contract for convenience, with the contractor suspended from participating in County contracts for five (5) years together with assessment of a penalty of up to 10% of the contract value; and/or
 - c. Termination of the contract for default together with assessment of a penalty of 10% of the contract value.

Each action and/or remedy described above is at the sole discretion of the County, and is in addition to any damages which the County may be entitled to under the contract. This short video can be used as guidance on submitting the Prime to Subcontractor Payment Reporting:

http://stage.prismcompliance.com/etc/movies/vendor_contractpayment_tutorial.htm

If after contract expiration, it has been determined the MWBE firms named were not used or were under used, by the contractor and supporting documentation was not provided and approved by the County the contractor may be assessed a penalty of up to 10% of the contract value and/or suspended from participating in County contracts for 5 years.

Questions regarding this correspondence and/or the use of this system can be directed to the MWBE Office at mwbe@baltimorecountymd.gov or call (410) 887-3407.

Attachment: MWBE Payment Report Form
 MWBE Payment Acknowledgement Form

Cc: File

S E C T I O N V

POST AWARD DOCUMENTS

**This Section to be Completed
by Successful Bidder after Award**

CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (“Contract”), IS MADE THIS _____ day of _____ 20____, by and between Baltimore County, Maryland, a body corporate and politic (“County”), and _____, (“Contractor”).

WITNESSETH, that the Contractor, for and in consideration of the payment or payments herein specified and agreed to by the County, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work, services, and labor in fulfillment of the requirements of Contract Number **22166 GX0** “Project”) in strict conformity with the solicitation, plans, specifications, special provisions, any and all addenda, and the proposal, at the prices named therein, and all of which are collectively the Proposal, and said Proposal is attached hereto and made a part thereof.

The Project shall be done in strict compliance with (i) the Proposal, (ii) the Baltimore County Department of Public Works and Transportation September 2023 “Standard Specifications for Construction and Materials” and “Standard Details for Construction” (iii) and any and all revisions thereto as of the date of advertisement, including but not limited to the General Conditions Building Projects, as applicable, and all of which (i-iii) are made a part hereof and incorporated herein (collectively, the “Specifications”). Contractor understands and agrees it is Contractor’s responsibility and obligation to obtain a copy of the “Specifications” and agrees the Specifications are incorporated herein. Copies are available on the County’s website at www.baltimorecountymd.gov/departments/public-works/standards.

The Project shall be subject to the inspection and approval of the Office of Budget and Finance – Property Management for Baltimore County, or his authorized representative, and in the event any portion thereof shall be rejected by said Director or his representative as defective or unsuitable, then the said portion shall be removed and replaced and be performed anew to the satisfaction and approval of the said Director or his representative at the cost and expense of the Contractor.

THE CONTRACTOR AFFIRMS that it is aware of, and will comply with, the provisions of Sections 14-101 through 14-108 of the Election Law Article of the Annotated Code of Maryland, as the same may be amended from time to time, which require that every person who makes, during any 12-month period, one or more contracts, with one or more Maryland governmental entities involving cumulative consideration, of at least \$200,000.00, to file with the State Board of Elections certain specified information to include disclosure of attributable political contributions in excess of \$500 during defined reporting periods.

THE CONTRACTOR FURTHER COVENANTS AND AGREES that all the Project shall be furnished, performed and delivered, in every respect, to the satisfaction and approval of the Office of Budget and Finance – Property Management, aforesaid, on or before the expiration of **Two Hundred Sixty-Six (266) CALENDAR DAYS** (the “Contract Period”) after written notice has been given by the Director or their authorized representative to begin the work.

IT IS AGREED THAT TIME IS OF THE ESSENCE. In the event the Contractor fails to achieve Final Completion and Final Acceptance of the Contract work within the Contract Period specified herein, plus any extensions thereto agreed to in writing by a legally authorized representative of the County pursuant to the terms of this Contract, then Contractor shall pay the County the sum of **FIFTEEN HUNDRED DOLLARS (\$1500.00)** as Liquidated Damages for each **CALENDAR DAY** after the expiration of the Contract Period, as may be extended by the County, until the Contractor achieves Final Completion and Final Acceptance of the Project.

