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VOLUME 1 OF 1

TECHNICAL SPECIFICATIONS

S P E C

FOR

MURPHEY CANDLER PARK IMPROVEMENTS

PROJECT MANUAL:

CITY OF BROOKHAVEN, GEORGIA

PROJECT #15092.00 G
BID 22 #109

PREPARED BY:

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Land Planning · Landscape Architecture
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March 2022

TECHNICAL PROVISIONS

DIVISION 0 - BIDDING/CONTRACT REQUIREMENTS

DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 2 - SITE WORK

END OF SECTION 00002

MULTIUSE TRAIL ON DAM

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BID FORM

MURPHEY CANDLER PARK IMPROVEMENTS

MULTIUSE TRAIL ON DAM

BROOKHAVEN, GEORGIA

1. Bid as Advertised: Yes ———
   No ———

2. Bid Expires: _____ Month _____ Day _____ Year
   (Minimum of 90 days)

3. Bid Received From: (Company) _____

   (Address) _____

   (Phone) _____

   (Contact) _____

Project Number: 15092.00 G

Bid Number: **ITB No. 22=109**

I. INTRODUCTION:
The City of Brookhaven is in the process of accepting bids from qualified Contractors for the specified improvements in Ashford Park and providing a Splash Pad per the Scope of Work.

II. INSTRUCTIONS:
Failure to adhere to the instructions below and elsewhere in the Invitation To Bid may result in the bid being deemed non-responsive.

A. Bidder shall not attach information in lieu of completion of the forms provided below and any specifically requested attachments. All information requested by the Client must be provided.

B. Bidder's qualifications and ability to complete this project will be determined based upon the information presented. All questions must be answered in full.

Bidder acknowledges receipt of the following addenda:

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

BASE BID LUMP SUM WITH UNIT PRICES

Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Clark, Patterson, Lee and their consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment services, and all calculated allowances below, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated **Lump Sum** of:

_____

Dollars

($_____)

(Total transferred from the Construction Items Bid Schedule

BID GUARANTEE

The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 ten days after a written Notice of Award, if offered within 60 sixty days after receipt of bids, and on failure to do so agrees to forfeit to Owner the Bid Bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

_____ Dollars ($_____)

SUBCONTRACTORS AND SUPPLIERS

The Bidder shall execute subcontracts for the portions of the Work as indicated on the attached List of Sub-contractors.

TIME OF COMPLETION

The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed issued by Owner and shall fully complete the Work within 180 calendar days.

The City of Brookhaven will charge the Contractor Five Hundred Dollars and no cents ($500.00) per day for liquidated damages for every day beyond the contracted Time of Completion January 2022 that the Work is not complete.

Note: Completed Construction Items Bid Schedule must be completed in full and attached to this Bid Form or be declared non-Conforming:
See Instructions to Bidders (ITB)

Bidder further declares that the full name and resident address of Bidder's Principal is:

_____ _____
Authorized Representative Authorized Representative
(Print or Type) *(Signature)*

Signed, sealed, and dated this _____ day _____, 2022

Notarized _____ (Seal)

My Commission Expires _____

Company Name and Address:

_____

_____

_____

Principal: _____

Title: _____

LIST OF SUBCONTRACTORS

I do ____,/do not ____, propose to subcontract some of the work on this project. I propose to Subcontract work to the following subcontractors:

NAME AND ADDRESS	TYPE OF WORK

COMPANY NAME_____

AUTHORIZED REPRESENTATIVE SIGNATURE_____

SECTION 01010

SUPPLEMENTAL CONDITIONS

1.1 General: These Conditions are a Supplemental Conditions to the General Conditions of the Contract for Construction

1.2 Drawings and Specifications: See Cover Sheet of Drawings for list of Contract Drawings.

See Table of Contents of Project Specifications for list of Technical Specification Sections. Pay particular attention to Division 1 of the Specifications as they apply to the General Conditions.

1.3 Temporary Equipment: See Section 01600 Materials and Equipment for more detail.

1.4 Lifting Devices and Hoisting Facilities: The Contractor shall provide, operate and maintain construction cranes for hoisting materials, as well as other type hoists, as may be required for execution of the work of all trades as identified in the contract documents and specifications. Such apparatus, equipment and construction shall meet the requirements of labor laws and other applicable state and federal laws.

1.5 Temporary Support Facilities: See Section 01500 Construction Facilities.

1.6 Layout of Site Work: See Section 01050 Field Engineering for general descriptions.

Specific Requirements:
Before commencing any work, the Contractor shall verify all grades, lines, levels and dimensions as indicated on the Drawings. He shall report any errors or inconsistencies to the Landscape Architect before commencing work.

The Contractor shall stake the entire project, both as to location of all construction items as well as finish grades. This stakeout may be accurate or rough, depending on the Contractor's preference. This stakeout shall be made early in the construction process and preserved for reference during construction.

The purpose of the staking, with inspection and adjustment by the Landscape Architect, is to adapt the design to the site rather than allow the design to be forced upon the site. Staking is subject to various degrees of adaptation which can only be determined by the Landscape Architect. This variation is an aesthetic decision, the amount of adjustment most often determined by the existing trees, terrain, soil conditions, utilities, sub-surface water and by other intangibles which are impractical to survey in absolute accuracy.
e
The Contractor shall notify the Landscape Architect at least five working days before inspection of the stakeout must be made. During the inspection the Landscape Architect will adjust the stakeout as necessary to fit the trees, topography, and all other objects and conditions on the site. At this time the Landscape Architect will clearly mark all trees and

other vegetation to be removed. This staking-inspection process must take place prior to any tree removal, grading, construction, or any other work on the site.

During the inspection, the Contractor shall be at the site along with the person who will superintend the work under this contract.

The staking inspection process shall be repeated for any work not staked and approved or adjusted during the first site visit. No work shall ever be done without the stakeout first being adjusted and approved by the Landscape Architect. All alignment, dimensions and elevation of any grading, excavation, construction, and planting is subject to adjustment to accommodate existing conditions and to save trees and other vegetation.

Any work progress delays caused by inadequate, incomplete or improper staking shall not merit an extension of the contract or delay charges by the contractor.

The Landscape Architect shall have 2 days to respond to any request to come to the site and adjust a stakeout.

The Landscape Architect shall have a minimum of three (3) days to resolve any problems created by unknown conditions discovered during the stakeout or construction.

Contractor shall be responsible to adequately schedule his work to allow constant work to continue. When unknown conditions inhibit the flow of work the contractor shall continue unhindered portions elsewhere on the project and notify the Landscape Architect immediately.

1.7 Unknown Conditions: Subsurface Conditions: Should the Contractor encounter, during the progress of the work, subsurface latent physical conditions at the site, materially differing from those shown on the drawings or specified for unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the drawings and Specifications, the attention of the Landscape Architect shall be called immediately to such conditions before they are disturbed. The Landscape Architect shall thereupon promptly investigate the condition, and if he finds that they do so materially differ, the contract price shall, with the written approval of the Owner, be increased or decreased in accordance with such conditions.

1.8 Geo-Technical Assistance. The Contractor shall coordinate the involvement and schedule of the Geotechnical Consultant for the project.

Some geotechnical borings were made on the dam and are available to the contractor.

The Owner will retain at his own expense the services of a qualified geo-technical engineer to advise on all construction techniques involved in the work, including the design, checking and approval of temporary bracing, shoring, underpinning and other items pertinent to the work, and on construction methods for solution of problems which may be encountered. The geo-technical engineer shall be primarily concerned with construction methods necessary to prevent settlement or failure of walkways, foundations and footings, and/or damage to such

surrounding structures as sidewalks, roads, utilities, and embankments on the Owner's property.

1.9 Existing Utilities Shown. Existing utility lines shown on the drawings, such as, cables, ducts, conduits, and piping shall, if damaged (unless they are to be abandoned) be immediately repaired, protected, and maintained in use until relocation of same has been completed or shall be cut and capped where directed or shall be prepared for service connections when so required.

1.10 Utilities Not Shown. Contractor shall be responsible for securing the services of a utility locator to determine any unknown utilities that may be on the site. Any utilities encountered that are not shown on the drawings and are to remain as active utilities, if inadvertently damaged by the Contractor, shall be repaired by him. An adjustment in the contract price will be made at rates determined by the Contractor and approved by the Landscape Architect. If an extra expense is incurred in protecting and maintaining any utility line not shown on the drawings, an adjustment in the price will be made. Contractor shall not be compensated if the utility was improperly located or omitted by locator if it is deemed that the utility could have been detected.

1.11 Inclusion of Accessories: Unless specifically mentioned otherwise, all anchors, bolts, screws, fittings, fillers, hardware accessories, trim and other parts required for, or in connection with, an item of material to make a complete, serviceable, finished and first quality installation shall be furnished and installed as part of the item whether or not shown on the drawings or specified.

1.12 Protection: All materials shall be shipped, stored and handled in a manner that will afford protection and insure their being in first class condition at the time they are incorporated in the work.

After installation all materials shall be properly protected against damage to insure their being in first class condition when the project as a whole is completed and accepted by the Owner.

1.13 Installation: All items shall be installed in a workmanlike manner in accordance with the best recognized practice of the trade. Manufactured items shall be installed in strict accordance with the manufacturer's printed directions, specifications and/or recommendations. All working parts shall be properly adjusted after installation and left in perfect working order. Unless otherwise indicated, items exposed to weather or subject to flooding shall be installed so as to shed water. Items shall in all cases be installed plumb and true and/or in proper relation to surrounding materials.

Samples: Contractor shall be responsible for preparing samples as required in the technical specifications and to obtain approvals prior to construction of the item.

1.14 Reference to Standard Specifications: When standard specifications such as The American Society for Testing and Materials, Federal Specifications, Department of Commerce (Commercial Standards), American Institute of Steel Construction, or other well known public or trade associates are cited as a standard to govern materials, and/or workmanship,

such specifications or portions thereof as referred to shall be equally as binding and have the full force and effect as though it were copied into these specifications. Such standard as are mentioned are generally recognized by and available to the trades concerned.

1.15 Reference to Manufacture's Publications: Unless otherwise specifically stated, all manufacturer's catalogs, specifications, instructions or other information or literature that are referred to in the specifications shall be considered as the latest edition and/or revision of such publication that is in effect on the date of the Invitation or Advertisement for Bids.

1.16 Document Signatures: See General Conditions.

1.17. Materials Furnished by Others: Whenever the Contractor or any Subcontractor shall receive items from another contractor or from the Owner for storage, erection or installation, the Contractor or Subcontractor receiving such items shall give receipts for items delivered, and any necessary replacing of item or items received. No adjustment will be made to contract price for increased insurance premiums, except for materials and/or equipment furnished by the Owner and not listed as such in other Contract Documents.

1.18. Substitute Materials and Equipment: See Section 01631 Substitutions for more detail.

Approval, by the Landscape Architect, of substitute materials and equipment shall not relieve the Contractor from his responsibility to supply and install any additional materials, equipment, or labor required to make the substitution properly function within the intent of the Contract Documents, as issued for Bid, whether or not recognized by the Landscape Architect or Contractor. The Contractor shall supply and install such required additional cost to the Owner.

1.19. Protection of Existing Structures: The Contractor shall be liable for all damage to existing structures that occurs as a result of his negligence to provide proper and adequate protective measures, including but not limited to buildings, walls, fences, paving, conduits, furniture, pipe, wiring, drains, underground utilities and equipment.

The Contractor shall be liable for all damage to trees, shrubs, turf and other vegetation. See Tree Penalty Clause in Section 02112, page 2.

1.20. Security Considerations: Construction shall not interfere with reasonable access to the adjacent park facilities.

Contractor shall not interfere with reasonable use of the park and site facilities.

1.21. Working Hours: See General Conditions.

1.22. Order of Construction: Contractor shall submit a progress schedule at the pre-construction conference outlining the order of his construction process - Priorities within this schedule shall be coordinated with the Owner. See Section 01040 Coordination for more detail.

Sequence of Work. Work is to be processed in an orderly manner. The organization of the Specifications or contract drawings does not necessarily indicate the order of sequence in

which work is to be performed. If prior construction or other contractors on the project site shall interfere with this work, the Landscape Architect shall declare the time and date when this project contract can be started on the site.

Contractor shall not be granted extensions or delay charges when it is deemed clearly that Contractor could have continued work on other components of the project or locations on the site without suffering a delay in the process.

1.23. Record of Construction Changes and As-Built Documents: On completion of the work, the Contractor shall mark the appropriate contract drawings in indelible ink showing the final locations of all underground installations including, but not limited to, power lines, irrigation lines, sewage lines, drainage lines, septic tanks, fuel tanks, etc. They also shall record the proper location of all installations above ground where they have been changed on the site from designated locations on the plans.

Contractor shall provide a flash drive containing the as-built plans to the Owner upon completion of the project.

1.24. Guarantee: See Section 017040 Warranties for more detail descriptions. All landscape materials shall be guaranteed by the Contractor in accordance with Section 02900.

1.25. Application for Payment: See Section 01027 Application of Payment for detail instructions.

1.26. Certificates for Payment: Upon receipt of Application for Payment, Owner's Representative with the Landscape Architect shall make an inspection and issue to the Contractor a Certificate for Payment or state in writing to the Contractor a Certificate for Payment or state in writing to the Contractor the corrections which must be made according to the plans and Specifications before he shall be paid. These corrections shall be made at once, and the Owner's representative shall issue a Certificate for Payment on their acceptance. The Owner shall pay the full amount of the Certificate within fifteen (15) days after receiving the Certificate for Payment from the Owner's Representative.

1.27. Quantities and Measurements:
The following principles shall govern the settlement of disputes which may arise over discrepancies in the contract documents: (a) as between figures given on drawings and the scaled measurements, the scaled measurements shall govern; (b) as between large-scale drawings and small-scale drawings, the larger scale shall govern; (c) as between drawings Form of Agreement and the Specifications, requirements of the Form of Agreement shall govern.

1.28. Maintenance: The Contractor shall be responsible for all maintenance, as required, until completion and acceptance of the work. Various items of maintenance are indicated in applicable sections of the Technical Specifications, to which the Contractor is referred. The Owner shall become responsible for maintenance upon completion and final acceptance of the work.

END OF SUPPLEMENTAL CONDITIONS

SECTION 01026

SCHEDULE OF VALUES

PART 1 GENERAL

1.0 SCOPE

The work under this Section includes preparation and submittal of a Schedule of Values.

The Construction Items Bid Schedule may substitute for the Schedule of Values when the project is bid by using the Construction Items Bid Schedule to determine the Base Bid Amount. In that case, the Construction Items Bid Schedule can be substituted for the Schedule of Values in this Section of the Specifications.

See Section 00-350 Construction Items Bid Schedule
See Section 01027 Application for Payment for more detail.

2.0 GENERAL

A. Timing of Submittal: Submit to the Landscape Architect, a Schedule of Values allocated to the various portions of the work, within 10 days after Notice to Proceed.

The first progress payment will not be made until the next pay cycle following the Landscape Architect's approval of the Contractor's Schedule of Values.

B. Supporting Data: Upon request of the Engineer, support the values with data which will substantiate their correctness.

C. Use of Schedule: The schedule of values, unless objected to by the Landscape Architect, shall be used only as a basis of the Contractor's Application for Payment.

D. Construction Items Bid Schedule may serve as the Schedule of Values.

E. Construction Items Bid Schedule form is available through the Consultant in Excel electronic format upon request.

3 - FORM AND CONTENT OF SCHEDULE OF VALUES

A. Form and Identification
1. Prepare schedule of values on 8-1/2 x 11-inch paper in landscape format.
2. Contractor's standard forms and automated printout may be used.
3. Identify schedule as: *Murphey Candler Park*
   a. Title of project and location: ***Murphey Candler Park***
   b. Landscape Architect
   c. Name and address of Contractor

d. Contract designation
c. Date of submission

B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. Breakdown shall be by number and construction items, for ease of field verification of quantities completed in each line item.

See Section 01027 Applications for Payment for more detail.

C. Format
1. Follow the Construction Items Bid Schedule of the Contract Documents as the format for listing the component items quantities and costs.
2. Identify each item with the number and name of the respective item of the Schedule.

D. For each major line item, list sub-values of major products or operations under the items as shown on the Construction Items Bid Schedule and Bid Form.

E. For the Various Portions of the Work:
1. Each construction item shall exclude any proportional amount of the Contractor's overhead and profit.
2. For items on which progress payments will be requested for stored materials, break down the value into:
a. The cost of the materials delivered and stored, with taxes paid.
b. The total installed value, less Contractor's overhead and profit and less item a. above.
c. Copies of the delivery manifest and supplier invoice.

A. Mobilization is identified as a separate line item so the contractor can bill ahead to secure operational capital to begin the project.

B. General Conditions and Overhead shall be shown as a separate line item at the bottom and not calculated into the unit items costs.

C. Additional Items: At the end of the Construction Items Bid Schedule the contractor may add additional line items that he feels were not listed or should be further broken down.

D. When the Construction Items Bid Schedule is used to bid the project, the sum of all the values listed on the Construction Items Bid Schedule plus all addenda shall equal the Bid Total or Contract Amount as shown on the Bid Form.

END OF SECTION 01026

SECTION 01027

APPLICATIONS FOR PAYMENT

1.1 GENERAL

A. Coordinate the Construction Items Bid Schedule and Applications for Payment with the Contractor's Schedule of Payment, Submittal Schedule, and List of Subcontracts.

B. Coordinate preparation of the Construction Items Bid Schedule with preparation of the Contractor's Project Construction Schedule of Work.

1. Correlate line items in the Construction Items Bid Schedule with other required administrative schedules and forms, including:

   a. Contractor's Project Construction Schedule.
   b. Application for Payment forms, including Continuation Sheets.
   c. List of subcontractors and consultants.
   d. List of products.
   e. List of principal suppliers and fabricators.
   f. Schedule of submittals.
   g. Schedule of materials stored

2. Submit the Project Construction Timeline Schedule at the earliest possible date but no later than 7 days before the date scheduled for submittal of the first Application for Payment.

C. Format and Content: Use the Construction Items Bid Schedule as the format for establishing the Schedule of Payment. Provide at least one-line item for each Unit Item on the Construction Items Bid Schedule as a payment item.

1. Include the following Project Identification ***Murphey Candler Park - City of Brookhaven –***

   a. Project name and location – *Murphey Candler Park*
   b. Name of Consultant – *CPL Inc.*
   c. Project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. Arrange the Schedule of Payment items in tabular form with separate columns to indicate the following for each item listed:

   a. Item number.
   b. Name of the item.
   c. Total quantity of the item.
   d. Unit price.
   e. Total price.

f. Current work completed by dollar value.
g. Previous dollar amount completed.
h. Percentage of Item Sum completed to nearest one-hundredth percent.

3. Provide separate backup for each part of the Work where the Application for Payment includes materials or equipment, purchased or fabricated and materials stored, but not yet installed.

4. Change Orders or Construction Change Directives that change the Contract Sum must be pre-approved before commencing the work or applying for payment. Pre-approved change orders may be attached to the application for payment as a new items line at the bottom of the Payment Schedule after completion and acceptance of the change order work.

5. Maintain a chronological and on-going Ledger List of minor field deletions or additions to the contract to be attached to each payment request.

6. Consultant can provide a sample Pay Request if requested by contractor.

D. Applications for Payment shall be consistent with previous applications and payments as certified by the Owner's Representative and paid to date by the Owner.

E. Payment-Application Times: Payment dates are indicated in the Agreement. The period covered by each application is the period indicated in the Agreement.

F. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment, or the form supplied by the Owner.

G. Application Preparation: Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The Landscape Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Payment and the Contractor's Construction Items Bid Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives approved prior to the last day of the construction period covered by the application.

H. Transmittal: Submit 3 executed original copies of each Application for Payment to the Owner's Representative within 24 hours. One copy shall be complete, including waivers of lien and similar attachments.

1. Transmit each copy with a transmittal listing attachments and recording appropriate information related to the application.

I. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of lien from every entity who may file a lien arising out of the contract and related to the work covered by the payment.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Submit each Application for Payment with Contractor's waiver of lien for the period of construction covered by the application.
   a. Submit final Applications for Payment with final waivers from every entity involved with performance of the Work covered by the application who may file a lien.
4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.

J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

Provisions of the contract regarding payment shall supersede any applicable provisions of the Georgia Prompt Payment Act.

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Payments.
4. Contractor's Construction Schedule (*preliminary if not final*).
5. Submittal Schedule (*preliminary if not final*).
6. List of Contractor's staff assignments.
7. Copies of necessary building permits.
8. Copies of required licenses from governing authorities.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.
11. Traffic control plan if required

K. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

1. Administrative actions and submittals that shall precede or coincide with this application include the following:

   Provisions of the contract regarding payment shall supersede any applicable provisions of the Georgia Prompt Payment Act:

   a. Occupancy permits.
   b. Warranties and maintenance agreements.
   c. Test/adjust/balance records.
   d. Maintenance instructions.
   e. Meter readings.
   f. Changeover information related to Owner's occupancy.
   g. Final cleaning.
   h. Application for reduction of retainage and consent of surety.

l. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

L. Retainage: Client shall retain 10% of all approved pay requests until substantial completion of the project. Retainage may drop to 5% until final inspection and acceptance with approval of the Owner.
1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Transmittal of Project construction records to the Owner.
4. Certified As-Built survey.
5. Proof that taxes, fees, and similar obligations were paid.
6. Removal of temporary facilities and services.
7. Change of door locks to Owner's access.
8. Fulfillment of all erosion control measures.

M. Quantity Allowance Payment Applications:
The contract includes certain allowance quantities for bid items that may need additional material quantities during the course of the project. The contractor is required to track these specific bid items during construction to verify when 100% of the bid quantities are exhausted. The documents are not limited to but may include Purchase Orders, delivery manifests, load tickets or any other document that confirms the use of the full 100%.

Once the bid quantity is exhausted, the contractor must request in writing access to use the allowance quantities. These quantities must also be documented as they are used. Pay Requests may only ask for the quantities used. Any remaining quantities are credited back to the Owner and the end of the project.

If the contractor exhausts the bid quantity and the allowance quantities, then he must prepare a Change Order Request to secure additional quantities.

N. Final Ledger: Contractor shall request payment for 100% of all construction items as shown on the Construction Schedule and Payment Request. Contractor must make a final tabulation of all Allowance Quantities and Change Orders as part of the final request. The final tabulation and ledger will be either a subtraction from the total contract or an addition. In the case of subtractions, the contractor shall enter the total deleted at the bottom of the request. In the case of an addition, the Landscape Architect shall prepare a final change order for approval by the Contractor and Owner.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01035

MODIFICATION PROCEDURES

1.1 GENERAL

A. Minor Changes in the Work: The Landscape Architect will issue instructions authorizing changes in the Work that do not alter the contract amount on AIA Form G710.

B. Owner-Initiated Change Order Proposal Requests: The Landscape Architect will issue a description of proposed changes in the Work that require adjustment to the Contract Sum or Time. The description may include supplemental or revised Drawings and Specifications.

1. Proposal requests are for information only (RFI). Do not consider them an instruction to stop work or to execute the proposed change.

2. Within 20 days of receipt of a Change Request, submit an estimate of costs necessary to execute the change for the Owner's review.
   a. Include an itemized list of products required and unit costs, with the total amount of purchases.
   b. Use unit costs from the Schedule of Values. If unit costs have to change, submit detail documentation to explain the need to change a unit price.
   c. Indicate taxes, delivery charges, equipment rental, and amounts of trade discounts.
   d. Indicate the effect the change will have on the Contract Time.

C. Contractor-Initiated Proposals: When unforeseen conditions require modifications, the Contractor may submit a request for a change to the Landscape Architect.

1. Describe the proposed change. Indicate reasons for the change and the effect of the change on the Contract Sum and Time.
2. Include an itemized list of products required and unit costs, with the total amount of purchases.
3. Indicate taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Additional work already included on the Schedule of Values shall be submitted at the same price as originally quoted unless otherwise agreed prior to submittal.

D. Proposal Request Form: Use AIA Document G709.

E. Allowance Adjustment: Base Change Order Proposals on the difference between the purchase amount and the allowance, multiplied by the measurement of work-in-place. Allow for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs only where indicated as part of the allowance.
2. Prepare explanations and documentation to substantiate margins claimed.

3. Submit substantiation of a change in work claimed in the Change Orders related to unit-cost allowances and quantities.

F. Submit claims to increase costs due to a need to change an allowance, whether for purchase order amount or handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of authorization to proceed. The Owner will reject claims submitted later than 21 days.

1. Do not include indirect expense in cost amount unless the Work has changed from that described in Contract Documents.
2. No change to indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

G. Construction Change Directive: When Owner and Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714 instructing the Contractor to proceed with a change.

1. The Construction Change Directive contains a description of the change and designates the method to be followed to determine change in the Contract Sum or Time.

H. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completing the change, submit an itemized account and supporting data to substantiate Contract adjustments.

I. Change Order Procedures: Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order on AIA Form G701.

J. Contractor shall submit Requests for Information (RFI) whenever items or parts of the central documents are unclear or incorrect. Contractor shall maintain a list of Requests by number and date with responses from the Architect.

K. Unit Item Cost: When changes effect unit items for which costs have already been established, change request must utilize the agreed unit prices for additions or deletions.

L. Unit Item Cost Changes: Unit item costs previously accepted by the Owner may be subject to change if the contractor submits sufficient documentation to verify the need for such a change.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01035

SECTION 01040

COORDINATION

1.1 GENERAL

A. This Section includes requirements for coordinating construction operations including, but not necessarily limited to, the following:

1. Coordination drawings.
2. Administrative and supervisory personnel.
3. Coordinate with Project Landscape Architect/Engineer.
4. Coordination with the EOR for the project and the Safe Dams Inspector
5. Coordinating with Parks Director or Owner's Representative
7. Utilities connections and coordination with all utility providers.
8. Coordinate with the city police force for access and traffic control
9. Coordinate with athletic associations and groups using the roadway and walk.
10. Coordinate with Municipal agencies to close roadway on dam.
11. Coordination between various sub-contractors.
12. Coordination between other on-site contractors at the spillway.
13. Coordination with Safe Dams, EOR and City to lower the lake as needed.
14. Coordination with other contractors engaged by the Client or local utility.
15. Coordination of sleeves, holes, and other items to assist subcontractors

NOTE:
The Spillway Repair and Maintenance Project team has not completed the final construction documents nor had the plans permited by the City, GSWCC or Safe Dams. Therefore the City has decided to proceed on the Spillway Repair and Mainteance project on a separate independent schedule for the Multiuse Trail on the Dam project.

If the project does come to fruition during the multiuse trail project schedule, the trail contractor will be required to cooperate with the other contractors. At the time of the Spillway Project begins, the trail contractor may negotiate a change order if there proves to be significant work involved with the cooperation.

1.2 COORDINATION

A. Coordinate construction to assure efficient and orderly installation of each portion of the Work. Coordinate operations that depend on each other for proper installation, connection, and operation.

1. Schedule operations in a sequence required to obtain the best results where installation of one part depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to assure maximum accessibility for maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.

4. Schedule operations with Parks Director to avoid interference with pre-scheduled events.
5. Coordinate regularly with lake user groups on site to insure cooperation and notification.
6. Coordinate with local permitting agencies to secure timely approvals.
7. Coordinate with local law enforcement to execute a Traffic Control Plan.
8. Do not impede lake users' access to the lake outside the construction limits.

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

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
2. Notify Owner when pre-scheduled operations may constitute a hardship for the contractor.
3. Prepare weekly reports during construction to be given to industrial park tenant

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

1. Preparation of schedules.
2. Delivery and processing of submittals.
3. Progress meetings.
4. Project closeout activities.
5. Public notifications of lake access and use.

D. Conservation: Coordinate construction to assure that operations are carried out with consideration for conservation of energy, water, and materials as well as protection of the lake.

1. Salvage materials and equipment involved in performance of, but not incorporated in, the Work.
2. Deliver salvaged items to location to be specified by the owner.

E. Coordination Drawings: Prepare coordination drawings if needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate shop drawings.
2. Indicate required installation sequences.
3. Comply with requirements contained in Section "Submittals."

F. Staff Names: On date of Pre-Construction meeting, submit a list of the Contractor's staff assignments, including the superintendent and other personnel assigned to the

Project. Identify individuals and their responsibilities. List their addresses and telephone numbers.

1. Provide copy of list to the owner and Landscape Architect/Engineer.
2. Post copies in the Project meeting room, the temporary field office, and each necessary telephone number.
3. Contractor shall always maintain a list of regulatory agencies and their contact information on site in the construction trailer.

G. Subcontractor Assistance:
It is the Contractor's duty to coordinate with his subcontractors in advance so that pipe holes, sleeves, inserts, etc., for subcontractors are installed as work progresses. This includes coordination with other independent Contractors working on related work.

1.3 PRODUCTS (Not Applicable)

1.4 EXECUTION

A. Inspection of Conditions: Require Installers of major components to inspect substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected. Provide photographs and daily reports of the inspected conditions.

B. Coordinate temporary enclosures with inspections and tests to minimize the need to uncover completed construction.

C. Clean and protect construction in progress and adjoining materials, during handling and installation. Apply protective covering to assure protection from damage.

D. Clean and maintain completed construction as necessary through the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

E. Limiting Exposures: Supervise construction to assure that no part is subject to harmful, dangerous, or damaging exposure. Such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Water and wave exposure
5. Solvents and chemicals.
6. Abrasion.
7. Soiling, staining, and corrosion.
8. Combustion.

END OF SECTION 01040

SECTION 01050

FIELD ENGINEERING

1.1 GENERAL

A. This Section specifies requirements for field-engineering services including, but not limited to, the following:
   1. Land survey work to locate easement, utilities, and subterranean objects.
   2. Civil engineering services to assure positive drainage.
   3. Location of underground utilities.
   4. Geotechnical monitoring.
   5. Field adjustments to layout.
   6. Erosion Control measurements.
   7. Design/Build Services.
   8. Coordination with the EOR and Safe Dams
   9. Lowering and maintaining the lake at 5’ below surface level
   10. Traffic Control plan on Nancy Creek Drive

B. Submit a certificate certifying location and elevation of improvements.

C. Project Record Documents: Submit a record of Work performed and record copy of survey data collected in the field. TerraMark has already surveyed the entire site and the survey is available to the contractors in Cad format upon request.

D. Surveyor Qualifications: Engage a land surveyor registered in the state where the Project is located.

E. Geotechnical Data: When required, engage qualified Geotechnical Engineers familiar with the conditions of the site and approved by the Owner.

F. Professional Design Services: Secure design consultants and engineers licensed in the state and approved by the Owner.

G. Approvals: All changes to the plans that effect the dam or lake level shall first be approved by the project EOR and later by Safe Dams.

H. Traffic Control: Any changes to the traffic control plan must be approved by the City of Brookhaven.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Identification: The surveyor will identify existing control points and property line corner stakes. Boundaries are indicated on the existing survey by TerraMark.

B. Verify layout information, in relation to property survey and existing benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without written approval. Report destroyed reference points or requirements to relocate reference points because of changes in grades.
2. Replace destroyed Project control points. Base replacements on the original survey control points and property corner pins.

C. Field locate adjacent street right-of-way lines on the ground to use as reference during staking and construction.

D. Existing Utilities: The existence of underground utilities and construction is not guaranteed. Verify location of underground utilities and other construction before beginning site work or excavation.

1. Prior to construction, verify location and invert elevation at points of connection to storm sewers, and water-service piping, and underground utility boxes.
2. Locate existing lateral sanitary sewer line as shown on the existing site survey.

E. Work from lines and levels established by the property survey. Establish benchmarks and markers to set lines and levels at each story of construction and to locate each element. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.

1. Advise entities engaged in construction activities of marked lines and levels provided for their use.
2. As construction proceeds, check every element for line, level, and plumb.

F. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference.

1. Record deviations from lines and levels. Advise the Architect when deviations exceed tolerances. On Project Record Drawings, record deviations that are accepted and not corrected.
2. On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

G. Site Improvements: Locate and lay out site improvements, including pavements, stakes grading, fill and topsoil placement, conduit locations, utility slopes, and invert elevations.

I. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing granite curbs, structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities and utility providers having jurisdiction.

J. Geotechnical Monitoring: Contractor shall coordinate the services of the Owner's Geotechnical Engineer to take the soil borings necessary to verify the construction requirements for the following project elements are acceptable.

1. Sidewalk stabilization.
2. Curb stabilization.
3. Retaining wall foundations.
4. Splash pad foundations and columns
5. Road surfaces.

K. Subsurface Conditions: Contractor is responsible to correct all subsurface conditions necessary to ensure the structural integrity of all elements of the project. Reference each section of the Technical Specifications for detailed execution requirements.

END OF SECTION 01050

SECTION 01095

REFERENCE STANDARDS AND DEFINITIONS

1.01 GENERAL

A. Definitions: Basic contract definitions are included in the Conditions of the Contract.

B. "Indicated" refers to graphic representations, notes, or schedules on the Construction Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. Where the word or words "as directed", "as required", "as approved", "as permitted" “as selected”, “as requested”, “as authorized”, or words of like effect are used ln the specifications or on the drawings, the Contractor shall understand that direction, requirement, approval or permission of the Landscape Architect is intended. Similar words "approved", "acceptable", "satisfactory", or words of like import mean approved by, acceptable to or satisfactory to the Landscape Architect.

D. "Approved": When used in conjunction with the Project Landscape Architect's action on the Contractor's submittals, applications, and requests, is limited to the Project Landscape Architect's duties and responsibilities as stated in the Conditions of the Contract.

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

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

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

H. "Provide" means to furnish and install, complete and ready for the intended use.

I. "Installer" is the Contractor, or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular construction activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "installer," means being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

2. Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter."

J. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing work as part of the project. The extent of the project site is shown on the Construction Drawings and may or may not be identical with the description of the land on which the project is to be built.

K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

L. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-division format and "Master Format" numbering system.

1. Abbreviated Language: Language used in the Specifications is abbreviated. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

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

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

N. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

O. Copies of Standards: Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required

construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

P. Abbreviations and Names: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.

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

R. Engineer, Architect, Landscape Architect, all indicate the design consultant responsible to the Owner for observing the construction of the project.

1.02 PRODUCTS (Not Applicable)

1.03 EXECUTION (Not Applicable)

END OF SECTION 01095

SECTION 01200

PROJECT MEETINGS

1.1 GENERAL

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.
2. Preinstallation conferences.
3. Progress meetings.
4. Weather Records and Calendar
5. Special sub-contractor pre-installation meetings
6. Final punch list inspection

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction. Review responsibilities and personnel assignments.

C. Attendees: Authorized representatives of the Owner, Landscape Architect, and their consultants; the Contractor and its superintendent; major subcontractors; and other concerned parties shall attend.

1. Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.

D. Agenda: Discuss items that could affect progress, including the following:

1. Tentative construction schedule.
2. Critical work sequencing.
3. Submittal of Shop Drawings, Product Data, and Samples.
4. Use of the premises.
5. Special Feature schedules
6. Weather conditions and schedule
7. Sequencing and Traffic Control
8. Maintenance of lake lowering / refilling process

E. Preinstallation Conferences: Conduct a conference before each activity that requires coordination with other operations.

F. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation shall attend. Advise the Landscape Architect of scheduled meeting dates.

1. Review the progress of other operations and preparations for the activity under consideration at each preinstallation conference, including requirements for the following:

a. Compatibility problems and acceptability of substrates.
b. Time schedules and deliveries.
c. Manufacturer's recommendations.
d. Warranty requirements.
e. Inspecting and testing requirements.

2. Record significant discussions and agreements and disagreements, and the approved schedule. Promptly distribute the record of the meeting to everyone concerned, including the Owner and the Landscape Architect.

3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate actions necessary to resolve problems and reconvene the conference.

G. Progress Meetings: Conduct progress meetings at the Project Site at regular intervals as agreed in the contract. Notify the Owner and the Architect of scheduled dates. Coordinate meeting dates with preparation of the Payment Request.

H. Attendees: The Owner, Architect, and other entities concerned with current progress or involved in planning, coordination, or future activities shall be represented. Participants shall be authorized to conclude matters relating to the Work.

I. Agenda: Review and correct or approve minutes of the previous meeting. Review items of significance that could affect progress. Include topics for discussion appropriate to Project status.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule. Determine how to expedite construction behind schedule; secure commitments from parties involved to do so. Discuss revisions required to ensure subsequent activities will be completed within the Contract Time.

2. The schedule shall indicate the dates for the starting and completion of various stages of construction and shall be revised monthly as required by the conditions of the work.

3. Review the present and future needs of each entity present, including the following:
a. Time.
b. Sequences.
c. Status of submittals.
d. Deliveries and off-site fabrication problems.
e. Temporary facilities and services.
f. Quality and work standards.
g. Change Orders.
h. Daily reports and weather conditions
i. Shop drawings and submittals
j. Onsite inspections and adjustments

k. Traffic control plan
l. Lake lowering / refilling

3. Reporting: Distribute meeting minutes to each party present and to parties who should have been present. Include a summary of progress since the previous meeting and report.
4. Schedule Updating: Revise the Contractor's Construction Schedule after each meeting where revisions have been made. Issue the revised schedule concurrently with the report of each meeting.
7. Record Drawings: Contractor shall maintain a current and complete set of all Contract Documents on-site at all times.
8. Review 'Requests for Information' and resolve.
9. Review 'Change Orders' and resolve.
10. Review Pay Requests and schedule of payments.
11. Resolve on-site issues and adjustments.
12. Review weather reports and status of schedule and delays.

J. Daily Construction Reports: Contractor shall prepare a daily report recording events on the site. Submit duplicate copies to the Landscape Architect at weekly intervals. Include the following information:

1. Daily record showing work engaged, completed, and started
2. List of subcontractors at the site
2. High and low temperatures, general weather conditions.
3. Accidents and unusual events.
4. Stoppages, delays, shortages, and losses.
5. Meter readings and similar recordings.
6. Emergency procedures.
7. Orders and requests of governing authorities.
8. Services connected, disconnected.
9. Equipment or system tests and startups.
10. Substantial Completions authorized
11. Materials delivered or stored
12. Inspection or testing completed
13. Official visitors to the site
14 Traffic Control efforts
15. Lake Lowering / refilling status.

K. Construction Records: Contractor shall maintain the following reports and records for review at each Program Meeting. See Section 1300 submittals for more detail of each report.

1. As Built Field Set:
Set of plans kept inside for the purpose of updating and recording all changes and modifications. Update with red lines to record changes as they occur. Update with red lines to record changes as they occur. Said redlines must be issues in Meeting Minutes.

2. Request for Information (RFI) Book:
   Sequential record of all requests and their subsequent answers.

3. Shop drawings and approved site field changes

4. Documents and Samples of special product to the Site:

5. Change Orders:
   Sequential record of all accepted or pending change orders with backup data.

L. Documents and Samples at the Site:

In addition to instruments mentioned in this section, include copies of all Requests for Payment and correspondence between Landscape Architect and Contractor. Maintain all copies in orderly files in Contractor's job site office. Records shall be available for reference during all on-site project meetings.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 01220

UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. See Construction Items Bid Schedule in the Instructions to Bidders in Division 1.

1.2 SUMMARY

A. This Section includes:

1. Unit price work as shown at the bottom of the Construction Items Bid Schedule.
2. List of unit prices required.
3. Procedures for unit price work.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form and Construction Items Bid Schedule, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 SUBMITTALS

A. Supporting Data: When applications for payment include unit price work submit substantiated measurement of quantity installed or executed.

1.5 PROCEDURES

A. Unit Prices include all costs necessary to satisfactorily complete the work identified, including materials, delivery, labor, and installation. Insurance, overhead, profit and other General Conditions are shown separately as a percentage added.

B. Measurement and Payment: Refer to the individual Specification Sections for work that requires establishment of a unit price. Methods of measurement and payment for unit price items are specified in this section.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and the right to have such work measured, at Contractor’s expense, by an independent surveyor acceptable to Owner.

D. List of Unit Prices: A list of unit prices is included on the Construction Items Bid Schedule. Specification Sections and details are referenced on the bid schedule that identifies requirements for materials described under each unit price item.

E. Unit Price Quantities: In case of unit price quantity discrepancies between Bid Form, Construction Items Bid Form and this form, or any other section, the unit price quantities stated in this section shall prevail.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. **Unit Price: Rip Rap Excavation.**

1. Description: Removal of additional rip rap on the dam for construction of the walls and sidewalk. Excavate and remove the rip rap from the site.
2. Purpose: To adjust the contract sum if additional rip rap must be removed and a quantity is determined.
3. Unit of Measurement: Square Feet removed.
4. Quantity to be included in Contract Sum: **1000 sf Allowance:**
5. Include only the following in the unit price: Excavation, loading, hauling and dumping fees to remove the rip rap from the site.
6. Overhead and profit to show as a separate percentage.
7. Include all other costs in contract sum.
8. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.
9. Note: Unsatisfactory soils that are part of the dam structure on or in the dam shall not be replaced with GAB or Surge Stone but replaced with comparable soil and compacted in lifts to meet the standard of the existing dam structure as required by the EOR and SDP..

B. **Unit Price: Footing Excavation.**

1. Description: Removal of material for additional footing excavation to be filled with concrete footing per detail. Excavate and remove the material from the site.
2. Purpose: To adjust the contract sum when additional footing is needed, and an add quantity is determined.
3. Unit of Measurement: Linear Foot removed to fit footing detail size.
4. Quantity to be included in Contract Sum: **100 LF Allowance:**
5. Include only the following in the unit price: Excavation, loading, hauling and dumping fees to remove the materials from the site. Also include review and approval by the EOR and Safe Dams
6. Overhead and profit to show as a separate percentage.
7. Include all other costs in contract sum.
8. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.