Contractor’s Initials

Date

Rev. 09/2024

IT IS FURTHER AGREED that:

- (a) These Liquidated Damages are a reasonable estimate of the County's damages solely due to the public's loss of use of the Project during the delay period and is not a penalty.
- (b) It is very difficult, if not impossible, to accurately measure the damages to the County due to the public's loss of use of the Project during the delay period.
- (c) Notwithstanding GP 8.09 of the Baltimore County Standard Specification for Construction, in addition to the damages due to the public's loss of use of the Project during the delay period, the County is likely to incur additional direct costs during the delay period, including but not limited to, costs for construction management, consultants, architectural services, office trailer and supplies, utilities, County employees' time, County vehicles, and such other costs that the County will incur to continue administration of the construction and the Contract during the delay period, all of which will be monitored by the County, and if so required by the County, the Contractor shall pay such actual damages incurred during the delay period. THE PARTIES HERETO UNDERSTAND AND AGREE THAT CONTRACTOR'S OBLIGATION TO PAY THE COUNTY FOR ACTUAL DAMAGES DURING THE DELAY PERIOD SHALL BE IN ADDITION TO THE CONTRACTOR'S OBLIGATION TO PAY THE LIQUIDATED DAMAGES DUE TO THE PUBLIC'S LOSS OF USE OF THE PROJECT.
- (d) The County shall have the right, but not the obligation, to deduct the Liquidated Damages due to the public's loss of use of the Project, and the County's actual costs and costs to continue administration of the construction and the Contract, from any monies due or any monies that may become due to the Contractor.

IT IS DISTINCTLY UNDERSTOOD AND AGREED that no claim for extra work, material or overhead not specifically provided for in the Contract will be allowed by the County, nor shall the Contractor do any work or furnish any materials not covered by this Contract and the Specifications, unless the same is ordered in writing by a legally authorized representative of the Office of Budget and Finance – Property Management in accordance with the terms of the Contract. Any such work or materials which may be done or furnished by the Contractor without any such written order first being given shall be at said Contractor's sole risk, cost and expense and Contractor hereby covenants and agrees that without such written order, Contractor shall make no claim for compensation for work, materials, or overhead so done or furnished.

NOTWITHSTANDING GP 4.06 OF THE BALTIMORE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, IT IS SPECIFICALLY AGREED that the Contractor shall have no entitlement to damages arising out of delay, disruption, interference or hindrance from any cause whatsoever. However, this provision shall not preclude recovery or damages by the Contractor for hindrances or delays due solely to fraud or gross negligence on the part of the County or its agents.

IT IS FURTHER DISTINCTLY AGREED that the said Contractor shall not assign this Contract, nor any part thereof, nor any right to any of the monies to be paid hereunder, nor shall any part of the work to be done or material furnished under said Contract be sublet without the prior written consent of a legally authorized representative of the Office of Budget and Finance – Property Management in accordance with the terms of this Contract. Further, the acceptance of the final payment by the Contractor shall effectuate a release in full of all claims against County and its officials, employees, representatives, and agents arising out of, or by reason of the Project and this Contract.

The Contractor shall review government issued identification and badge all employees of the Contractor and its subcontractors. The Contractor shall also review all federal forms, including but not limited to I-9's, for compliance as well as copies of all employment eligibility and identity documentation maintained to the extent required by law.

The Bonds, given by the Contractor in a sum equal to the total contract price of the Project in compliance with the terms and provisions of this Contract, are hereby attached and incorporated herein.

IT IS AGREED that in the event that the County is delayed or prevented from timely execution of this Contract, the Contractor releases County and agrees Contractor shall have no action, claim or demand against County therefore.

Contractor's Initials

Date

Rev. 09/2024

THE CONTRACTOR HEREBY FURTHER AGREES to receive the prices set forth in the Proposal incorporated herein as full compensation for the completion of the Project and, in all respects, to complete said Contract to the satisfaction of the County.

THE CONTRACTOR REPRESENTS AND WARRANTS:

- (i) it is duly formed and validly existing under the laws of the State of _____;
- (ii) it is in good standing in the State of Maryland;
- (iii) it has the power and authority to consummate the obligations and responsibilities contemplated hereby, and has taken all necessary action to authorize the execution, delivery and performance required under this Contract;
- (iv) the Contractor and the person executing this Contract for the Contractor each warrant that he/she is duly authorized by the Contractor to execute and seal this Contract on the Contractor's behalf;
- (v) the warranties of merchantability and fitness for a particular purpose and use and warranties of title and against infringement, and all express warranties contained in this Contract, including but not limited to the Proposal (and any sample or model presented by Contractor and expressly accepted by the County) shall apply to the portion of this Contract pertaining to or for goods;
- (vi) all representations and warranties made in the Proposal and herein remain true and correct in all respects when made, as of the date of this Contract, and throughout the term of this Contract; and
- (vii) there exists no actual or potential conflict of interest between its performance under this Contract and its engagement or involvement in any other personal or professional activities and in the event such conflict or potential conflict arises during the term of this Contract, the Contractor shall immediately advise the County in writing thereof.