C. **Unit Price:** Unsatisfactory soil Removal

1. Description: Removal of unsatisfactory soils encountered and requiring excavation as defined in the specifications.
2. Purpose: To adjust the contract sum when actual quantity is determined.
3. Unit of Measurement: Cubic Yard
4. Quantity to be included in Contract Sum: **50 CY price:**
5. Include only the following: Excavation to plan subgrade, hauling and disposal off site. Also include review and approval by the EOR and Safe Dams. Include cost in unit price of the material being replaced.
6. Overhead and profit to show as a separate percentage.
7. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.
8.

D. **Unit Price: Replace with satisfactory earth fill**:

1. Excavation, hauling, and disposal of unsatisfactory soils to be included in the unit price of the replacement material.
2. Description: Removal of unsatisfactory soils leaves an unexpected void to be filled with suitable earth fill to be approved by EOR and SDP. .
3. Unsatisfactory soils removed that were part of the dam either in or on the structure of the dam shall be replaced with comparable soils compacted in lifts to match the conditions of the existing dam to satisfaction of EOR and SDP.
4. Purpose: To adjust the contract sum when actual quantities are determined.
5. Unit of Measurement: Cubic Yard
6. Quantity to be included in Contract Sum: **50 CY Allowance:**
7. Include only the following in the unit price: Excavation, removal, securing and bringing suitable earth fill material from off site to fill the voids to the original level of the soils removed. Also include approval by the EOR and Safe Dams.
8. Overhead and profit to show as a separate percentage.
9. Include all other costs in contract sum.
10. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.

E. Unit Price: Silt Fence

1. Description: Construction of additional specified double silt fence where needed in the field and not shown on the plans.
2. Purpose: To adjust the contract sum when actual quantity is determined in the field.
3. Unit of Measurement: Linear Foot
4. Quantity to be included in Contract Sum: **200 LF**
5. Include only the following in the unit price: Material and construction of the silt fence per detail; maintenance, repair, replacement and removal of silt fence.
6. Overhead and profit are included as a separate percentage.
7. Include all other costs in contract sum.
8. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.

F. <u>Unit Price</u>: Additional Wall Footing

1. Description: Construction of additional wall footing to match the project details where needed in the field and not shown on the plans.
2. Purpose: To adjust the contract sum when actual quantity is determined in the field.
3. Unit of Measurement: Linear Foot
4. Quantity to be included in Contract Sum: **100 LF**
5. Include only the following in the unit price: Material and construction of the footing per detail as shown on the plans.
6. Overhead and profit are included as a separate percentage.
7. Include all other costs in contract sum.
8. Method of measurement: Measurement will be made as outlined in the specifications and verified by the owner.

END OF SECTION 01220

SECTION 01300

SUBMITTALS

1.1 GENERAL

A. Submittal Procedures: Coordinate submittal preparation with construction, fabrication, other submittals, and activities that require sequential operations. Transmit in advance of construction operations to avoid delay.

1. Coordinate submittals for related operations to avoid delay because of the need to review submittals concurrently for coordination. The Landscape Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.

2. Processing: Allow 2 weeks for initial review. Allow more time if the Landscape Architect must delay processing to permit coordination. Allow 2 weeks for reprocessing.

    a. No extension of Contract Time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

3. Submittal Preparation: Place a permanent label on each submittal for identification. Provide a 4- by 5-inch (100- by 125-mm) space on the label or beside title block to record review and approval markings and action taken. Include the following information on the label for processing and recording action taken.

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

4. Submittal Transmittal: Package each submittal appropriately. Transmit with a transmittal form. The Architect will not accept submittals from sources other than the Contractor.

5. Transmittal Form: Use AIA Document G810. On the form, record requests for information and deviations from requirements. Include Contractor's certification that information complies with requirements.

B. Contractor's Construction Schedule: Prepare a horizontal bar-chart-type, contractor's construction schedule. Provide a separate time bar for each activity and a vertical line to identify the first working day of each week. Use the same breakdown of Work indicated in the "Schedule of Values." See Section 01026 Indicate estimated completion in 10 percent increments. As Work progresses, mark each bar to indicate actual completion.

1. Submit on date of Pre-Construction Meeting.
2. Prepare the schedule on stable transparency, or other reproducible media, of width to show data for the entire construction period.
3. Secure performance commitments from parties involved. Coordinate each element with other activities; include minor elements involved in the Work. Show each activity in proper sequence. Indicate sequences necessary for completion of related Work.
4. Coordinate with the Schedule of Payment, list of subcontracts, Submittal Schedule, payment requests, and other schedules.
5. Indicate completion in advance of Substantial Completion. Indicate Substantial Completion to allow time for the Architect's procedures necessary for certification of Substantial Completion.
6. Phasing: Show how phased completion affects the Work.
7. Work Stages: Indicate important stages for each portion of the Work.
8. Area Separations: Provide a separate time bar to identify each construction area for each portion of the Work. Indicate where each element must be sequenced with other activities.

C. Submittal Schedule: After developing the Contractor's Construction Schedule, prepare a schedule of submittals. Submit within 10 days of submittal of the Construction Schedule.

1. Coordinate with list of subcontracts, Schedule of Values, list of products, and the Contractor's Construction Schedule.
2. Prepare the schedule in chronological order. Provide the following information:

    a. Date for first submittal.
    b. Related Section number.
    c. Submittal category (Shop Drawings, Product Data, or Samples).
    d. Name of the subcontractor.
    e. Description of the Work covered.
    f. Date for the Architect's final approval.

3. Schedule Distribution: Distribute copies of the Contractor's Construction Schedule and the Submittal Schedule to the Architect, Owner, subcontractors, and parties required to comply with submittal dates. Post copies in the field office.

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

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

D. Daily Construction Reports: See Section 1200 for more detail

E. Shop Drawings: See Section 01340 for more detail about Shop Drawings. See Shop Drawings in respective Technical Sections as identified.

Do not use Shop Drawings without an appropriate final stamp indicating action taken.

F. Product Data: Collect Product Data into a single submittal for each element of construction. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, mark copies to indicate applicable information.

1. Include the following information:

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

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

3. Submittals: Submit 2 copies; submit 4 copies where required for maintenance manuals. The Landscape Architect will retain one and return the other marked with action taken.

a. Unless noncompliance with Contract Documents is observed, the submittal serves as the final submittal.

4. Distribution: Furnish copies to installers, subcontractors, suppliers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until a copy of Product Data is in the Installer's possession.

a. Do not use unmarked Product Data for construction.

G. Samples: Submit full-size Samples cured and finished as specified and identical with the material proposed. Mount Samples to facilitate review of qualities.

1. Include the following:

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

2. Submit Samples for review of size, kind, color, pattern, and texture, for a check of these characteristics, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed. Where variations are inherent in the material, submit at least 3 units that show limits of the variations.

a. Refer to other Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar characteristics.
b. Refer to other Sections for Samples to be incorporated in the Work. Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
c. Samples not incorporated into the Work, or designated as the Owner's property, are the Contractor's property and shall be removed from the site.

3. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from standard choices. The Architect will review and return submittals indicating selection and other action.

4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 3 sets. One set will be returned marked with the action taken. Maintain sets of Samples, at the Project Site, for quality comparison.

a. Unless noncompliance with Contract Documents is observed, the submittal may serve as the final submittal.
b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

5. Distribution of Samples: Distribute additional sets to subcontractors, manufacturers, and others as required for performance of the Work. Show distribution on transmittal forms.

H. Quality Assurance Submittals: Submit quality-control submittals, including design data, certifications, manufacturer's instructions, and manufacturer's field reports required under other Sections of the Specifications.

1. Certifications: Where certification that a product or installation complies with specified requirements is required, submit a notarized certification from the manufacturer certifying compliance.

a. Signature: Certification shall be signed by an officer authorized to sign documents on behalf of the company.

I. Sample Panels:

1. Contractor shall construct sample panels in accordance with the Technical Specifications for review and approval by Landscape Architect.
2. Samples shall be prepared in advance of construction sequencing to allow time for modifications and approvals.
3. Contractor shall allow Landscape Architect five days to respond to a request to see a sample.
4. Full scale construction of any work requiring a pre-approved sample shall not begin until after Landscape Architect issues a statement of approval.

J. Architect's Action: Except for submittals for the record or information, where action and return are required, the Architect will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

1. Action Stamp: The Architect will stamp each submittal with an action stamp. The Architect will mark the stamp appropriately to indicate the action taken.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01340

SHOP DRAWINGS

PART 1 GENERAL

1.01 SCOPE

A. The work under this Section includes submittal to the Owner's Representative of shop drawings, product data and samples required by the various sections of these Specifications. The following items will require shop drawings.

1. Guard Railings for the overlook decks
2. Bumper Rail attached to the back of the existing DOT rail.
3. Lake Lowering process and details as needed.

B. Electronic Submittals: The Client prefers electronic submittals of Shop Drawings to the Client Website.

C. Submittal Contents: The submittal contents required are specified in each section of the Project Manual Technical Specifications. Owner prefers electronic submittals.

D. Definitions: Submittals are categorized as follows:

1. Shop Drawings

a. Shop drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.

b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail Shop Drawings. Show dimensions and note dimensions that are based on actual field measurements. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawings to be used in connection with the Work without appropriate final "Action" markings by the Project Landscape Architect for Owner's Representative.

2. Product Data

a. Product data includes standard printed information on materials, products and systems, not specially prepared for this project, other than the designation of selections from among available choices printed therein.

b. Collect required data into one submittal for each unit of work or system and mark

each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked and special coordination requirements.

3. Samples

a. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.

b. Provide units identical with final condition of proposed materials or products for the work. Include “range” samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Project Landscape Architect's selection is required. Prepare samples to match the Project Landscape Architect's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and “kind” by the Project Landscape Architect. Project Landscape Architect will note “test” samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the Contractor.

4. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.02 ROUTING AND SUBMITTALS

A. Submittals and routine correspondence shall be routed as follows:
1. Supplier to Contractor (through product representative if applicable)
2. Contractor to Owner’s Representative to review/approve submittals.
3. Owner to forward to Landscape Architect or other professionals prior to submitting back to Contractor if deemed necessary.
4. Project Landscape Architect to Owner’s Representative to Contractor
5. Contractor to Supplier

PART 2 PRODUCTS

2.01 Manufacturer's Literature

A. Where content of submitted literature from manufacturers includes data not pertinent to this

submittal, clearly indicate which portion of the contents is being submitted for the Owner's Representative and Project Landscape Architect's review.

B. Submit the number of copies which are required to be returned (not to exceed (3) three) plus three copies which will be retained by the Owner's Representative.

2.02 Samples

A. Samples shall illustrate materials, equipment or workmanship and established standards by which completed work is judged.

B. Unless otherwise specifically directed by the Owner or Project Landscape Architect, all samples shall be of the precise article proposed to be furnished.

C. Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the Owner's Representative.

2.03 Colors

A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Owner's Representative for review and selection.

B. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

2.04 Footing Connectors:

Simpson Post Connector: OWT Ornamental Wood Ties,
(4x4 FPBIW) 51789 Faux Post Base for wooden post of guardrails.

PART 3 EXECUTION

3.01 Contractor's Coordination of Submittals

A. Prior to submittal for the Owner's Representative to review, the Contractor shall use all means necessary to fully coordinate all material, including the following procedures:

1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.
2. Coordinate as required with all trades and all public agencies involved.
3. Submit a written statement of review and compliance with the requirements of all applicable Technical Specifications as well as the requirements of this Section.

4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, all deviations from the Contract Documents.

B. Each copy of the shop drawings and data shall bear the Contractor's stamp showing that they have been so checked. Shop drawings submitted to the Owner's Representative without the Contractor's stamp will be returned to the Contractor for conformance with this requirement.

C. The Owner may back charge the Contractor for costs associated with having to review a particular shop drawing, product data or sample more than two times to receive a "No Exceptions Taken" mark.

D. Grouping of Submittals

1. Unless otherwise specifically permitted by the Owner's Representative, make all submittals in groups containing all associated items.

2. No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble the shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to the Owner's Representative along with Contractor's comments as to compliance, non-compliance or features requiring special attention.

E. Schedule of Submittals

1. Within 30 days of Contract award and prior to any shop drawing submittal, the Contractor shall submit a schedule showing the estimated date of submittal and the desired approval date for each shop drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the Contractor's responsibility and a measure of time allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted concurrently.

3.02 Timing of Submittals

A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.

B. In scheduling, allow sufficient time for the Owner's Representative and Project Landscape Architect's review following the receipt of the submittal.

3.03 Reviewed Shop Drawings

A. Owner's Representative Review

1. Allow a minimum of 30 days for the Owner's Representative initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The Owner's Representative will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of two weeks for reprocessing each submittal. Advise the Owner's Representative on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be foreshortened.

2. Acceptable submittals will be marked "No Exceptions Taken". A minimum of three copies will be retained by the Owner's Representative for Project Landscape Architect's and the Owner's use and the remaining copies will be returned to the Contractor.

3. Submittals requiring minor corrections before the product is acceptable will be marked "Make Corrections Noted". The Contractor may order, fabricate and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked "No Exceptions Taken" prior to installation or use of products.

4. Submittals marked "Amend and Resubmit" must be revised to reflect required changes and the initial review procedure repeated.

5. The "Rejected - See Remarks" notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the Contractor shall repeat the initial review procedure utilizing acceptable products.

6. Only two copies of items marked "Amend and Resubmit" and "Rejected - See Remarks" will be reviewed and marked. One copy will be retained by the Project Landscape Architect and the other copy with all remaining unmarked copies will be returned to the Contractor for resubmittal.

B. No work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" notation. The Contractor shall maintain at the job site a complete set of shop drawings bearing the Project Landscape Architect's stamp and approved by the Owner.

C. Substitutions: In the event the Contractor obtains the Owner's Representative approval for the use of products other than those which are listed first in the Contract Documents, the Contractor shall, at the Contractor's own expense and using methods approved by the Project Landscape Architect, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.

D. Use of the "No Exceptions Taken" notation on shop drawings or other submittals is general and shall not relieve the Contractor of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The Owner's Representative and or Project Landscape Architect's review shall not relieve the Contractor of responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site. The Contractor is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.04 Resubmission Requirements

A. Shop Drawings

1. Revise initial drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.

2. Indicate on drawings all changes which have been made other than those requested by the Owner's Representative.

B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

END OF SECTION 01340

SECTION 01400

QUALITY CONTROL

1.1 GENERAL

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

B. Contractor Responsibilities: Unless they are the responsibility of another entity, Contractor shall provide inspections and tests specified elsewhere and required by authorities having jurisdiction. Costs for these services shall be included in the Contract Sum.

1. Where inspections and tests are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform these services. Costs for these services are included in the Contract Sum.

2. Where inspections and tests are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.

3. Where inspections and tests are the Owner's responsibility, the Owner will engage the services of a qualified independent testing agency to perform those services. Payment will be made from the Inspection and Testing Allowance, as authorized by Change Orders.

    a. Where the Owner engages an agency to test or inspect part of the Work and the Contractor is required to engage an entity to test or inspect the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless the Owner agrees in writing.

C. Retesting: The Contractor is responsible for retesting where results of inspections and tests prove unsatisfactory and indicate noncompliance with requirements.

1. The cost of retesting is the Contractor's responsibility where tests performed indicated noncompliance with requirements.

D. Auxiliary Services: Cooperate with agencies performing inspections and tests. Provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include the following:

1. Providing access to the Work.
2. Furnishing incidental labor and facilities to assist inspections and tests.
3. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
4. Providing facilities for storage and curing of test samples.
5. Delivering samples to testing laboratories.

6. Providing preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Providing security and protection of samples and test equipment.

E. Duties of the Testing Agency: The testing agency shall cooperate with the Landscape Architect and the Contractor in performing its duties. The agency shall provide qualified personnel to perform inspections and tests.

1. The agency shall notify the Landscape Architect and the Contractor of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency shall not release, revoke, alter, or enlarge requirements or approve or accept any portion of the Work.
3. The agency shall not perform duties of the Contractor.

F. Coordination: Coordinate activities to accommodate services with a minimum of delay. Avoid removing and replacing construction to accommodate inspections and tests.

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

G. Submittals: The testing agency shall submit a certified written report, in duplicate, of each inspection and test to the Landscape Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection or test through the Contractor.

1. Submit additional copies of each report to the governing authority, when the authority so directs.

2. Report Data: Reports of each inspection, test, or similar service include, but are not limited to, the following:

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

H. Qualifications for Service Agencies: Engage inspection and testing service agencies that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each agency shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Repair and Protection: Upon completion of inspection, testing, and sample taking, repair damaged construction. Restore substrates and finishes. Comply with Division 1 Section "Cutting and Patching."

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

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for inspection and testing.

END OF SECTION 01400

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.1 GENERAL

A. Summary: This Section specifies construction facilities and temporary controls including temporary utilities, support facilities, and security and protection facilities.

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

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.

C. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

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

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

E. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. Submit reports of tests, inspections, meter readings, and procedures performed on temporary utilities. At the earliest time, change over from use of temporary service to use of permanent service.

1.2 PRODUCTS

A. Materials: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

1. Lumber and Plywood: Comply with Division 6 Section "Rough Carpentry." Provide UL-labeled, fire-treated lumber and plywood for temporary offices and sheds. Provide exterior, Grade B-B high-density concrete form overlay plywood for signs. Provide 5/8-inch- (16-mm-) thick exterior plywood for other uses.
2. Roofing Materials: UL Class A standard-weight asphalt shingles or UL Class C mineral-surfaced roll roofing on roofs of temporary offices, shops, and sheds.

3. Paint: Comply with Division 9 Section "Painting."

    a. For exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
    b. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.
    c. For interior walls of temporary offices, provide 2 coats interior latex-flat wall paint.

4. Tarpaulins: Waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
5. Water: Potable water approved by local health authorities.
6. Open-Mesh Fencing: 0.120-inch- (3-mm-) thick, galvanized 2-inch (50-mm) chain link fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches (38 mm) I.D. for line posts and 2-1/2 inches (64 mm) I.D. for corner posts.

B. Equipment: Provide new equipment. If acceptable to the Landscape Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

1. Water Hoses: 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long. Provide adjustable shutoff nozzles at hose discharge.
2. Electrical Outlets: Properly configured, NEMA-polarized outlets. Provide outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
3. Electrical Power Cords: Grounded extension cords. Use hard-service cords where exposed to abrasion and traffic.
4. Fire Extinguishers: Hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

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

1.3 EXECUTION

A. Installation, General: Use qualified personnel to install temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

1. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
2. Conditions of Use: Keep temporary facilities clean and neat in appearance. Operate safely and efficiently. Relocate as the Work progresses. Do not overload

facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

B. Temporary Utility Installation: Engage the local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect. Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders.
5. Temporary Water Service: Install temporary water service and distribution piping of sizes and pressures adequate for construction. Maintain service until permanent water service is in use. Sterilize piping prior to use.
6. Temporary Electric Power: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear. Install service underground.

    a. Power Distribution: Install wiring overhead and rise vertically where least exposed to damage.
    b. Temporary Lighting: Provide temporary lighting with local switching to fulfill security requirements and illumination for construction operations and traffic conditions.

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

    a. Heating Facilities: Except where the Owner authorizes use of the permanent system, provide vented, self-contained, LP-gas or fuel oil heaters with individual space thermostatic control. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.

8. Sanitary Facilities: Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. Provide toilet tissue, paper

towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers.

a. Toilets: Install self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

1) Provide separate facilities for male and female personnel.

b. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up. Dispose of drainage properly. Supply cleaning compounds.

1) Provide safety showers, eyewash fountains, and similar facilities for safety, and sanitation of personnel.

c. Drinking-Water Facilities: Provide containerized, tap-dispenser, bottled drinking-water units.

9. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

a. Filter out soil, construction debris, chemicals, and similar contaminants that might clog sewers or pollute waterways.

b. Connect temporary sewers to the municipal system, as directed by sewer department officials. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

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

C. Support Facilities Installation: Locate field offices, storage sheds, and other construction and support facilities for easy access and in coordination with the Owner. Maintain facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

1. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet (9 m) of building lines. Comply with requirements of NFPA 241.

2. Field Offices: Provide heated and air-conditioned, insulated, weather tight temporary offices of size to accommodate personnel at the Project Site. Provide offices on foundations adequate for normal loading. Provide units with lockable entrances, operable windows, and serviceable finishes. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:

    a. Furnish field offices with a desk and chairs, a 4-drawer file cabinet, plan table, plan rack, and a 6-shelf bookcase. Equip with a water cooler and toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.

3. Storage and Fabrication Sheds: Install sheds equipped to accommodate materials and equipment involved. Sheds may be open shelters or fully enclosed spaces within the building. Locations to be determined with the owner on site.

4. Temporary Paving: Construct temporary paving for roads, storage areas, and parking where the same permanent facilities will be located. Comply with Division 2 Section "Hot-Mixed Asphalt Paving."

    a. Coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of base and finish courses of permanent paving.

        1) Install temporary paving to minimize the need to rework the installations and to result in permanent roads and paved areas without damage or deterioration when occupied by the Owner.

    b. Delay installation of the final course of permanent paving until immediately before Substantial Completion. Coordinate with weather conditions to avoid unsatisfactory results.
    c. Extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration, and supervision.

5. Dewatering Facilities and Drains: For temporary drainage and dewatering operations not directly associated with construction, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain excavations and construction free of water.
6. Temporary Enclosures: Provide temporary enclosures for protection of construction from exposure, foul weather, other construction operations, and similar activities. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions.

    a. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.

b. Close openings through floor or roof decks and horizontal surfaces with load bearing, wood-framed construction.

7. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees.
8. Temporary Elevator Use: Refer to Division 14 Sections for elevators.
9. Project Signs: Install project identification and other signs where indicated to inform the public and persons seeking entrance to the Project. Support on framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs. Engage an experienced sign painter to apply graphics. Comply with details indicated.
10. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.
11. Waste Collection and Disposal: Collect waste daily. Comply with requirements of NFPA 241. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

    a. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80° F (27° C).

12. Stairs: Provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with a protective covering of plywood or similar material so finishes will be undamaged at the time of acceptance.

D. Security and Protection Facilities Installation: Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion.

1. Temporary Fire Protection: Until permanent facilities supply fire-protection needs, install and maintain temporary fire-protection facilities of types needed to protect against controllable fire losses. Comply with NFPA 10 and NFPA 241.

    a. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell. Maintain unobstructed access to fire extinguishers.
    b. Store combustible materials in containers in fire-safe locations.
    c. Prohibit smoking in hazardous fire-exposure areas.
    d. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

3. Barricades, Warning Signs, and Lights: Comply with code requirements for erection of barricades. Paint with appropriate colors, graphics, and warning signs. Where appropriate and needed, provide lighting, including flashing red or amber lights.

4. Enclosure Fence: If possible, before excavation begins, install an enclosure fence with lockable entrance gates to enclose the entire site or the portion sufficient to accommodate construction.

    a. Provide open-mesh, chain link fencing with posts set in a compacted mixture of gravel and earth.

    b. Provide plywood fence, 8 feet (2.5 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, and preservative-treated wood posts spaced not more than 8 feet (2.5 m) apart.

6. Security Enclosure and Lockup: Where possible, install temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, and theft. Provide a secure lockup where materials and equipment are of value and must be stored.

7. Environmental Protection: Operate temporary facilities and conduct construction in ways that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making equipment to hours that will minimize complaints.

E. Operation: Enforce discipline in use of temporary facilities. Limit availability to intended uses to minimize waste and abuse.

F. Maintenance: Maintain facilities in operating condition until removal. Protect from damage by freezing temperatures and similar elements. Maintain temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid damage.

G. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect during excavation.

H. Termination and Removal: Remove each temporary facility when the need has ended, when replaced by a permanent facility, or no later than Substantial Completion. Complete or restore permanent construction delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

2. Remove temporary paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with oil, asphalt and other petrochemical compounds, and substances that might impair growth of plant materials or lawns. Repair or replace paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.

END OF SECTION 01500

SECTION 01600

MATERIALS AND EQUIPMENT

1.1 GENERAL

A. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock.

1. "Named Products" are items identified by the manufacturer's product name, including make or model number or designation, shown or listed in the manufacturer's published product literature.

B. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

D. Product List: A list of products required is included at the end of this Section. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed. Coordinate product list with the Contractor's Construction Schedule and Submittal Schedule.

1. Form: Prepare product list with information on each item tabulated under the following column headings:

a. Related Specification Section number.
b. Generic name used in Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.

2. Within 60 days after date of commencement of the Work, submit 3 copies of the product list. Provide a written explanation for omissions of data and variations from Contract requirements.
3. The Architect will respond within 2 weeks of receipt of the list. No response within this period constitutes no objection to listed manufacturers or products but does not waive the requirement that products comply with Contract Documents. The Architect's response will include a list of unacceptable products.

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

1. When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected.

F. Nameplates: Except for required labels and operating data, do not attach manufacturer's nameplates or trademarks on surfaces exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

   a. Name of product and manufacturer.
   b. Model and serial number.
   c. Capacity.
   d. Speed.
   e. Ratings.

G. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage and to prevent overcrowding construction spaces. Coordinate with installation to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
2. Deliver products in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
3. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
4. Store products to facilitate inspection and measurement of quantity or counting of units. Store heavy materials away from the structure in a manner that will not endanger the supporting construction.
5. Store products subject to damage by the elements aboveground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.2 PRODUCTS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.

2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.

    a. Where products are specified by name, accompanied by the term "or equal," comply with provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
4. Descriptive Specification Requirements: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that provides the characteristics and otherwise complies with requirements.
5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply and are recommended for the application. Manufacturer's recommendations may be contained in product literature or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
7. Visual Matching: Where Specifications require matching a Sample, the Architect's decision on whether a product matches will be final. Where no product in the specified category matches and complies with other requirements,

comply with provisions concerning "substitutions" for selection of a matching product in another category.

8. Visual Selection: Where requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product that complies with other requirements. The Architect will select the color, pattern, and texture from the product line selected.

1.3 EXECUTION

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

END OF SECTION 01600

SECTION 01631

SUBSTITUTIONS

1.1 GENERAL

A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed after award of the Contract are considered requests for substitutions. The following are not a request for substitutions:

1. Substitutions requested during the bidding period and accepted by Addendum prior to award of the Contract.
2. Revisions to the Contract Documents requested by the Owner.
3. Specified options included in the Contract Documents.
4. Contractor's compliance with regulations issued by governing authorities.

B. Substitution Request Submittal: The Architect/Engineer or Client Representative will consider requests for substitution received within 60 days after commencement of the Work.

1. Submit 3 copies of each request for substitution. Submit requests according to procedures required for change-order proposals.
2. Identify the product or method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide documentation showing compliance with the requirements for substitutions and the following information:

    a. Coordination information, including a list of changes needed to other Work that will be necessary to accommodate the substitution.
    b. A comparison of the substitution with the Work specified, including performance, weight, size, durability, and visual effect.
    c. Product Data, including Drawings and descriptions of products and installation procedures.
    d. Samples, where applicable or requested.
    e. A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the substitution on Contract Time.
    f. Cost information, including a proposal of the net change, if any in the Contract Sum.
    g. Certification that the substitution conforms to the Contract Documents and is appropriate for the applications indicated.
    h. The Contractor's waiver of rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.

4. Architect's Action: If necessary, the Architect will request additional information within one week of receipt of a request for substitution. The Architect will notify

the Contractor of acceptance or rejection within 2 weeks of receipt of the request. Acceptance will be in the form of a change order.

a. Use the product specified if the Architect cannot make a decision within the time allocated.

1.2 PRODUCTS

A. Conditions: The Architect will receive and consider a request for substitution when one or more of the following conditions are satisfied. Otherwise, the Architect will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Changes are in keeping with the intent of the Contract Documents.
3. The specified product cannot be provided within the Contract Time. The Architect will not consider the request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
4. The request is related to an "or-equal" clause.
5. The substitution offers the Owner a substantial advantage, in cost, time, or other considerations, after deducting compensation to the Architect for redesign and increased cost of other construction.
6. The specified product cannot receive approval by a governing authority, and the substitution can be approved.

B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction not complying with the Contract Documents do not constitute an acceptable request for substitution, nor do they constitute approval.

1.3 EXECUTION (Not Applicable)

END OF SECTION 01631

SECTION 01700

CONTRACT CLOSEOUT

1.1 GENERAL

A. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

B. Substantial Completion: Before requesting inspection for certification of Substantial Completion, complete the following:

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the Work claimed as substantially complete.

    a. Include supporting documentation for completion and an accounting of changes to the Contract Sum.

2. Advise the Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
4. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
5. Deliver tools, spare parts, extra stock, and similar items.
6. Complete final cleanup requirements, including touchup painting.
7. Touch up and repair and restore marred, exposed finishes.

C. Inspection Procedures: On receipt of a Request for Inspection, the Landscape Architect will proceed or advise the Contractor of unfilled requirements. The Landscape Architect will prepare the Certificate of Substantial Completion following inspection or prepare a Punch List to advise the Contractor of construction items that must be completed or corrected before the certificate will be issued.

1. The Landscape Architect will repeat inspection when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

D. Final Acceptance: Before requesting inspection for certification of final acceptance and final payment, complete the following:

1. Final payment request with releases and supporting documentation. Include insurance certificates where required.
2. Submit a statement, accounting for changes to the Contract Sum.
3. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.

4. Submit final meter readings for utilities, a record of stored fuel, and similar data as of the date of Substantial Completion.
5. Submit consent of surety to final payment.
6. Submit a final settlement statement.
7. Submit evidence of continuing insurance coverage complying with insurance requirements.

E. Re-inspection Procedure: The Landscape Architect will re-inspect the Work upon receipt of notice that the Work has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.

1. Upon completion of re-inspection, the Landscape Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Landscape Architect will advise the Contractor of Work that is incomplete or obligations that have not been fulfilled but are required in the form of a Punch List.
2. If necessary, re-inspection will be repeated.

F. Record Document Submittals: Do not use record documents for construction. Protect from loss in a secure location. Provide access to record documents for the Landscape Architect's reference.

G. Record Drawings: Maintain a set of prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark the drawing most capable of showing conditions fully and accurately. Give attention to concealed elements.

1. Mark sets with red pencil. Use other colors to distinguish between variations in separate categories of the Work.
2. Organize record drawing sheets into manageable sets. Bind with durable-paper cover sheets, print titles, dates, and other identification on the cover of each set.
3. Upon completion of the work, submit one reproducible copy of the Record Drawings to the Owner.

H. Record Specifications: Maintain one copy of the Project Manual, including addenda. Mark to show variations in Work performed in comparison with the text of the Specifications and modifications. Give attention to substitutions and selection of options and information on concealed construction. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Landscape Architect for the Owner's records.
2. Submit complete copies of all testing data and shop drawings to the Owner.

I. Maintenance Manuals: Organize operation and maintenance data into sets of manageable size. Bind in individual, heavy-duty, 2-inch (51-mm), 3-ring, binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Shop Drawings and Product Data.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires maintenance to provide instruction in proper operation and maintenance. Include a detailed review of the following items:

1. Maintenance manuals.
2. Spare parts, tools, and materials.
3. Lubricants and fuels.
4. Identification systems.
5. Control sequences.
6. Hazards.
7. Warranties and bonds.
8. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following:

1. Startup and shutdown.
2. Emergency operations and safety procedures.
3. Noise and vibration adjustments.

C. Final Cleaning: Employ experienced cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Complete the following operations before requesting inspection for certification of Substantial Completion.

1. Remove labels that are not permanent labels.
2. Clean transparent materials, including mirrors and glass. Remove glazing compounds. Replace chipped or broken glass.
3. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances. Leave concrete floors broom clean. Vacuum carpeted surfaces.
4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication. Clean plumbing fixtures. Clean light fixtures and lamps.
5. Clean the site of rubbish, litter, and foreign substances. Sweep paved areas; remove stains, spills, and foreign deposits. Rake grounds to a smooth, even-textured surface.

D. Pest Control: Engage a licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.

E. Removal of Protection: Remove temporary protection and facilities.

F. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials and dispose of lawfully.

END OF SECTION 01700

SECTION 01740

WARRANTIES

1.1 GENERAL

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
2. Refer to Section 02900 for plant material warranties.
3. All conditions of this Section shall also apply to warranties stated in other sections.

4’ Refer to WaterSplash manual for warranties on products and materials.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as

limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
2. Where the Contract Documents require a special warranty, or similar commitment, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

H. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

I. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

J. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (*115-by-280-mm*) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. List of Warranties: As follows:
Irrigation, Planting, Fountain, Lighting, Electrical and any other products under warranty.

B. Schedule: Provide warranties on products and installations as specified in the included Sections: Division 2, thru Division 16.

END OF SECTION 01740

CONTRACTOR WARRANTY FORM

PROJECT: CITY OF BROOKHAVEN – MURPHEY CANDLER PARK IMPROVEMENTS
MULTIUSE TRAIL ON DAM

LOCATION: BROOKHAVEN, GEORGIA

OWNER: CITY OF BROOKHAVEN

GENERAL CONTRACTOR:

We _____, contractor
(Company Name)

for _____, as described in Specification Section (s)
(list trade)

_____ do hereby warrant
(list appropriate sections of specifications)

that all labor and materials furnished and work performed in conjunction with the above referenced project are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one year from Date of Substantial Completion and that all street signs will be free from defects due to defective materials or workmanship for a period of seven years from Date of Substantial Completion.

This warranty commences at 12:00 noon on _____

and expires at 12:00 noon on _____. Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be repaired or replaced by the undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

DATE: _____ FOR: _____
(COMPANY NAME)

BY: _____

TITLE: _____

END OF SECTION 01740A

SUB-CONTRACTOR WARRANTY FORM

PROJECT: CITY OF BROOKHAVEN – MURPHEY CANDLER PARK IMPROVEMENTS
MULTIUSE TRAIL ON DAM

LOCATION: BROOKHAVEN, GEORGIA

OWNER: CITY OF BROOKHAVEN

SUB-CONTRACTOR:

We _____, sub-contractor
(Company Name)

for _____, as described in Specification Section (s)
(list trade)

_____ do hereby warrant
(list appropriate sections of specifications)

that all labor and materials furnished and work performed in conjunction with the above referenced project are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one year from Date of Substantial Completion and that all street signs will be free from defects due to defective materials or workmanship for a period of seven years from Date of Substantial Completion.

This warranty commences at 12:00 noon on _____

_____ and expires at 12:00 noon on _____. Should by any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be repaired or replaced by the undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

DATE: _____ FOR: _____
(COMPANY NAME)

BY: _____

TITLE: _____

END OF SECTION 01741

Matrix Engineering Group, Inc.
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EARTHWORK

Matrix Report # 1

Project Name: Murphy Candler Park - Dam Boardwalk (Geotechnical) **Date:** 5/6/2020 **Day:** Wednesday

Project No: 302400 **Weather:** Overcast

Representative: Sam Alyateem, PE **Temperature:** 50 - 70°

General Contractor: N/A **Evaluation Type:** Earthwork

Rainfall Amount: 0 inch

Location: West Nancy Creek Drive Right-of-Way (Refer to Figure)

Matrix Engineering Group, Inc. completed the authorized subsurface exploration at the Murphy Candler Park. This work was performed in accordance with our proposal dated April 17, 2020 and authorized via email on April 20, 2020 by Mr. Lee Croy of Broohaven City. The objective of this work was to explore the subsurface conditions along the top of the existing dam at select locations and provide prelininary soil information in the planning and/or design of a proposed boardwalk.

Based on a site meeting with Mr. Lee Croy, we understand that a boardwalk, approximately 6 feet wide, is proposed along the entire lake frontage with West Nancy Creek Drive NE. The board walk will be supported on foundations constructed within the existing slope of the dam. Since the slope along facing the lake has been stabilized with rip-rap rock, the surface of the slope (soil) was not accessible for testing. Therefore, Mr. Croy requested that an attempt be made at the top of the slope and if penetration was not possible as a result of rock boulders, testing should be attempted on the southern ROW of West Nancy Creek Drive NE to obtain general soil information.

A total of ten (10) attempts were made. Refer to the attached Figure for the approximate test locations.

The soil consistency and bearing capacity were evaluated in general accordance with ASTM STP-399 using a portable hand auger and Dynamic Cone Penetrometer device. The DCP device consists of a cone tip which drives into the soil, and a 15-lb ring-weight hammer falling freely 20 inches at the top. The number of hammer blows required to drive the samples 1.75 inches is recorded and is designated as the Blow Count. The blow counts, when properly evaluated and correlated to the Standard Penetration Test Resistance (SPT), is an index of the soil strength, consistency and ability to support foundations. The number of blow counts per increment (bpi) was counted and recorded.

The test borings were backfilled with the soil cuttings upon the completion of DCP testing. Some consolidation of the backfilled soil column should be expected.

Seven (7) attempts were made along the lake frontage (northern ROW) designated as H-1 to H-7. Penetration was only possible at test location H-7 extended to 6 feet Below Ground Surface (BGS). Tests H-1 to H-6 encountered rock boulders within a few inches below the existing surface with a maximum of 11 inches penetration at H-6. Test soil at test boring H-7 consisted of loose brown silty sand changing to soft clayey silty at 3 feet BGS. The soil then changed to stiff and very stiff clayey silt at 3.5 feet up to the termination depth. The Dynamic Cone Penetrometer test results ranged between 3 blow per increment (bpi) to greater than 15 bpi. Refer to the test boring logs attached to this report.

Tests H-8, H-9, and H-10 were performed along the southern ROW. The test borings were extended up to a maximum of 7 feet BGS. The soil generally consisted of soft to stiff clayey silt with inclusions of trace of roots and some decomposed organics. The consistency ranged between 6 bpi to 15 bpi.

FINDINGS AND RECOMMENDATIONS

Based on the test borings, we anticpate that rock fragments to be encountered during foundations preperation if the

foundations are supported on the top of the slope. The design should anticpate that foundations constructed on top of the slope to require excavation on the order of 24 inches compact the bottom of the excavation and placed crushed stone layer below the foundation to provide a uniform bearing support for the boardwalk. An allowable of soil bearing capacity of 2,000 can be assumed for the design of the foundations constructed at the top of the slope.

Foundations constructed within the slope will require removal of rip-rap rock that is currently covering the surface. After removal of the rock, the exposed surface of the slope should be evaluated by the soil engineer to confirm consistency of the soil and its bearing capacity. If the soils encountered are similar to the subsurface conditions found at test boring H-8, H-9, and H-10, we recommend that an allowable soil bearing capacity of 1,500 be assumed provided that an inspection is performed during the foundation preparation. Soft soils should be anticipated that may require stabilization to provide the required bearing capacity. Stabilization may include additional excavation of soft soils, placement of geotextile fabric (TerraTex HD or equivalent) and crushed tone as warranted by the field conditions.

Sam Alyateem
Prepared By

Reviewed By

Respectfully submitted
MATRIX ENGINEERING GROUP, INC.