THE CONTRACTOR shall not disclose any documentation and information of any kind or nature disclosed to the Contractor in the course of its performance of duties hereunder without the express prior written consent of the County.

Those sections in this Contract which by their nature are intended to survive, including but not limited to, Contractor's representations and warranties, confidential information, and indemnification shall survive the termination of this Contract.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand and seal the day and year first above written.

CONTRACTOR NAME: _____

WITNESS FEDERAL TAX ID or SS #: _____

By: _____ (Seal)

Name: _____

Type (Print) Name

Title: _____ Date: _____

WITNESS: **BALTIMORE COUNTY, MARYLAND**

Executive Secretary By: _____ Date: _____
D'Andrea L. Walker, County Administrative Officer

Type (Print) Name

APPROVED FOR FORM AND LEGAL
AND SUFFICIENCY* (Subject to
execution by the duly authorized
Administrative official and Chairperson
of the County Council, as indicated).

APPROVED:

Kevin D. Reed, Director
Office of Budget and Finance Date: _____

Office of the County Attorney

*Approval of Form and Legal Sufficiency does not convey approval or disapproval of the substantive nature of this transaction. Approval is based upon typeset documents. All modifications require re-approval.

Rev. 09/2024

PERFORMANCE BOND

Bond No. _____

Principal _____

Business Address of Principal _____

Surety _____

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

	DOLLARS	\$	_____
Penal Sum of Bond (express in words and figures)			
<u>Gwynn Oak Park Pavilion & Parking Expansion</u>			20 _____
Contract Name	Date of Contract		
<u>22166 GX0</u>			20 _____
Contract Number	Date Bond Executed		

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL, above-named, and SURETY, above-named, and authorized to do business in the State of Maryland, are held and firmly bound unto the OBLIGEE, above-named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, THE PRINCIPAL entered into a certain contract with the OBLIGEE described and dated as shown above and is required to provide this bond pursuant to Maryland State law and/or County law and the contract.

NOW, THEREFORE, if the aforesaid PRINCIPAL shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the OBLIGEE with or without notice to the SURETY, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation to be void; otherwise to remain in full force and effect.

THE SURETY FURTHER GUARANTEES That it is (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. A Performance Bond is required for each and every Contract in excess of twenty-five thousand (\$25,000). A Performance Bond shall be in the amount equal to at least one hundred (100%) percent of the Contract price. The fully executed Performance Bond shall be delivered by the Bidder to the Department's Division of Construction Contracts Administration no later than the time the Contract is to be executed by the Contractor.

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

In Presence of:	Individual Principal
------------------------	-----------------------------

Witness: _____	as to: _____ (SEAL)
----------------	---------------------

Print Name: _____	Print Name: _____
-------------------	-------------------

Attest:	Corporate Principal
	_____ (Name of Corporation)

Witness: _____	By: _____ Affix
----------------	-----------------

Print Name: _____	Print Name: _____ Corporate
-------------------	-----------------------------

Title: _____	Seal
--------------	------

Attest:	Surety
	_____ (Name of Surety)

Business Address:	_____
--------------------------	-------

Witness: _____	By: _____ Affix
----------------	-----------------

Print Name: _____	Print Name: _____ Corporate
-------------------	-----------------------------

Title: _____	Seal
--------------	------

Reviewed for Baltimore County Requirements

_____	Office of the County Attorney
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PAYMENT BOND

Bond Number _____

Principal _____

Business Address of Principal _____

Surety _____

Obligee: **BALTIMORE COUNTY, MARYLAND**
A body corporate and politic

A Corporation of the State of _____ and authorized to do business in Maryland

DOLLARS \$ _____

Penal Sum of Bond (express in words and figures) _____

Gwynn Oak Park Pavilion & Parking Expansion
Contract Name_____ 20 _____
Date of Contract22166 GX0
Contract Number_____ 20 _____
Date Bond Executed

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL, above-named, and SURETY, above-named, and authorized to do business in the State of Maryland, are held and firmly bound unto the OBLIGEE, above-named, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, THE PRINCIPAL entered into a certain contract with the OBLIGEE described and dated as shown above and is required to provide this bond pursuant to Maryland State law and/or County Law and the contract.