Matrix Engineering Group, Inc.
engineers | special inspectors | construction consultants

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EARTHWORK

Project Name: Murphy Candler Park - Dam Boardwalk (Geotechnical) **Date:** 5/6/2020 **Day:** Wednesday

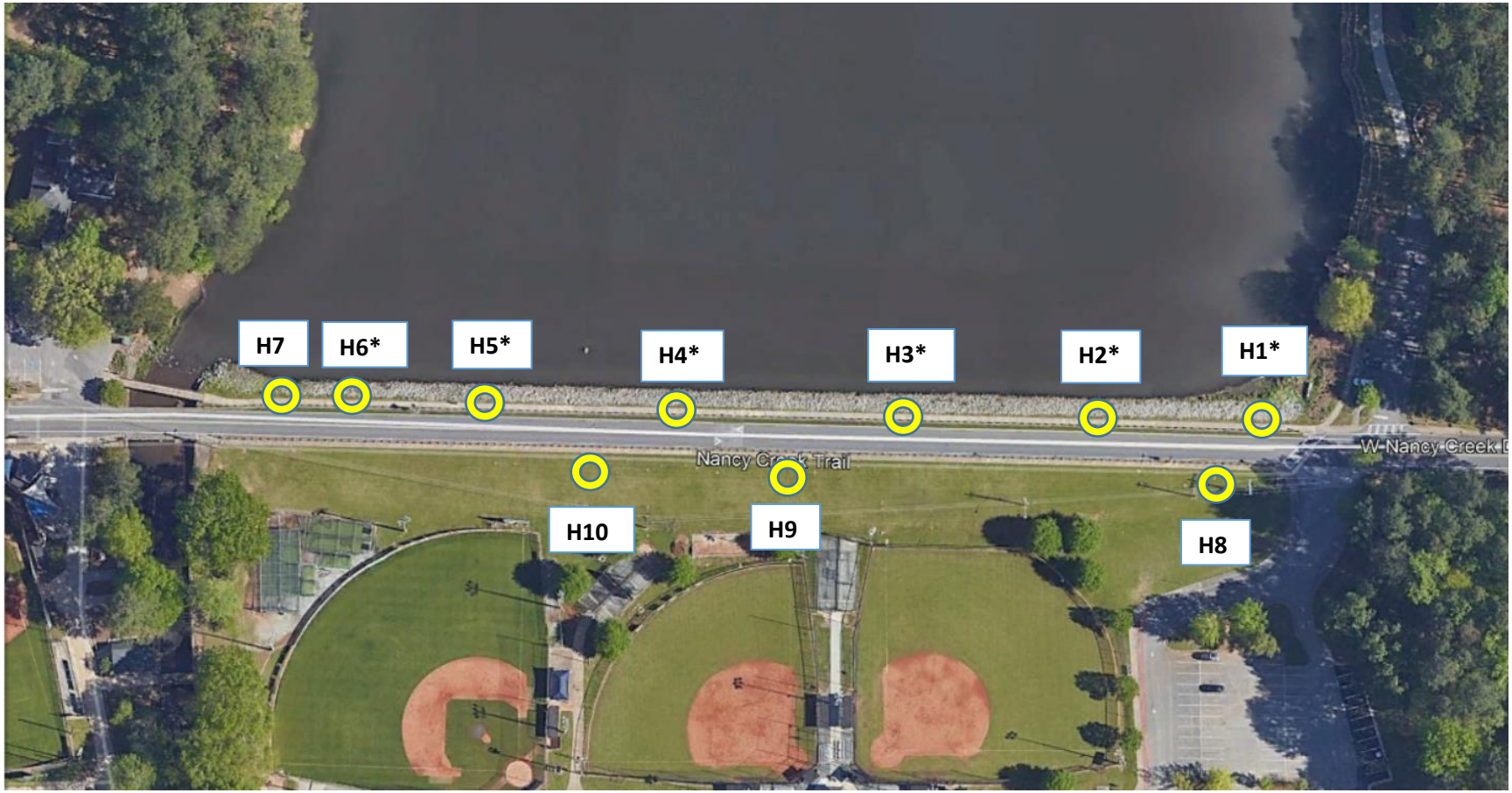
Project No: 302400 **Weather:** Overcast

Representative: Sam Alyateem, PE **Temperature:** 50 - 70°

General Contractor: N/A **Rainfall Amount:** 0 inch

For action items found during this evaluation					
Ref#	**Deficiency(Action Item)**	**Location**	**Addressed By**	**Date**	**Action Taken**
There are no corrective action items for this report.					
Additional Comments:					

Matrix Reviewer



* = Shallow Auger Refusal

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental & Construction Materials Consultants

DRILL HOLE LOG

BORING NO. H1 - H5

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Northern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● 10 20 30 40 50	STP 399
	0						
	0.5	**FILL - Gravel.**	GP				
	1	**Auger Refusal due to the presence of rock.**					
	1.5						
	2						
	2.5						
	3						
	3.5						
	4						
	4.5						
	5						
	5.5						
	6						
	6.5						
	7						
	7.5						
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Auger Refusal was encountered at depths ranging from 2 to 5 inches.

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DRILL HOLE LOG

BORING NO. H6

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Northern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● (10 20 30 40 50)	STP 399
	0						
	0.5	**FILL - Loose, Light Brown, Low Plasticity, Silty Sand with Gravel.**	FILL			●	8
	1	**Auger Refusal encountered at 11 inches due to the presence of rock.**					
	1.5						
	2						
	2.5						
	3						
	3.5						
	4						
	4.5						
	5						
	5.5						
	6						
	6.5						
	7						
	7.5						
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Ground water was not encountered within the drilled depth of the boring at the time of drilling. Boring was backfilled with boring soil cuttings.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental & Construction Materials Consultants

DRILL HOLE LOG

BORING NO. H7

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Northern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● (10 20 30 40 50)	STP 399
	0						
	0.5	**FILL - Loose, Light Brown, Low Plasticity, Silty Sand with Gravel.**	FILL				
	1						
	1.5	**Loose, Light Brown, Low Plasticity, Silty Sand, with rock fragments.**					10
	2						
	2.5						3
	3	**Soft, Mottled(Yellowish Brown and Light Brown), Medium to High Plasticity, Clayey Silt.**					
	3.5						11
	4	**Stiff, Light Brown, Micaceous, Low Plasticity, Sandy Silt.**					
	4.5						15+
	5	**Very Stiff, Dark Brown, Micaceous, Low Plasticity, Sandy Silt.**					
	5.5						
	6						13
	6.5	**Boring terminated at 6 ft BGS.**					
	7						
	7.5						
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Ground water was not encountered within the drilled depth of the boring at the time of drilling. Boring was backfilled with boring soil cuttings.

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental & Construction Materials Consultants

DRILL HOLE LOG

BORING NO. H8

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Southern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● (10 20 30 40 50)	STP 399
	0						
	0.5	**3 to 4 inches of Topsoil.**					
	1	**FILL - Stiff, Light Brown, Low Plasticity, Sandy Silt, with hairline roots.**	FILL				15
	1.5						
	2						
	2.5						8
	3	**Loose, Grayish Brown, Micaceous, Low Plasticity, Silty Sand.**					
	3.5						6
	4						
	4.5	**Boring was terminated at 4 ft BGS.**					
	5						
	5.5						
	6						
	6.5						
	7						
	7.5						
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Ground water was not encountered within the drilled depth of the boring at the time of drilling. Boring was backfilled with boring soil cuttings.

This information pertains only tothis boring and should not be interpreted as being indicitive of the site.

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental & Construction Materials Consultants

DRILL HOLE LOG

BORING NO. H9

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Southern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● (10 20 30 40 50)	STP 399
	0						
	0.5	**4 to 6 inches of Topsoil.**					
	1	**FILL - Firm, Light Brown, Low Plasticity, Sandy Silt, with hairline roots, and rock fragments.**	FILL				
	1.5						
	2	**Soft, Light Brown, Medium to High Plasticity, Clayey Silt.**					7
	2.5						
	3	**Becomes Stiff.**					9
	3.5						
	4						
	4.5	**Stiff, Light Brown, Low Plasticity, Sandy Silt.**					10
	5						
	5.5	**Color Changes to Mottled(Light Brown and Dark Gray), Low to Medium Plasticity, Sandy Silt, with occasional tiny rounded course sand.**					15
	6						11
	6.5	**Boring was terminated 6 ft BGS.**					
	7						
	7.5						
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Ground water was not encountered within the drilled depth of the boring at the time of drilling. Boring was backfilled with boring soil cuttings.

This information pertains only tothis boring and should not be interpreted as being indicitive of the site.

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental & Construction Materials Consultants

DRILL HOLE LOG

BORING NO. H10

File: murphey dam walk Date Printed: 5/7/2020

PROJECT: Murphey Candler Park - Dam Boardwalk **PROJECT NO.:** 302400
CLIENT: City of Brookhaven **DATE:** 05/05/2020
LOCATION: Southern Side of W Nancy Creek Drive NE **ELEVATION:**
DRILLER: Matrix Engineering Group **LOGGED BY:** Ashraf Abukhalaf
DRILLING METHOD: ASTM D STP 399 **STATION:**
DEPTH TO - WATER> INITIAL: **After 48+ Hours:** **CAVING>** C

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%). ▲ Penetration - ● (10 20 30 40 50)	STP 399
	0						
	0.5	**4 to 6 inches of Topsoil.**					
	1	**FILL - Firm, Mottled (Light Brown and Yellowish Brown), Low to Medium Plasticity, Sandy Silt.**	FILL				
	1.5						
	2	**Firm, Light Brown, Low Plasticity, Sandy Silt.**					7
	2.5						
	3						11
	3.5	**Becomes Stiff.**					
	4						
	4.5						10
	5	**Stiff, Mottled (Gray and Light Brown), Medium to High Plasticity, Clayey Silt, with some decomposed organics.**					
	5.5						
	6						9
	6.5						
	7	**Loose, Grayish Brown, Micaceous, Low Plasticity, Sandy Silt.**					9
	7.5	**Boring was terminated at 7 ft BGS.**					
	8						
	8.5						
	9						
	9.5						
	10						
	10.5						
	11						
	11.5						
	12						
	12.5						
	13						

Ground water was not encountered within the drilled depth of the boring at the time of drilling. Boring was backfilled with boring soil cuttings.

corblu
ECOLOGY GROUP

January 22, 2021

Mr. Mack Cain
Clark Patterson Lee
3011 Sutton Gate Drive, Suite 130
Suwanee, GA 30024

VIA E-MAIL

Subject: **Letter of No Permit Required**
Murphy Candler Park – Multi-Use Trail Project on Dam
Brookhaven, Georgia
Corblu Project No. 02-051019

Dear Mr. Cain:

In response to your recent request, Corblu Ecology Group, LLC (Corblu) is pleased to submit this evaluation of the proposed recreational trail to be located within Murphy Candler Park in Brookhaven, Georgia, with specific reference to the trail segment proposed to traverse the top of the existing Murphy Candler Lake dam.

Based on our review of the layout plan provided by you for the multi-use trail and previous site visits to the subject site, we believe the project does not require authorization from the U.S. Army Corps of Engineers (USACE). The trail at this location will be constructed entirely within uplands (i.e., dam surface) and no impacts to jurisdictional waters (i.e., Murphy Candler Lake) are proposed; therefore, no USACE coordination or authorization is required.

Additionally, as proposed, the multi-use trail on the dam does not require a stream buffer variance authorization from the Georgia Environmental Protection Division (EPD) at this location. The lake-side of the dam is lined with rip-rap along the edge of the subject lake and does not exhibit a “point-of-wrested vegetation which is necessary to establish a protected buffer; therefore, coordination or a variance from the EPD is not required.

Corblu appreciates this opportunity to assist you with this project. Please contact the undersigned at (770) 591-9990 if you have any questions regarding this letter.

Sincerely,

CORBLU ECOLOGY GROUP, LLC

Törren Hoyord, CE, WPIT
Project Scientist

Richard W. Whiteside, PhD, CWB, CSE
President

MURPHEY CANDLER PARK – MULTIUSE TRAIL ON THE DAM

Team Contact information:

1. Georgia DNR - Safe Dams Department:

The Georgia Safe Dams Department has jurisdiction over this dam and will be the final authority on approving whatever is done on the face of the dam and the processes used. They have reviewed the drawings and provided their approval. Any questions arising that may need their input, the contractor is instructional to contact the following person:

Kate Betsill
Environmental Engineer
Georgia Safe Dams Program
2 Martin Luther King Jr. Drive, S.E.
Atlanta, GA 30334
O 404-232-7844
C 404-535-1150
kate.betsill@dnr.ga.gov

2. Engineer of Record – Multiuse Trail:

The city of Brookhaven has retained Atlas to be the Engineer of Record for the project and will be responsible for inspecting and approving the work completed by the contractor for the city. Atlas has been involved with CPL in the process of preparing the plans and meeting with Safe Dams to ensure the integrity of the work. IF the contractor needs to contact Atlas for any reason, please contact the person listed below.

Jonathan P. Sharpe, P.E.
Engineering Department Manager
ATLAS:
Formerly: **Piedmont Geotechnical Consultants**
3000 Northfield Place, Suite 1100
Roswell, GA 30076
O: 770.752.9205
C: 770.312.3074
Jonathan.Sharpe@oneatlas.com

3. Spillway Repair and Maintenance – Project Manager

Tom Roberts, P.E.
Stormwater Manager
City of Brookhaven
mobile 404.906.2747

office 404.637.0528
Tom.Roberts@BrookhavenGA.gov
www.BrookhavenGA.gov
4362 Peachtree Rd. Brookhaven, GA 30319

4. **Spillway Repair Engineer:**

Sam Crampton, P.E., CFM
Associate Vice President
Dewberry
2835 Brandywine Road, Suite 100
Atlanta, Georgia 30341-4015
678.537.8622 office
404.308.1286 cell
678.530.0044 fax
scrampton@dewberry.com

5. **Brookhaven City Officials:**

Tom Roberts, P.E.
Stormwater Manager
City of Brookhaven
mobile 404.906.2747
office 404.637.0528
Tom.Roberts@BrookhavenGA.gov
www.BrookhavenGA.gov
4362 Peachtree Rd. Brookhaven, GA|30319

Tim Ward, P.E., CFM
City Engineer
Community Development Department
City of Brookhaven, GA 30319
Cell: 678-644-6421
Direct: 404-637-0486
Main: 404 637-0500
Tim.Ward@BrookhavenGA.gov
www.BrookhavenGA.gov
4362 Peachtree Rd. Brookhaven, GA|30319

Don Sherrill, PE, PLS, PMP
Public Works Deputy Director
City of Brookhaven
404-637-0682
don.sherrill@brookhavenga.gov

Permit Extension Approval

Application #-BLC21-00007
Address-4051 Candler Lake
Date- 9/15/2021

Extension- (1) (2) (3)
Conditions- none
Per the code section listed below you are approved for this extension request. Please note that this is the first of three approvals available with the Building Official.

Sec. 7-118. - Permits.
(g)
Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless a permit has been issued. The building official is authorized to grant up to three written extensions of time for additional periods not exceeding 90 days each before such application is declared abandoned. The extension shall be requested in writing and justifiable cause demonstrated.

Steve Holder, CBO
Building Official
City of Brookhaven
☎ 404-637-0740
steve.holder@BrookhavenGA.gov
www.BrookhavenGA.gov
4362 Peachtree Rd.|Brookhaven, GA|30319

SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

Related Section 02200 Earthwork, and Section 02540 Erosion and Sediment Control,

1.2 SCOPE:

A. This Section describes materials and equipment to be utilized and requirements for their use in preparing the work site for construction. The Contractor shall furnish all materials, equipment, and labor necessary to complete the work. Precautionary measures that prevent damage to existing trees and other site features to remain are part of the Work.

B. LDP Permit: Client has submitted plans to the city for approval. The LDP permit number is LDP21-00005. Contractor will have to retrieve it before starting construction.

C. A City Building Permit application has also been submitted. The Brookhaven building permit number is BLC21-00007.

D. Traffic Control: Contractor shall prepare a Traffic Control Plan to submit upon award of the contract. Contractor shall secure approval of a Traffic Control Plan from the Brookhaven Police Department prior to beginning work.

It is anticipated that the concrete can be pumped or poured from the edge of West Nancy Creek Drive on the dam. The traffic control plan shall address this issue.

E. Contractor may not close both lanes of Nancy Creek Drive across the dam at any given time. At least one lane must remain open at all times. At any time that one lane is closed the contractor must provide traffic control flagmen during the entire period the lane is closed.

F. Any damage done to the rail, turf, curb or roadway on the dam will have to repaired to original condition by the contractor.

G. Contractor may opt to pour concrete during late nights with approval by the city.

H. Construction Access shall conform to all erosion control protection requirements.

I. Local Codes: Comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction. All required permits of a temporary nature shall be obtained for construction operations by the Contractor.

J. Grading and excavation operations on the dam shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

K. Underground Utilities: There appears to be a gas line and possible telephone line on the lake side of the dam. Prior to any construction activities, the contractor is responsible for locating all utility lines crossing the dam that may be in the construction zone. Once located the contractor shall also dig a test pit to locate the depth of the lines to determine if they represent a hazard or impediment to the construction of the project as designed.

L. Contractor shall take special care to not damage the existing DOT guardrail that runs along the top of the dam and is within the limits of construction. In the event that the rail is damaged, the contractor shall demolish and repair the guardrail to the specifications of the DOT.

M. Contractor shall always maintain reasonable access to the park and lake for use of the citizens. Access to the lake along the face of the dam is not required.

N. Lake Lowering Plan: It is anticipated that the contractor will be required to lower the lake a minimum of 5 feet below the bottom of the footing excavation to execute the construction.

The lake should not have a drawdown or refill at a maximum rate faster than 1' per week per the SD standards. Once the lake is drawn down, the contractor shall request and inspection of the dam by Safe Dams and shall inform the city so that they may arrange an inspection of the exposed spillway, standpipe weir, and spillway release channel.

Contractor shall prepare a plan for lowering the lake in accordance with the stated criterial and submit with bid proposal. Schedule and work method must be coordinated with the City of Brookhaven Spillway Maintenance project and drainpipe repair project. The contactor shall be responsible for securing any and all permits relative to lowering the lake. An ACOE permit is *'not needed'* for lowering the lake.

Sections 02880 By-Pass Pumping and 02285 Surface Water Diversion and Dewatering have been provided in the Project Manual as Reference Specs to assist the Contractor in preparing his Lake Lowering Plan. Contractor is fully responsible for the design and execution of the Lake Lowering process.

O. Siphon hoses for lowering and maintaining the lake at a low level should be placed at or near the spillway for intake and downstream in the outflow channel for discharge. Siphon hoses may be attached to the underside of the pedestrian bridge and the highway bridge crossing the spillway. This work must be

coordinated with the City of Brookhaven Spillway Maintenance project. Contact Tom Roberts – Public Works. See appendix for list of participants.

P. There is a lower drainpipe under the dam with a slide gate riser. The slide gate may be used to help lower the lake only if approved by the EOR for the City Spillway Project in coordination with Safe Dams.

Q. The existing pedestrian bridge will not be removed as part of the trail project nor the proposed future Spillway Repair and Maintenance projects.

R. Contractor is required to coordinate schedules, deliveries, and use of Nancy Creek Drive with the contractor on the city spillway project if the two projects proceed on the same schedule.

S. ACOE and EPD permits: The project environmental consultant has determined that there is no wrested vegetation along the base of the dam, therefore there are not setback buffers on the dam. That means there is no need for an ACOE permit nor EPD variance. Nor is a requirement for an ACOE permit to lower the lake.

T. Contractor shall coordinate with the Owner's Representative to be aware of special events taking place in the park and to take reasonable measures to accommodate the traffic and events.

U. Owner is developing a detour pedestrian trail along the south side of the dam to allow pedestrians to pass without getting into the construction zone.

V. DOT Guardrail. Nancy Creek Drive over the dam is a city street. The low guardrail along the road belongs to the city DOT. The project includes a wooden bumper rail attached to the back of the DOT metal rail. Permission to build this rail is part of securing the city LDP. Contractor does not need to secure a permit from the local DOT to build this rail as long as they do not damage the existing rail

W. Existing Sidewalk: The existing sidewalk will be removed at the discretion of the contractor during the building process.

X. Parking lot on the east end of the dam may be used by the contractor for stagging. An area within the lot will be designated as usable by the contractor. Part of the lot will remain open for patrons during the construction process.

Y. Access to the construction zone will be from the east end of the dam. Contractor will take care not to damage the existing parking, curb, monument and other existing conditions in this location. A stagging and access plan needs to be worked with the city prior to beginning construction.

Z. Contractor needs to provide a Sequencing plan for how he intends to remove the rip rap, play silt fence, build the conditions, and remove the silt fence. Plans needs to be reviewed and approved by the city prior to beginning the project.

1.3 CLEARING AND GRUBBING:

A. Clearing: there is very little vegetation on the site. Only some volunteer trees on the dam that have grown up in the rip rap. Contractor shall remove all the vegetation on the dam by cutting it down to flush with the existing grade. Stumps can be removed as part of the excavation work on the walls.

B. Within the limits schematically identified on the Drawings for excavation, the site will have rip rap removed and grubbed to prepare for construction.

B. The Contractor shall verify existing conditions on the site, and examine all adjoining roadways to the site, which in any way may affect completion of the work. Report to the Landscape Architect or Owner's Representative in writing any condition which will prevent the proper performance of the proposed site construction work. The site premises shall be accepted as found. Landscape Architect and Engineer assume no responsibility for conditions of the site.

C. Grubbing:
1. All rip rap on the face of the dam that interferes with the construction of the footings and wall shall be removed and stored for reuse as necessary on the site or elsewhere in the park.
.
2. All, lumber piles, trash and obstructions, except utility poles, shall be removed as noted on the Drawings and disposed of by the Contractor. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.
.
4. All paving and curbs adjoining any excavation area or embankment that may be damaged or buried shall be replaced or repaired as needed.

E. No spoil, rip rap, debris or other material generated from the grubbing exercise on the dam shall be allowed to fall into the lake.

F. All debris, roots, foundations, and rubbish embedded in the ground shall be removed and disposed of properly by the Contractor as specified below. Refer to Section 02112 of the specifications for additional requirements.

1.4 TESTING AND INSPECTION SERVICES:

A. Soil testing will be performed by an independent testing laboratory approved by the Owner. Payment for soil testing shall be made by the Owner.

B. The soils testing laboratory is responsible for the following:
   1. Compaction tests in accordance with ASTM D 698.
   2. Field density tests for each one foot of lift; one test for each 2,500 square feet of fill.
   3. Inspecting and testing footing trenches, subgrades and proposed fill materials.

C. The Contractor's duties relative to testing include:
   1. Notifying the laboratory of conditions requiring testing.
   2. Coordinating with the laboratory for field-testing.
   3. Providing representative fill soil samples to laboratory for test purposes. Provide 50-pound samples of each fill soil.
   4. Paying costs for additional testing performed beyond the scope of that required and for re-testing where initial tests reveal non-conformance with specified requirements.

D. Inspection:
   1. Earthwork operations, suitability of excavated materials for fill and backfill, and placing and compaction of fill and backfill is subject to inspection. The Geotechnical Engineer will observe earthwork operations and provide recommendations as necessary for subgrade improvement.
   2. Foundations and shallow spread footing foundations are required to be inspected by a geotechnical engineer to verify suitable bearing and construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION:

A. Maintain benchmarks, monuments, and other reference points. Re-establish, at no cost to the Owner, any such reference points if disturbed or destroyed.

B. Maintain silt sock along the bottom of the rip rap on the dam to protect the lake from silt.

C. Excess soil material excavated for the footings shall be stored and reused for filling behind the retaining walls.

D. Maintain the lake at a 5’ below the bottom of the wall footings until the footings and walls are installed.

3.2 CLEARING:

A. Clear areas required for access to site and execution of the work

B. Remove rip rap within the area to be excavated. All stones to be saved within the grading limits are shown on the Drawings. Coordinate removal, relocation and reuse of rip rap stones with the Landscape Architect or Owner's Representative.

C. Rip rap removed from the dam for construction access shall be replaced to cover the same area before the lake level is restored.

3.3 STAKING:

A. The Contractor shall stake the entire site, both as to location of major construction items as well as finish grades. This stakeout may be accurate or rough, depending on the Contractor's preference. See Paragraph 1.6 of Section 01010 Supplemental Conditions.

B. The purpose of the staking, with inspection and adjustment by the Landscape Architect, is to adapt the design to the site rather than allow the design to be forced upon the site. Staking is subject to various degrees of adaptation, which can only be determined by the Landscape Architect. This variation is an aesthetic decision; the amount of adjustment most often is determined by the existing trees, terrain, and soil conditions sub-surface water and by other intangibles, which are impractical to survey in absolute accuracy.

D. During the inspection, the Contractor shall be at the site along with the person who will superintend the work under this contract.

E. The staking-inspection process shall be repeated for any work not staked and approved or adjusted during the first site visit. No work shall ever be done without the stakeout first being adjusted and approved by the Landscape Architect. All alignment, dimensions and elevation of any grading, excavation, construction and planting is subject to adjustment to save trees and other vegetation.

3.4 DISPOSAL OF REFUSE:

A. The refuse resulting from the clearing and grubbing operation shall be hauled to a disposal site secured by the Contractor and shall be disposed of in accordance with all requirements of federal, state, county and municipal regulations. No debris of any kind shall be deposited in any stream, body of water, or in any street or ditch. In no case shall any material be left on the site or shoved onto abutting private properties.

B. Contractor may not dispose of refuse by burning or burial on site. All refuse must be removed and properly disposed of offsite.

C. This is an active park, and the contractor shall take great care to not damage any of the site outside the construction limits nor dispose of refuse materials in the park.

3.5 STAGING AREA:

Several site locations near the construction site may be available to the Contractor for use in staging and storage within the Park. These sites must be pre-approved by the Owner prior to utilization.

W. Nancy Creek Drive on top of the dam is a public road and cannot be permanently blocked. Contractor may make temporary closures with approval and cooperation of the Brookhaven Police Department.

3.6 TRAFFIC CONTROL:

Contractor shall prepare a Traffic Control plan that outlines when and how the contractor plans to control traffic during the use of the city streets and roads to perform the work.

The contractor may use West Nancy Creek Drive on top of the dam to set a concrete truck to pump or pour concrete for the walls. The contractor may not block but one lane at a time to while parking a concrete truck and must maintain flagmen and safety procedure during the time.

3.7 LAKE LOWERING AND REFILLING

The lake will need to be lowered to facilitate footing construction and excavation. The lake lowering should be done by use of temporary siphons or pumps. The existing lake low-level pipe/valve shall not be used. The siphon water shall be released in the existing spillway on the downhill side of the dam without causing damage or erosion.

The lake should be lowered and maintained at a minimum of five (5) feet below the lowest planned footing subgrade elevation. This facilitates for the lake to fluctuate some without interfering with construction. The lake level should be maintained at the lower elevation during all retaining wall construction and backfilling operations. Once all work on the upstream slope is compete and only sidewalk and rail construction remain, the lake level can be returned to normal pool. The time of construction decision and the weather could affect this requirement.

The lake level shall not be lowered at a rate of more than one (1) vertical foot per week.

During refilling, the lake level shall not be raised at a rate of more than one (1) vertical foot per week. The dam should be monitored and inspected by the EOR at each 2-foot increase of the lake level.

The contractor shall maintain the lake at the lower level as long as the excavation is open to the weather. This may require additional or backup siphons during rain events.

Contractor shall take care to protect the fish and aquatic life in the lake from being sucked into the syphon system and discharged downstream.

All lake lowering operations shall comply with all local, state, and federal regulations governing the lowering of a lake considered part of State Waters.

3.8 FINAL CLEANUP:

Upon completion of the site construction and removal of all remaining materials and equipment, the contactor shall perform on last cleanup to remove all construction refuse, debris, soil, scuff marks, trash and any other items or marks that should not be left on the site or on the finished product.

Clean up and repair any damage caused in the Stagging and Storage area.

Remove all Erosion control fencing on the dam and restore Rip Rap.

Pressure Wash: The contractor shall pressure wash the new pavement as a final task.

END OF THE SECTION

SECTION 02100 B
SITE CLEARING

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Clearing and protection of vegetation.

B. Removal of existing debris.

C.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

5.01 SITE CLEARING

A. Comply with other requirements specified in Section 02100.

B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

5.02 VEGETATION

A. Do not remove or damage vegetation beyond the limits indicated on drawings.

B. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
   1. At vegetation removal limits.

C. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.

D. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
   1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
   2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
   3. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.

E. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

5.03 DEBRIS

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02125B

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) COMPLIANCE

PART 1 - GENERAL

1.01 SCOPE

A. The work specified in this Section consists of the following under the requirements for Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES), Storm Water Discharges Associated with Construction Activities, under the State of Georgia, Department of Natural Resources, Environmental Protection Division (EPD).

- Notice of Intent (N.O.I.) – Electronic submittal to EPD by Owner
- Updates to the Erosion, Sedimentation, and Pollution Control (ES&PC) Plan – By Landscape Architect
- Comprehensive Monitoring Plan (CMP) – By Landscape Architect
- Compliance Inspections and Monitoring – By Contractor
- Notice of Termination (N.O.T.) – By Owner after appraisal of site by Landscape Architect.

1.03 QUALITY ASSURANCE

A. Perform all work under this Section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated in these Specifications. Where provisions of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.

B. Provide all materials and promptly take all actions necessary to monitor, document and achieve effective erosion and sedimentation control in accordance with the National Pollutant Discharge Elimination System (NPDES), Storm Water Discharges Associated with Construction Activities, under the State of Georgia, Department of Natural Resources, Environmental Protection Division (EPD) and these Specifications.

C. The temporary and permanent erosion and sedimentation control measures shown on the Erosion, Sedimentation, and Pollution Control (ES&PC) Plan are minimum requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques and sequence of operation shall be updated on the ES&PC Plan and submitted to the Designer for approval by the Contractor at no additional cost to the Owner.

PART 2 - EXECUTION

2.01 NOTICE OF INTENT

A. The contractor shall obtain coverage as a Secondary Permittee under the General Permit GAR1000003– Common Development for the Murphey Candler Park projects. Contractor shall coordinate with the City of Brookhaven Public Works Director to be added as a Plan Preparer in the GEOS system to complete this paperwork.

2.02 EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN UPDATES

A. Project Civil Engineer has prepared the ES&PC Plan for the Murphey Candler Park Improvements in accordance with Georgia's NPDES Permit for Storm Water Discharges Associated with Construction Activities. To meet the requirements of the permit, the Project Civil Engineer that prepared the ES&PC Plan has provided the required Engineer's certification on the plans.

B. Upon direction from the Owner's Representative, the Project Civil Engineer will conduct the initial inspection of the Best Management Practices (BMPs) for the construction site. The permit requires that the Engineer certifying the ES&PC Plan must also perform the initial BMP inspection.

C. Per the NPDES regulations, the ES&PC Plan is a dynamic document. The project Civil Engineer is responsible for updating the ES&PC Plan if needed. Major changes and amendments to the ES&PC Plan must be certified by a licensed professional engineer, including changes in design, construction, operation, or maintenance which has a significant effect on the potential for the discharge of pollutants to waters of the state. Appropriate Certification of the ES&PC Plan site change updates shall be the responsibility of the General Contractor and the project Civil Engineer.

2.03 COMPREHENSIVE MONITORING PLAN

A. The Contractor shall prepare the Comprehensive Monitoring Plan (CMP), as required under the NPDES permit. The purpose of the CMP is to define the methods used to monitor performance of on-site BMPs and storm water runoff. The plan shall include sampling strategies and monitoring locations for the site, along with details of the record keeping and reporting requirements applicable to the site. The plan shall also include example record keeping and reporting forms to assist with the documentation necessary to maintain compliance under the permit. The CMP shall be provided in an oversized 3-ring binder, and all records and inspection logs kept in a central on-site location.

B. Per the NPDES regulations, the CMP is a dynamic document and major changes and amendments to the Plan, such as changing sampling locations, must be certified by a licensed professional. The Contractor who prepared the CMP will be responsible for updating and certifying the CMP.

2.04 ON-SITE COMPLIANCE INSPECTIONS AND MONITORING

A. The Contractor shall provide daily, weekly, monthly, and rainfall dependent BMP inspections and associated storm water monitoring, as required under the permit. According to the permit, inspections and monitoring shall be conducted by "Qualified Personnel" under the supervision of the Primary Permittee. For this project, the Contractor is the Operator and shall perform all daily inspections and BMP maintenance. A summary of inspections required under the permit, are as follows.

B. Daily - Daily inspections must be conducted of petroleum storage usage and handling areas and construction entrances/exits by "Qualified Personnel". In addition, daily rainfall data must be recorded.

C. Weekly - Qualified personnel shall inspect site BMPs at least once every 7 calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater.

D. Monthly - Inspections are required monthly until a N.O.T. is submitted for areas that have undergone final stabilization.

E. Qualifying Rainfall Event - Sampling after each qualifying rainfall event is required until the N.O.T. is submitted with the final sampling data. Qualifying sampling events as measured by the on-site rain gauges provided by the Contractor and monitored by the Owner, are defined under Section 6, subsection d.3. of the General NPDES Permit No. GAR100003, effective August 1, 2018.

F. All monitoring results will be recorded onto appropriate forms and provided in the CMP binder, so all records and inspection logs can be kept in a central on-site location. All monitoring results shall also be submitted monthly to Georgia Environmental Protection Division (EPD) as required under the permit.

2.05 NOTICE OF TERMINATION

A. At completion of construction, the Contractor is responsible for preparing and submitting the N.O.T. form. The N.O.T must be approved by the Designer/Landscape Architect before submittal. Final acceptance of this project by the City of Brookhaven will not be issued until the N.O.T. requirements have been satisfied.

END OF SECTION 02125B

SECTION 02125

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SCOPE:

A. Work described in this section includes the containment of sediment transport, control of erosion and treatment of pollutants prior to, during and throughout all construction operations; establishment of permanent vegetative cover and continued maintenance of said measures in accordance with Part III, paragraph 3.4 of this section.

B. This Section also specifies removal of temporary erosion and sedimentation controls.

C. Temporary and permanent erosion and sedimentation controls include grassing and mulching of disturbed areas and structural barriers at those locations, which will ensure that erosion during construction will be maintained within acceptable limits. Acceptable limits are as established by the Georgia Erosion and Sedimentation Control Act of 1975, as amended, Section 402 of the Federal Clean Water Act, and applicable codes, ordinances, rules, regulations and laws of local, state, and municipal authorities having jurisdiction. All fines imposed for improper erosion and sedimentation control shall be paid by the Contractor.

D. Land disturbance activity shall not commence until a Land Disturbance Permit has been issued by governing authority and Contractor has obtained NOI coverage as a Secondary Permittee under the General Permit GAR100003 – Common Development for the Murphey Candler Park Projects.

E. All control measures shown on the Drawings are to be considered the minimum required; additional measures may be required. Provide same as required.

F. Contractor is solely responsible for protection of downstream properties from encroachment or damage from soil erosion and/or the discharge of pollutants by water or air to any areas off the Project site.

G. Contractor shall stake the location of the erosion control fences prior to construction and approved by the Landscape Architect prior to construction.

1.02 SUBMITTALS:

A. Four complete copies of engineering data, including shop drawings, for all products shall be submitted to the Landscape Architect and Engineer for approval.

B. Schedule of operations: Submit schedule of exact dates operations including program of erosion, sediment and pollution control measures, maintenance of all said measures including control facilities, structures and devices and vegetative practices. Show anticipated starting and completion dates for land-disturbing activities including excavation, filling and rough grading, finished grading, construction of temporary and permanent control measures, and disposition of temporary erosion sediment and pollution control measures.

1.03 PROJECT CONDITIONS:

A. Furnish and install all control measures prior to or concurrent with any land disturbance activity. The Contractor is responsible for the initial provision and installation of all control measures and then the continued provision and installation of all measures throughout all construction operations and all sequences of construction operations.

B. Schedule grading operations to allow permanent erosion control to take place in the same construction season. Avoid or minimize exposure of soils to winter weather. Maintain all controls until vegetative cover has been established.

C. Construct and maintain temporary control measures until such time as permanent measures are effective in control of erosion, sediment and pollution from the site. Extent of measures shall be responsibility of Contractor.

D. Stop all erosion, sediment or pollution from leaving the site and encroaching on downstream or surrounding properties.

E. Temporary grassing shall be applied to all disturbed areas left idle for 72 hours.

F. Contractor is responsible for all quantities of all control measures regardless if shown on the Drawings. The extent of soil erosion control measures shown on the Drawings should be considered minimum.

G. All expenses related to the removal, relocation, replacement and/or rerouting of any and all existing utilities or other built, stored, stockpiled items of any kind, surface or subsurface is the responsibility of the contractor and will be included in the Contract Sum.

1.04 QUALITY ASSURANCE:

A. Procedures shall comply with "Manual for Erosion and Sediment Control in Georgia", latest edition published by the Georgia Soil and Water Conservation Committee." Contractor is required to keep a logbook on site documenting his inspection of all control devices (minimum once/week and within 24 hours of any storm event) and noting any corrections or modifications. General Contractor must also file a "Notice of Termination" when the site is finally stabilized, and all stormwater management systems have been constructed and have been proven to be functioning in accordance with the Design Concept(s).

B. The temporary and permanent erosion and sedimentation control measures shown on the Drawings are minimum requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques and sequence of operation will be installed by the Contractor at no additional cost to the Owner

C. Reference the Drawings for any other procedural manuals, publications, permits or other field guidelines required for the Contractor to obtain, understand and utilize in the performance of his work. Be reference of same, said materials are made a part of these Specifications.

D. The temporary and permanent erosion and sedimentation control measures shown on the Drawings are minimum requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques and sequence of operation will be installed by the Contractor at no additional cost to the Owner.

B. Perform all work under this Section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated in these Specifications. Where provisions of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.

C. Provide all materials and promptly take all actions necessary to achieve effective erosion and sedimentation control in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 as amended (OCGA §12-7-1, et. seq.), local ordinances, other permits, local enforcing agency guidelines and these Specifications.

D. Basic Principles:
1. Coordinate the land disturbance activities to fit the topography, soil types and conditions.
2. Minimize the disturbed area and the duration of exposure to erosive elements.
3. Provide temporary or permanent stabilization to disturbed areas immediately after rough grading is complete.
4. Safely convey run-off from the site to a stable outlet to prevent flooding and damage to downstream facilities resulting from increased runoff from the site.
5. Retain sediment on-site that was generated on-site.
6. Minimize encroachment upon watercourses.

E. Implementation:
1. The Contractor is solely responsible for the control of erosion within the Project site and prevention of sedimentation from leaving the Project site or entering waterways.
2. The Contractor shall install temporary and permanent erosion and sedimentation controls, which will ensure that runoff from the disturbed area of the Project site shall pass through a filter system before exiting the Project site.
3. The Contractor shall provide temporary and permanent erosion and sedimentation control measures to prevent silt and sediment from entering any waterways and any designated wetland areas.
4. The Contractor shall limit land disturbance activity to those areas shown on Drawings.
5. The Contractor shall maintain erosion and sedimentation control measures within disturbed areas on the entire site at no additional cost to the Owner until the final acceptance of the Project. Maintenance shall include mulching, re-seeding, clean out of sediment barriers and sediment/detention ponds, replacement of washed-out or undermined rip rap and erosion control materials, to the satisfaction of the Owner and Landscape Architect.
6. Trenching; Contractor shall not trench in areas the include root zones of trees to be saved. Trench lines can be adjusted in collaboration with the Landscape Architect.
7. Contractor may go outside the construction limits to establish erosion control methods that may be more practical than the ones shown on the drawings. Contractor shall get permission from the Owner and Landscape Architect before implementing such plans.
8. Existing dry swales and storm drainage structures may offer more effective opportunities to control silt runoff and erosion. Contractor is free to explore

alternative options on site for erosion control if the plans are approved by the Landscape Architect and Owner

PART 2 - PRODUCTS

2.01 SEDIMENT BARRIER:

A. Silt Fence:
1. Type A (NS - Non-Sensitive) silt fence shall meet the requirements of Section 171 of the Georgia Department of Transportation Standard Specifications, latest edition.
2. Type C (S - Sensitive) Silt Fence is a combination of Type A silt Fence with woven wire reinforcement. Type C Silt Fence reinforcement shall meet the requirements of Section 171 of Georgia D.O.T. Specifications. Netting shall be ½ - inch, galvanized steel, chicken wire mesh.
3. Silt fence fabric shall be an approved product on the Georgia DOT Qualified Product List No. 36, latest edition.

B. Hay Bales: Hay bales shall be clean, seed-free cereal hay, rectangular in shape and contain five cubic feet or more of material.

C. Concrete Blocks: Concrete blocks shall be hollow, non-load-bearing type.

D. Plywood shall be 3/4-inch thick exterior type to lay over roots for access.

E. Filter stone shall be crushed stone conforming to Georgia Dept. of Transportation Table 800.0IH, Size Number 3. Filter stone may be used to build check dams.

F. Compost Filter socks to be used where tree roots should not be cut by silt fence trencher as shown on the construction documents.

G. Surge stone may be used to create check dams where necessary to impede silt flow.

2.02 CONSTRUCTION EXIT STONE:

A. Use sound, tough, durable stone resistant to the action of air and water. Slabby or shaley pieces will not be acceptable, aggregate size shall be in accordance with the National Stone. Association Size R-2 (1.5 to 3.5-inch stone) or Type 3 riprap stone conforming to Section 805.01 of the Georgia Department of Transportation Standard Specifications.

2.03 CONCRETE:

A. Concrete shall have a compressive strength of not less than 3,000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C94.

2.04 RIP RAP:

A. Stone Rip Rap: Use sound, tough, durable stones resistant to the action of air and unless noted otherwise, stone riprap shall be per size indicated on the Plans and individually sized for each outfall.

1. Type 1 Rip Rap: Size and gradation shall conform to Section 805.01 of the Georgia DOT Standard Specification for Type 1 Stone Dumped Rip Rap.
2. Type 3 Rip Rap: size and gradation shall conform to Section 805.01 of the Georgia DOT Standard Specifications for Type 3 Stone Dumped Rip Rap.
3. River Stone: Where designated Contractor shall use river stone comparable to Type l.
4. Rip Rap may be used to erect Check Dams on dry swales or existing storm structures.

2.05 PLASTIC FILTER FABRIC:

A. All plastic filter fabric shall conform to the Georgia Department of Transportation Standard Specifications, Section 881.06 for non-woven filter fabrics on most applications for this project, except for underneath riprap areas or stone construction entrances.

B. A plastic filter fabric shall be an approved product on the Georgia Department of Transportation Qualified Product List No. 28, latest edition.

C. Filter fabric for silt fences shall be a 36" Georgia DOT approved pervious sheet of synthetic polymer filaments non-woven from continuous filaments with wire fence backing. Filter fabric shall be of type recommended by its manufacturer for the intended application. The filter fabric shall meet the following requirements:
    1. Listed on Georgia DOT QPL-36.

D. Polymer shall be applied utilizing a hydro seeder mix of appropriate seed, fertilizer, lime and mulch for the same acre or without seed/fertilizer/lime/mulch mix.

E. Follow all manufacturers' instructions and recommendations. Do not mechanically disturb treated areas after application. (This does not include foot traffic as necessary to install erosion control blanket).

F. Contractor shall furnish and install as necessary a minimum 200 lbs. of erosion control polymer for incidental "touch-up" or "point source erosion areas".

G. Furnish two forms of synthetic polymer:
    1. Emulsion polymer for hydro seeder application with 30% active strength.
    2. Powder polymer for hand spreading with an active strength of 95%.