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

THE SURETY FURTHER GUARANTEES That it is (a) licensed in the State of Maryland, (b) rated "B" or better by the A.M. Best Company, (c) on federal funded projects, authorized by the underwriting limitation contained in the U.S. Department of the Treasury Circular 570, as amended, to guaranty the amount of the Bid, and (d) in good standing as determined by the County's Engineer. A Payment Bond is required for each and every Contract in excess of twenty-five thousand (\$25,000). A Payment Bond shall be in the amount equal to at least one hundred (100%) percent of the Contract price. The fully executed Payment Bond shall be delivered by the Bidder to the Department's Division of Construction Contracts Administration no later than the time the Contract is to be executed by the Contractor.

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

In Presence of:

Individual Principal

Witness: _____

as to: _____ (SEAL)

Print Name: _____

Print Name: _____

Attest:

Corporate Principal

(Name of Corporation)

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Attest:

Surety

(Name of Surety)

Business Address: _____

Witness: _____

By: _____ Affix

Print Name: _____

Print Name: _____ Corporate

Title: _____ Seal

Reviewed for Baltimore County Requirements

Office of the County Attorney



INSURANCE PROVISIONS

1. GENERAL REQUIREMENTS

- 1.1 Coverages Required:
Unless otherwise required by the specifications or the contract, the Contractor/Vendor shall purchase and maintain the insurance coverage's listed herein.
- 1.2 Certificate of Insurance:
Before starting work on the contract, or prior to the execution of the Contract on those bid, the Contractor/Vendor shall provide Baltimore County, Maryland with verification of insurance coverage evidencing the required coverages.
- 1.3 Baltimore County as Insured:
The coverage required, excluding Workers' Compensation and Employers' Liability and Medical Malpractice Liability/Professional Liability/Errors and Omissions Liability, must include Baltimore County, Maryland and its agents, employees, officers, directors, and appointed and elected officials as an additional insured.
- 1.4 Contractor's/Vendor's Responsibility:
The providing of any insurance herein does not relieve the Contractor/Vendor of any of the responsibilities or obligations the Contractor/Vendor has assumed in the contract or for which the Contractor/Vendor may be liable by law or otherwise.
- 1.5 Failure to Provide Insurance:
Failure to provide and continue in force the required insurance shall be deemed a material breach of the contract. The Contractor/Vendor must maintain the insurance coverages required under the terms and conditions on this Contract while this Contract is in effect including renewal and extension terms.

2. INSURANCE COVERAGES

- 2.1 General Liability Insurance
- 2.1.1 Minimum Limits of Coverage:
Personal Injury Liability and Property Damage Liability
Combined Single Limit - \$500,000 each occurrence.
- 2.1.2 Such insurance shall protect the Contractor/Vendor from claims which may arise out of, or result from, the Contractor's/Vendor's operations under the contract, whether such operations be by the Contractor/Vendor, any subcontractor, anyone directly or indirectly employed by the Contractor/Vendor or Subcontractor, or anyone for whose acts any of the above may be liable.
- 2.1.3 Minimum Coverages to be Included:
(a) Independent Contractor's coverage;
(b) Completed Operations and Products Liability coverage;
(c) Contractual Liability coverage.

- 2.1.4 Damages not to be Excluded:
Such insurance shall contain no exclusions applying to operations by the Contractor/Vendor or any Subcontractor in the performance of the Contract including but not limited to:
(a) Collapse of, or structural injury to, any building or structure;
(b) Damage to underground property; or
(c) Damage arising out of blasting or explosion.

2.2 Automobile Liability Insurance

- 2.2.1 Minimum Limits of Coverage:
Bodily Injury Liability and Property Damage Liability
Combined Single Limit - \$500,000 any one accident.
- 2.2.2 Minimum Coverages to be Included:
Such insurance shall provide coverage for all owned, non-owned and hired automobiles.

2.3 Workers' Compensation and Employers' Liability Insurance

Such insurance must contain statutory coverage, including
Employers' Liability insurance with limits of at least:
Bodily Injury by Accident - \$250,000 each accident
Bodily Injury by Disease - \$500,000 policy limit
Bodily Injury by Disease - \$250,000 each employee

2.4 Valuable Papers and Records Coverage and Electronic Data Processing (Data and Media) Coverage

Minimum Limits of Coverage:
\$100,000 Per Claim and Each Occurrence
\$100,000 in the Aggregate

2.5 Other

Such other insurance in form and amount as may be customary for the type of business being under taken by the Contractor/Vendor.

2.6 Builder's Risk

See Special Provisions page 287 and General Conditions page 34,35, Article 33.