2.06 GRASSING:

A. Grassing materials shall meet the requirements of the following sections of the Georgia Department of Transportation Standard Specifications, latest edition:

Material	Section
Topsoil	893.01
Seed and Sod	890
Fertilizer	891.01
Agricultural Lime	882.02
Mulch	893.02
Inoculants	893.04

B. Seed species shall be provided as shown on the Drawings.

C. Mulch: Seeding (temporary and permanent) on all disturbed areas shall be held in place by the use of a mulch binder, as approved by the Project Landscape Architect. The mulch binder shall be non-toxic to plant and animal life and shall be approved by the Project Landscape Architect.

D. Rolled Erosion Control Products (RECP): On all slopes exceeding 3 (horizontal) to 1 (vertical) shall be held in place by the use of a RECP blankets/matting, as approved by the Project Landscape Architect.

E. Water: Water shall be free of excess and harmful chemicals, organisms and substances, which may be harmful to plant growth or obnoxious to traffic. Salt or brackish water shall not be used. Water shall be furnished by the Contractor.

PART 3 - EXECUTION

3.01 GENERAL:

A. Temporary and permanent erosion and sedimentation control measures shall prevent erosion and sediment from exiting the site. If, in the opinion of the Owner or Project Landscape Architect, the Contractor's temporary erosion and sedimentation control measures are inadequate, Contractor shall provide additional maintenance for existing measures or additional devices to control erosion and sedimentation at no additional cost to Owner.

B. All erosion and sedimentation control devices and structures shall be inspected by the Contractor at least once a week and immediately after to each rainfall occurrence. Any device or structure found to be damaged shall be repaired or replaced by the end of the day.

C. All erosion and sedimentation control measures and devices shall be constructed and maintained as indicated on the Drawings or specified herein until adequate permanent disturbed area stabilization has been provided and accepted by the Project Landscape Architect. Once adequate permanent stabilization has been provided and accepted by the Project Landscape Architect, all temporary erosion and sedimentation control structures and devices shall be removed.

3.02 TEMPORARY EROSION CONTROL DEVICES:

A. Construct temporary sediment barriers of silt fence at all points where surface water flows from construction area bypassing a temporary sediment traps if the area is subject to soil erosion; or as otherwise indicated on Drawings or as deemed necessary by inspectors.

B. Install temporary sediment traps and temporary sediment basins in accordance with the location and details shown on the Drawings. Remove accumulated sediment when they are one-third full of silt continually until permanent vegetative cover is established.

C. Install construction exit as indicated on Drawings. Maintain to prevent tracking and flow of mud onto public roads.

D. Construct diversion berms, dikes (2'-0" wide x 1'-6" tall) or ditches at the tops of all slopes or otherwise indicated on the Drawings. Machine compact these elements and plant temporary seed until permanent vegetative cover can be established.

E. Maintain temporary barriers until permanent erosion control measures are established. Repair and replace barriers damaged or displaced by construction activity

3.03 SEDIMENT CONTROL:

A. Construction Exit:
1. Construction exit(s) shall be placed as shown on the Drawings and as directed by the Project Landscape Architect. A construction exit shall be located at any point traffic will be leaving a disturbed area to a public right-of-way, street, alley, sidewalk, or parking area.
2. Placement of Construction Exit Material: The ground surface upon which the construction exit material is to be placed shall be prepared to a smooth condition free from obstructions, depressions or debris. The plastic filter fabric shall be placed to provide a minimum number of overlaps and a minimum width of one foot of overlap at each joint. The stone shall be placed with its top elevation conforming to the surrounding roadway elevations. The stone shall be dropped no more than three feet during construction.
3. Construction Exit Maintenance: The Contractor shall regularly maintain the exit with the top dressing of stone to prevent tracking or flow of soil onto public rights-of-way and paved surfaces as directed by the Project Landscape Architect.
4. Construction Exit Removal: Construction exit(s) shall be removed and properly disposed of when the disturbed area has been properly stabilized, the tracking or flow of soil onto public rights-of-way or paved surfaces has ceased and as directed by the Project Landscape Architect.

B. Sediment Barriers:
1. Sediment barriers shall include, but are not necessarily limited to, silt fences, hay bales, and any device, which prevents sediment from exiting the disturbed area.
2. Silt fences and hay bales shall not be used in any flowing stream, creek or river.
3. Sediment barriers shall be installed as shown on the Drawings and as directed by the Owner or Project Landscape Architect.
5. Sediment barriers shall be maintained to ensure the depth of impounded sediment is no more than one-half of the original height of the barrier or as directed by the Project Landscape Architect. Torn, damaged, destroyed or washed-out barriers shall be repaired, reinforced or replaced with new material and installed as shown on the Drawings and as directed by the Owner or Project Landscape Architect.
5. Sediment Barrier Removal:
a. Sediment barrier shall be removed once the disturbed area has been stabilized with a permanent vegetative cover and the sediment barrier is no longer required as directed by the Project Landscape Architect.
b. Accumulated sediment shall be removed from the barrier and replaced and stabilized on site as directed by the Owner or Project Landscape Architect.
c. All non-biodegradable parts of the barrier shall be disposed of properly.
d. The disturbed area created by barrier removal shall be permanently stabilized.

F. Inlet Protection: All storm inlets shall be covered with sediment boxes during grading operations and shall remain so covered until all open areas are permanently stabilized against erosion.

3.4 GROUND COVER

A. Protect all exposed soils with mulching (temporary measure) and vegetative ground cover (permanent measure).

B. Ground cover consists of temporary seeding on all graded areas which will not receive final grading or permanent planting within three (3) days.

C. All grassing, or planting operations shall include mulching as stabilization until ground cover by planting is effective.

D. Reseed as required until full vegetative coverage is established.

3.5 MAINTENANCE

A. Inspect all control elements after each rainfall event and a minimum of every two (2) weeks when no rainfall event(s) occur. Clear all debris and accumulated sediment from behind barriers when half full so their functional capacity is not reduced. Repair and replace any and all damaged measures of any kind.

B. Contractor is expected to maintain the erosion control compliance in accordance with NPDES Standards. See Section 02125B of this Project Manual.

B. Maintain all erosion, sedimentation, pollution control measures until the site has reached complete stabilization as described in Part VI.A. Termination of Coverage in the General NPDES Permit.

3.6 REMOVAL OF TEMPORARY EROSION CONTROL DEVICES

A. Remove all debris resulting from temporary erosion control from Project site.

B. Control dust from disturbed areas by means of mulching, irrigation, calcium chloride or other method subject to the Engineer's review.

3.07 CLEAN-UP:

A. Dispose of all excess erosion and sedimentation control materials in a manner satisfactory to the Owner and Landscape Architect.

B. Final clean up shall be performed in accordance with the requirements of these Specifications and to the satisfaction of the Owner and Landscape Architect.

END OF SECTION 02125

SECTION 02128 B
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

2.01 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. Performance bond.

E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

2.02 RELATED REQUIREMENTS

A. Section 02100 B- Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 02205 B - Grading: Temporary and permanent grade changes for erosion control.

C. Section 02225 B - Riprap: Temporary and permanent stabilization using riprap.

D. Section 02220 B - Aggregate Base Courses: Temporary and permanent roadways.

2.03 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 2021.

B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity 2020.

C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles 2015.

D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles 2015a.

E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile 2020b.

F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples 2017.

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit Current Edition.

2.04 PERFORMANCE REQUIREMENTS

A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Also comply with all more stringent requirements of State of [_____] Erosion and Sedimentation Control Manual.

C. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

D. 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.

E. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.

F. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

G. 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.

H. 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.

I. 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.

J. 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.

K. 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.

L. Open Water: Prevent standing water that could become stagnant.

M. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

2.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan:
   1. Include:
      a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
      b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.

c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
e. Other information required by law.
f. Format required by law is acceptable, provided any additional information specified is also included.

2. Obtain the approval of the Plan by authorities having jurisdiction.
3. Obtain the approval of the Plan by Owner.

C. 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.

D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

3.01 MATERIALS

A. Mulch: Use one of the following:
1. Straw or hay.
2. Wood waste, chips, or bark.
3. 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.

E. Gravel: See Section 02220 for aggregate.

F. Riprap: See Section 02225.

PART 3 EXECUTION

5.01 EXAMINATION

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

5.02 PREPARATION

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

5.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet.
      b. Slope Between 2 and 5 Percent: 75 feet.
      c. Slope Between 5 and 10 Percent: 50 feet.
      d. Slope Between 10 and 20 Percent: 25 feet.
      e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
   1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
   2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

G. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
   2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
   1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

I. Temporary Seeding: Use where temporary vegetated cover is required.

J.

5.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches.

2. Place geotextile fabric full width and length, with minimum 12-inch overlap at joints.
3. Place and compact at least 6 inches of 1 1/2 to 3 1/2-inch diameter stone.

B. Silt Fences:
1. Store and handle fabric in accordance with ASTM D4873/D4873M.
2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16-inch-high barriers with minimum 36-inch-long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28-inch-high barriers, minimum 48-inch-long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32-inch-high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
7. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
8. 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.

5.05 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.

5.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

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 02200

EARTHWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

B. Work on the face of the dam will be subject to periodic inspections by the Georgia Safe Dams Section of the Environmental Protection Division.

1.02 SUMMARY OF WORK

A. This Section includes earthwork as shown on the drawings and specified herein. Included is:

1. Preparation of subgrade for walks and pavement.
2. Preparation of subgrade for foundations and retaining walls.
3. Removal of rip rap to accommodate excavation. .
4. Excavation and backfilling for, foundations, and retaining walls.
5. Site grading and filling to indicated elevations.
6. Soil testing and submittals of all structural fill material
7. Dewatering of the footing excavation during construction.
8. Lowering the water of the lake during the construction of the project.

1.03 SUBMITTALS

A. Test Reports: Submit copies of following reports directly to the Project Landscape Architect and EOR.

1. Test reports on excavated reuse or borrow material.
2. Field density test reports.
3 One optimum moisture-maximum density curve for each type of soil encountered.
4. Density and moisture test on any imported fill material

B. Based on testing service reports and inspection, subgrade or fills which have been placed at below specified density, provide additional compaction and testing at no additional expense to Owner.

C. EOR: Atlas Technical Consultants LLC has been retained by the city to be the Engineer of Record on the project. All construction must be monitored by the EOR including any testing or work relative to soil excavation, selection, testing, placement or any other form of Geotechnical work.

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1.04 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork and site grading in compliance with applicable requirements of governing authorities having jurisdiction.

B. Testing and Inspection Services: Owner shall engage Atlas Technical Consultants and EOR for testing and inspection services, to include testing of soil materials proposed for use in work and field facilities for quality control testing during earthwork and site grading operations. All test reports must be signed by a licensed engineer.

C. One density test shall be performed for each 5,000 square feet of area and for each two vertical feet of fill placed.

D. Tests for Proposed Soil Materials: Test soil materials proposed for use in work and promptly submit test result reports. Provide one optimum moisture-maximum density curve for each type of soil encountered in subgrade fills. Determine the maximum densities in accordance with ASTM D 698. The EOR will determine suitability of materials to be used as fill. For borrow materials, perform a particle size analysis (ASTM D 6913), plasticity index (ASTM D 4318), moisture-density curve (ASTM D 698).

1.05 PROJECT CONDITIONS

A. Subsoil: Promptly notify soil testing service of unsuitable sub-surface conditions.

B. Existing Utilities: Locate existing underground utilities in areas of work before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner, and public and private utility companies, in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Engineer and then only after acceptable temporary utilities services have been provided. Demolish and completely remove from site underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active.

C. Use of Explosives: Use of explosives is not permitted.

D. Temporary Protection: Barricade open excavations made as part of earthwork operations and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect bottoms of excavations and soil beneath and around foundations from frost and freezing. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. Backfill and Fill Materials: Use satisfactory soil materials, complying with the American Association of State Highway and Transportation Officials (AASHTO) Designation M145, soil classification groups A-1, A-2-4, A-2-5, and A-3. Fill to be free of rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable, and other deleterious matter, as determined by the soils testing service.

B. Granular Base: Properly graded mixture of natural or crushed gravel or crushed stone that will readily compact to required density. Use material complying with applicable sections of the current edition of "Georgia Department of Transportation Standard Specifications for Construction of Roads and Bridges".

PART 3 EXECUTION

3.01 EXCAVATION

A. General: Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels and elevations. Obtain approval from the Architect.

B. Excavation Classifications: The following classifications of excavation will be made when unanticipated rock excavation is encountered in work. Do not perform such work until material to be excavated has been cross-sectioned and classified by soils testing laboratory. Rock excavation will be paid for at established unit prices, upon approval of Architect.

C. Earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as rock excavation or unauthorized excavation.

D. Rock excavation consists of removal and disposal of materials encountered that cannot be excavated with a 3/4 cubic yard capacity power shovel without drilling, or continuous use of a ripper or other special equipment, except such materials that are classified as earth excavation.

E. Trench rock excavation consists of removal and disposal of material classified as rock where the least horizontal dimension of required excavation is greater than three feet. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of material encountered will be classified as earth excavation.

F. Mass rock excavation consists of removal and disposal of material classified as rock where the least horizontal dimension of required excavation is greater than three feet. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of material encountered will be classified as earth excavation.

G. Rock payment lines are limited to the following:

1. Two feet outside of concrete work for which forms are required, except footings.
2. One foot outside perimeters of footings.
3. In pipe trenches, 6" below invert elevation of pipe and 2' wider than the outside diameter of pipe, but not less than 3' minimum trench width.
4. Near outside dimensions of concrete work where no forms are required.
5. Under slabs on grade, 6" below bottom of concrete slab.

H. Unauthorized excavation consists of removal of materials beyond indicated elevations or side dimensions without the specific direction of the Architect. Replace unauthorized excavation by backfilling and compacting as specified for authorized excavations of same classification, unless otherwise directed by Landscape Architect.

I. There will be no additional compensation for excavation, backfilling, concrete fill, or other cost due to unauthorized over-excavation in any direction. The Contractor is responsible for all additional testing costs associated with over-excavation.

J. Quoted unit prices shall include full compensation for labor, materials, tools, equipment, and incidentals required for excavation, trimming, shoring, de-watering, backfilling, compacting, and other necessary items for complete installation.

K. Unit prices for the following items, as set forth in the form of Proposal and as provided in the General Conditions, will apply in the event additions to the work are required and authorized by a written order from the Architect to the Contractor.

1. Mass Rock Excavation (per cu. yd.)
2. Trenched Rock Excavation (per cu. yd.)

L. Additional Excavation: When excavation has reached required subgrade elevations, notify soil testing laboratory to allow for inspection of conditions. If unsuitable materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by soils testing laboratory.

M. De-watering: Prevent surface water and subsurface or ground water from flowing into excavations, and flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other de-watering system components necessary to convey water away from site. Convey water removed from excavations and rainwater to collecting or run-off areas. Do not use trench excavations for site utilities as temporary drainage ditches.

N. Material Storage: Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade and shape stockpiles for proper drainage. Maintain excavated soil materials separately from topsoil stockpile. Dispose of excess unsatisfactory soil material, trash and debris, as specified.

O. Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations, and grades as shown.

P. Excavation for Trenches: Dig trenches to uniform width required for particular item to be installed, sufficiently wide to provide working room. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations.

Q Rip Rap excavated from the face of the dam shall be stored and piled for reuse or removal from the site.

3.02 COMPACTION

A. General: Control soil compaction during construction, providing the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements: Compact soil to not less than following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship determined in accordance with ASTM D 698; and not less than following percentages of relative density, determined in accordance with ANSI/ASTM D 4318, D 4253 AND D 4254, for soils which will not exhibit well-defined moisture-density relationship:

1. Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material to not less than 95% of the maximum dry density.
2. Pavements and Foundation Support Fills: Compact top 12" of subgrade and each layer of backfill or fill material to not less than 95% of the maximum dry density.

C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

D. The moisture content of the earth fill should be at or above the soil's optimum moisture content as determined by ASTM D698.

3.03 BACKFILL AND FILL

A. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontals so that fill material will bond with existing surface.

B. Placement and Compaction: Place backfill and fill materials in layers not more than 6" in loose depth for material compacted by heavy compaction equipment. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content of soil material. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice. Backfill excavations as promptly as work permits, but not until completion of inspection, testing, approval, and recording location of underground utilities, as required.

3.04 GRADING

A. General: Uniformly grade areas within limits of site grading under this section, including adjacent transition areas. Smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

Degree of finish required will be that ordinarily obtainable from either blade-grader or scraper operations.

B. Grading Around Trees: Where excavating, filling, or grading is required within branch spread of trees that are to remain, perform work as follows:

When trenching occurs around trees that are to remain, the tree roots shall not be cut but the trench shall be tunneled under or around the roots by careful hand digging and without injury to the roots.

C. Unpaved Areas: Finish areas to receive topsoil to within not more than 1" above or below required subgrade elevations, compacted as specified, and free from irregular surface changes.

D. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below required subgrade elevation, compacted as specified, and graded to prevent ponding of water after rains. Include such operations as plowing, dicing, and any moisture or aerating required to provide optimum moisture content for compaction. Fill low areas resulting from removal of unsatisfactory soil materials, obstructions, and other deleterious materials, using satisfactory soil material. Shape to line, grade, and cross-section as indicated.

3.05 PAVEMENT SUBBASE COURSE

A. General: Subbase course consists of placing subbase course material, in layers of specified thickness, over subgrade surface to support a pavement base or surface course. See other Division - 2 sections for paving specifications.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

C. Placing: Place subbase course material on prepared subgrade conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

3.06 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from Owner's Property: Remove waste materials, including excavated material classified as unsatisfactory soil material, trash and debris, and dispose of it off Owner's property.

END OF SECTION 02200

SECTION 02205 B
GRADING

PART 1 GENERAL

2.01 RELATED REQUIREMENTS

A. Section 02100 B - Site Clearing.

B. Section 02213 B - Excavation.

C. Section 02215 B - Fill: *filling and compaction*.

PART 2 PRODUCTS

PART 3 EXECUTION

5.01 EXAMINATION

A. Verify that survey benchmark and intended elevations for the Work are as indicated.

B. Verify the absence of standing or ponding water.

5.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

5.03 ROUGH GRADING

A. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

5.04 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. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

D. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

E. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

5.05 FIELD QUALITY CONTROL

A. See Section 31 2323 for compaction density testing.

END OF SECTION

SECTION 12215 B
FILL

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for footings, pile caps, and paving.

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2.02 RELATED REQUIREMENTS

A. Section 02128 B - Temporary Erosion and Sediment Control: Slope protection and erosion control.

B. Section 03300 - Cast-in-Place Concrete.

C. Section 02205 - Grading: Site grading.

D. Section 02216 - Excavation: Removal and handling of soil to be re-used.

E. Section 02205 - Riprap.

2.03 REFERENCE STANDARDS

A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)) 2012, with Editorial Revision (2015).

2.04 SUBMITTALS

A. Compaction Density Test Reports.

PART 2 PRODUCTS

4.01 FILL MATERIALS

4.02 SOURCE QUALITY CONTROL

A. See Section 01400 - 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.

PART 3 EXECUTION

6.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Verify areas to be filled are not compromised with surface or ground water.

6.02 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 general 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.

6.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

F. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

G. Compaction Density Unless Otherwise Specified or Indicated:

H. Reshape and re-compact fills subjected to vehicular traffic.

I. 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.

6.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

B. At Foundation Walls and Footings:
   1. Do not backfill against unsupported foundation walls.

6.05 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field inspection and testing.

6.06 CLEANING

A. See Section 17419 - Construction Waste Management and Disposal, for additional requirements.

B.

END OF SECTION

SECTION 02216 B
EXCAVATION

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Excavating for footings, pile caps, paving, and site structures.

B. Temporary excavation support and protection systems.

2.02 RELATED REQUIREMENTS

A. Section 02128 B Temporary Erosion and Sediment Control: Slope protection and erosion control.

B. Section 02100 B- Site Clearing: Vegetation and existing debris removal.

C. Section 02205 B- Grading: Soil removal from surface of site.

D. Section 02215 B- Fill: Fill materials, backfilling, and compacting.

E. Section 02225 B– Riprap

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2.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards current edition.

PART 2 PRODUCTS

PART 3 EXECUTION

5.01 EXAMINATION

A. Verify that survey benchmark and intended elevations for the work are as indicated.

B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.

C. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by Architect. If the proposed excavation extends more than 1 foot into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer.

5.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

5.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A. Excavation Safety: Comply with OSHA’s Excavation Standard, 29 CFR 1926, Subpart P.

5.04 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

5.05 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field inspection and testing.

B. Provide for visual inspection of load bearing excavated surfaces by Architect before placement of foundations.

5.06 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 02220 B
AGGREGATE BASE COURSES

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Aggregate base course.

B. Paving aggregates.

2.02 RELATED REQUIREMENTS

A. Section 02205 B- Grading: Preparation of site for base course.

B. Section 02215 B- Fill: Compacted fill under base course.

C. Section 03513 B- Concrete Paving: Finish concrete surface course.

2.03 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2018.

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)) 2012, with Editorial Revision (2015).

C. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).

D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)) 2012, with Editorial Revision (2015).

E. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.

F. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a.

2.04 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittal procedures.

B. Materials Sources: Submit name of imported materials source.

C. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

2.05 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When aggregate materials need to be stored on site, locate where indicated on drawings.

PART 2 PRODUCTS

4.01 MATERIALS

A. Coarse Aggregate: Coarse aggregate, complying with State of GA Department of Transportation standard.

PART 3 EXECUTION

6.01 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

6.02 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.

6.03 INSTALLATION

A. Place aggregate in maximum 4-inch layers and roller compact to specified density.

B. Level and contour surfaces to elevations and gradients indicated.

C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

6.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation From Design Elevation: Within 1/2 inch.

6.05 FIELD QUALITY CONTROL

A. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

B. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").

C. If tests indicate work does not meet specified requirements, remove work, replace, and retest.

6.06 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 02225 B
RIPRAP

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Riprap .

PART 2 PRODUCTS

4.01 MATERIALS

A. Riprap: Broken stone, 6-inch minimum size, 12-inch maximum size; solid and nonfriable.

PART 3 EXECUTION

6.01 PLACEMENT

A. Installed Thickness: 5-inch average.

END OF SECTION

SECTION 02845

GUARDRAILS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

1.02 DESCRIPTION OF WORK

A. The work covered by this Section includes furnishing all labor, materials and equipment required to furnish and install ridged wood beam wire mesh guardrails, including all posts, fastenings, anchorage and appurtenances required for a complete installation as shown on the Drawings and/or specified herein.

1.03 SUBMITTALS

A. Submit complete shop drawings and engineering data in accordance with the requirements of Section 01300 of these Specifications.

1.04 STORAGE AND PROTECTION

A. Guardrail, posts, brackets, mesh and accessories shall be stored above ground on suitable wood blocking so as not to bend or deflect excessively under their own weight. Guardrail posts and mesh will be stored with one end elevated to facilitate drainage. Materials shall be kept free of dirt, grease, concrete and other injurious materials.

B. Materials with evidence of damage, corrosion or rust shall not be used.

1.05 QUALITY ASSURANCE

A. The Contractor shall submit to the Project Landscape Architect written evidence that the guardrail and components are in conformance with the material and mechanical requirements specified herein. The guardrail shall meet the 200 lb load requirements for guardrails. In case of doubt as to the accuracy or adequacy of mill tests, the Project Landscape Architect may require that the Contractor furnish test reports from an independent testing laboratory on certified samples of constructed handrails.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Rail mesh shall be galvanized welded wire mesh in 2” square pattern. Mesh sections shall be furnished in standard laying lengths with pre-prepared for fastening to posts.

B. Posts and frame pieces shall be southern yellow pine and of the section, weight and length shown on the Drawings. The lumber shall conform to section 06100 Rough Carpentry requirements.

C. All splice and rail bolts shall be flat rounded, headed bolts with oval shoulders to prevent turning. All bolts and nuts shall be 5/8-inch in size, shall conform to ASTM A 307 and shall be galvanized in accordance with ASTM A 153.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Guardrail shall be installed at the locations shown on the Drawings or directed by the Project Landscape Architect. Guardrail shall be installed in accordance with the Drawings and approved contractor's shop drawings and installation instructions.

END OF SECTION 02845

SECTION 02870

SITE FURNISHINGS & FENCE

PART I GENERAL

1.1 SECTION INCLUDES
- A. Benches as shown on drawings and as specified herein.
- B. Trash Receptacles as shown on the drawings and details.

1.2 SUBMITTALS
- A. Contractor shall submit minimum of two (2) sets of color options for Owner.
- B. Contractor shall consult the project Site Detail sheet for more information.

1.3 Manufactures: All products and installation shall conform to the requirements of the manufactures' specifications.

PART 2 PRODUCTS

2.1 BENCHES:
- A. Manufacturer: Victor Stanley, PO Drawer 330, Dunkirk, MD 20754
  Toll Free: 1 800-368-2573: Tel (301) 855- 880: Website: Victorstanley.com
- B. Benches shall be RBF-28 Steelsites RB Series.
- C. Local Sales Representative: Hasley Recreation, Inc. Flowery Branch, Ga.
  Sales@hasley-recreation.com 770 965- 4042
- D. Anchor bolts are not provided by manufacturer.
- E. Finish: Coated with zinc rich epoxy then finished with polyester powder coating
- F. Metal components are steel shotblasted, etched, phosphatized, preheated and electrostatically powder coated with T.G.I.C. polyester power coating.
- G. Color: Black Powder coated.
- H. Assembly: This product is shipped fully assembled

2.3 TRASH RECEPTACLES:
- I. Manufacturer: Victor Stanley, PO Drawer 330, Dunkirk, MD 20754
  Toll Free: 1 800-368-2573: Tel (301) 855- 880: Website: Victorstanley.com
- J. Trash Receptacles shall be SD-242 Ironsites Series.
- K. Local Sales Representative: Hasley Recreation, Inc. Flowery Branch, Ga.
  Sales@hasley-recreation.com 770 965- 4042
- L. Anchor bolts are not provided by manufacturer.
- M. Finish: Coated with zinc rich epoxy then finished with polyester powder coating
- N. Metal components are steel shotblasted, etched, phosphatized, preheated and electrostatically powder coated with T.G.I.C. polyester power coating.
- O. Color; Black Powder coated.
- P. Assembly: This product is shipped fully assembled

PART 3 EXECUTION

3.1 INSTALLATION

A. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Restore damaged finishes and test for proper function. Clean and protect work from damage.

C. Contractor has to provide the anchor bolts to attach the bench and trash receptacle to the surface.

D. Install site elements in accordance with the manufacturer's recommendations.

3.2 BENCHES

A. Install benches where indicated on plans flush and level with surrounding pavement surfaces.

B. Install anchor bolts not provided by manufacturer to attach to the surface. Benches must be set flush and leveled at all times.

3.3 TRASH RECEPTACLE

A. Installation: Install per manufacture's specifications. See detail on Construction Documents.

B. Concrete: See Section 03310 for Concrete Base Specifications.

END OF SECTION 02870

SECTION 02885
SURFACE WATER DIVERSION AND DEWATERING

NOTE REFERENCE SPEC:

THIS SPECIFICATION SECTION IS PROVIDED ONLY AS A REFERENCE AND RESORCE TO THE CONTRACTOR TO USE IN HIS LAKE LEVEL LOWERING AND MAINTENACE PLAN AND CANNOT BE CONSTRUED AS A BINDING SPECIFICATION.

PART 1 - GENERAL

1.01 SCOPE

A. Local surface water diversion and removal of water from all excavation during construction.

B. The Contractor shall be responsible for and shall repair at his expense any damage to all subgrades, the foundations, structures, existing dam or any other part of the work caused by water, lack of or failure of any part of the surface water diversion or dewatering works.

1.02 RELATED WORK

A. Section 02880: Bypass Pumping *Reference Spec*

1.03 SUBMITTALS

A. Water Control Plan: Prior to beginning any work the Contractor shall submit for approval a Water Control Plan to the project Engineer of Record (EOR) showing his proposed method for care of the local surface water during construction and removal of water from all below grade areas. The plan may be placed in operation upon approval, but nothing in this section shall relieve the Contractor from full responsibility for the adequacy of the surface water diversion and protection works.

B. Lake Lowering: The contractor will lower the lake in order to complete the excavation for the proposed work. The contractor shall submit a plan for lowering the lake and have it approved by the EOR before beginning any work on the site.

C. Filling Schedule: Prior to refilling the lake, Contractor shall submit a filling schedule that meets the requirements of the Georgia Safe Dams Program to the Engineer for review and approval. A maximum rate of refilling of 1-foot per week is allowed.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 DIVERSION AND CARE OF SURFACE WATER

A. The Contractor shall provide measures to route surface runoff to prevent damage to the foundation subgrade, embankment fill, internal drains, permanent ditches, structures, outlet conduits, dam structure and all other project features.

B. All cofferdams and diversion ditches should be constructed to sufficiently handle storm flows without risk of damage to areas under construction. Contractor shall repair any damages to areas under construction due to insufficiencies in storm water handling facilities at no additional cost.

3.02 REMOVAL OF WATER FROM FOUNDATIONS

A. The Contractor should be aware that considerable removal and control of groundwater will be required during undercutting and replacement of unsuitable materials, installation of the seepage drains, outlet control structure, outlet pipe, and stilling basin, and any other construction activities that require construction below prevailing groundwater levels at the time of construction. These activities may require lowering the general groundwater 20 feet or more below existing grades (approximately 3 feet below the deepest proposed/anticipated grade), especially near the toe of the dam.

B. Dewatering shall be accomplished in a manner that will prevent the loss of fines from the foundation.

C. The Contractor will maintain the stability of the excavated slopes and bottom of the trenches.

D. The contractor shall perform dewatering, as directed by the Project Geotechnical Engineer and EOR, such that groundwater is lowered in all work areas to a depth of at least three feet below the planned/actual excavation level before allowing the excavation to proceed.

E. The dewatering system should function continuously, 24 hours a day, 7 days a week until structures, drains and fill are placed to a level of at least three feet above stabilized groundwater levels.

F. All construction operations shall be performed in the dry.

G. The Contractor must use wellpoints or cased wells and/or similar means of effectively dewatering the site area. Shallow sumps and trenches will not provide adequate dewatering.

H. The Contractor will be required to control seepage at least three feet below the bottom of the deepest excavation until subsequent work is completed.

I. No water from the dewatering activities in the excavated foundations shall be discharged in the lake or any other water of the state.

J. The Contractor shall install temporary groundwater monitoring wells at locations directed by the Project Geotechnical Engineer to confirm that the groundwater has been lowered to the level directed by the contract documents prior to excavating to the required grades. No excavation will be permitted below the prevailing groundwater levels.

3.03 REMOVAL OF DIVERSION AND DEWATERING WORKS

A. All temporary diversion and dewatering works shall be removed in a manner approved by the Project Geotechnical Engineer.

B. The portion of the dewatering works that are to remain in place such as wellpoints or cased wells shall be filled with sand or cement/ bentonite grout as directed by the Project Geotechnical Engineer.

C. Outflow from dewatering systems shall be channeled into a natural drainage feature in such a manner as to prevent erosion and sediment control problems due to the erosive force of the outflow stream.

D. Outflow from any dewatering systems that contains silt or other contaminates in the water shall not be discharged in the lake or any other natural drainage system.

3.04 RESERVOIR FILLING

A. Once all work is complete and approved by the Project Geotechnical Engineer, EOR, initial readings of the monitoring wells and drain outlets shall be made by the Project Geotechnical Engineer.

B. After initial readings are recorded, the contractor shall fill or refill the lake reservoir per the Engineer approved filling plan. A maximum rate of refilling of 1-foot per week is allowed. The dam should be monitored and inspected by the EOR and each 2 vertical feet of the lake level increase. All instrumentation should be measured during each inspection.

C. After each stage the dam shall be monitored for movement, outlet drains for seepage and the monitoring wells monitored for the phreatic surface.

D. After reservoir is filled to normal pool, water level measurements shall continue until water levels stabilize in the wells.

END OF SECTION

SECTION 02889

BYPASS PUMPING

PART 1 - GENERAL

NOTE - REFERENCE SPEC:
THIS SPECIFICATION SECTION IS PROVIDED ONLY AS A REFERENCE AND RESORCE TO THE CONTRACTOR TO USE IN HIS LAKE LOWERING AND MAINTENANCE PLAN AND CANNOT BE CONSTRUED AS A BINDING SPECIFICATION.

1.01 SCOPE OF WORK

A. Provide all materials, labor, and equipment to install, test, operate and maintain a temporary by-pass pumping system with redundancy for the purpose of maintaining the lake in a lowered condition a minimum of five (5) feet below the lowest footing elevation.

B. Lowering the lake and protecting the fish during to construction.

C. Protecting the spillway discharge race channel during the bypass process

1.02 RELATED WORK

A. Section 02885: Surface Water Diversion and Dewatering; *Reference spec*.

B. Murphey Dam Spillway Maintenance Plan: The city of Brookhaven has prepared plans for making maintenance repairs to the Murphey Candler Dam Spillway. The plans are not completed nor permitted and are therefore proceeding under a separate schedule from the Multiuse Trail.

C. Contractor is expected to coordinate and cooperate with the city and their contractor during the course of the project if the Spillway project comes to fruition during the course of the Multiuse trail project. A copy of the Spillway plans area available upon requires to the city.

1.03 UNIT RESPONSIBILITY

The by-pass pumps, piping, and associated accessories shall be provided by a single supplier to ensure a completely integrated and functional system.

1.04 SUBMITTALS

The Contractor shall develop a by-pass pumping plan, provide all equipment necessary for by-pass pumping, and maintain the equipment throughout the duration of the work. The Contractor shall submit the by-pass pumping plan, including all product and design data and operating calculations, to the Engineer of Record (EOR). The by-pass pumping plan shall include the following information as a minimum:

1. By-pass pump sizing criteria (i.e., force main size and length, static and dynamic head, flow velocity, maximum ponding elevation in reservoir, drawdown period and resulting capacity, number of each size to be on site, and power/fuel requirements.
2. Pump curves showing the pump operating range shall be submitted.

3. Method of noise control for each pump and/or generator; calculations demonstrating the expected attenuated noise levels (in decibels) at nearest residence.
4. Staging area for pumps and piping
5. Routing of pipes to and over the spillway into the spillway channel and securing in place.
6. Number, size, material, location, and method of installation of suction and discharge piping; thrust and restraint block sizes and locations; outlet(s)channel protection, temporary pipe supports and anchoring.
7. Schedule for installation and maintenance of by-pass pumping system, monitoring program, and monitoring log criteria.
8. Plan and schedule for lowering and maintaining the lake level at the prescribed level. .
9. Plan for protection of fish and other aquatic life during the process.
10. Plan for treatment of pumped water prior to discharging downstream.

PART 2 – PRODUCTS

2.01 BY-PASS PUMPS

A. The by-pass pumps used shall be fully automatic, self-priming units. The control system for the by-pass pumping system shall be fully automatic.

B. By-pass pumps shall be of sufficient capacity to accommodate the base flows plus any additional flows due to rain events.

C. The by-pass pumps may be driven by either electric motor or diesel engine.

1. Diesel engines must be provided with acoustic enclosures to minimize noise.
2. The Contractor is responsible for providing all necessary and required power and control wiring and associated electrical devices.

D. Unless otherwise specified or approved by the Owner, the pumping equipment shall be sound attenuated; noise levels shall not exceed 75 decibels at 23 feet.

E. The Contractor shall also provide a back up, on-site by-pass pumping system that will automatically energize upon a high-water level event, indicating the failure of the primary by-pass pumping unit. The back-up system shall be equal in all respects to the primary system. The backup by-pass pumping system shall have a separate force main from the main by-pass pumping system. The by-pass pumping system shall be configured to pump simultaneously with the main by-pass pumping system during storm events occurring where the main by-pass pumping unit does not dewater the lake to acceptable levels within one hour.

F. By-pass pump equipment supplier shall provide technical support and service 24 hrs/day, 7 days/week.

PART 3 - EXECUTION

3.01 EXAMINATION

A. The contractor shall verify the existing conditions.

B. The Contractor shall become familiar with the rainfall data and maximum allowable ponding elevation during construction associated with the Lake by reviewing the available information and data references provided in the Contract Documents. This is information provided to assist the Contractor with determining the needed dewatering and diversion devices for the project. If the Contractor requires more information to properly design dewatering and diversion devices, the Contractor should satisfy himself by obtaining the additional information, at his own expense.

C. The portion of the Lake drainage basin is urbanized and responds very quickly to rainfall events.

D. There is a pedestrian bridge over the spillway that must be protected during the process. The bridge will be closed to pedestrian use for safety reasons during the construction process. Contractor may utilize the bridge as part of the draw down system if needed. Contractor will be responsible for any damage caused to the bridge directly due to the drawdown system unitized.

3.02 BY-PASS PUMPING

A. The Contractor shall coordinate the by-pass pump installation and start-up with the Owner.
   1. A minimum of 48 hours advance written notice must be given before starting by-pass operations.
   2. The Owner reserves the right to delay the start of by-pass operations (e.g., in the event of forecasted adverse weather).

B. The complete by-pass pumping system shall be inspected daily by qualified personnel.

C. Lake is to be lowered to five (5) feet minimum below the bottom of the lowest footing as indicated on Sheet C8.4A Detail 2 to be an elevation of 886.35 feet. No excavation is allowed below the existing waterline on the dam or at the upstream toe the dam to create a sump for the by-pass pumping.

D. The lake level shall not be lowered at a rate of more than one (1) vertical foot per week. The contractor shall use temporary siphons/pumps to lower the lake level and maintain the lowered condition. The siphons/pumps should discharge in the service spillway.

E. The lake level shall not be lowered to an extent that would adversely impact aquatic life in the lake. This temporary pool elevation shall be maintained throughout the entire duration of the retaining wall construction and backfilling operations.

F. The lowered water level shall remain until the construction of the retaining walls is complete and the project Engineer deems the work is sufficiently complete to allow the lake level to be restored. Once the retaining walls have been constructed and backfilled (including all inspections) the pool elevation can be returned to the normal pool elevation. The lake shall not be filled more than 2 feet per week. During refilling the dam, service spillway, and CMP pipe should be monitored by the EOR for each (1) one-foot increase in pool elevation

D. Any fish trapped, floating or isolated in the exposed lakebed shall be removed as soon as possible. Any Fish removed shall be disposed of offsite properly in a landfill. The Contractor shall take measures to ensure that no odor caused by dead fish shall remain within 24 hours of commencing to remove fish.

E. The Contractor is responsible for the by-pass pumping operations and any damage caused to public or private property caused by the by-pass pumping operation, flow discharge, and/or failure of the by-pass pumping operation.

F. The Contractor to install a weather monitoring station and lake level gage at site to monitor rain events during non-work hours. Contractor shall be responsible for the weather monitoring station and components. The information shall be reported in real-time and be accessible from the internet. The web address shall be provided to Georgia Safe Dams program, the Contractor, pumping system supplier(s) and the Engineer. The reporting system shall be configured to call phone numbers and send text messages as specified by the Engineer.

G. The Contractor shall be on-call at all times to respond to all alarm conditions and/or failure of the by-pass pumping systems. The Contractor shall create a plan for bringing in additional pumping systems when lake levels, current rain events or forecasted rain events warrant additional pumping capacity as directed by the Engineer.

H. The by-pass pumping systems shall discharge flow into the existing spillway channel downstream of Nancy Creek Drive and the existing concrete spillway. Flows shall be contained within the legal easement of the spillway channel.

I. The by-pass pumping systems shall remain on-site, properly maintained and fully operational until permission for removal is given by the Engineer of Record.

END OF SECTION 02889

SECTION 02933

TEMPORARY SEEDING

PART 1 – GENERAL

1.1 SCOPE

A. The work covered by this section consists of the establishment of a temporary vegetative cover on disturbed areas by seeding with appropriate rapidly growing grass seed. Temporary seeding shall be provided for all exposed soil surfaces that are not to be fine graded or landscaped within 30 days after fine grading.

1.2 PROJECT CONDITIONS

A. Protect all adjacent public and private property from siltation and other damage due to construction activities with silt dams or fences as indicated on the Drawings.

B. Temporary seeding shall be applied to any and all disturbed areas left idle for two weeks and shall be applied no later than the 15th calendar day from last land disturbance activity (i.e. clearing, grubbing, or grading).

1.3 QUALITY CRITERIA

A. Installation shall be in strict compliance with the rules and regulations of the local seed laws.

B. Installation shall comply with all applicable codes, rules, regulations and ordinances related to erosion control and temporary seeding.

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PART 2 – PRODUCTS

2.1 TEMPORARY SEED

A. Select temporary grass seed appropriate to the season and site conditions. Temporary grass shall be a quick growing species such as millet, rye grass, Italian rye grass or cereal grasses suitable to the area providing a temporary cover which will not later compete with grasses sown for permanent cover. Seed shall meet the requirements of the rules and regulations of the Georgia Seed Law.

2.2 LIME

A. Provide agricultural grade ground or pulverized limestone. Lime shall contain not less than 85% carbonates with 50% passing a 100-mesh sieve. Lime shall have tested values of 90% minimum germination and 1% maximum weed content.

2.3 FERTILIZER

A. Provide standard commercial grade fertilizer, either 4-12-12, 6-12-12 or 5-10-15 as required for conditions.

PART 3 – EXECUTION

3.1 SEED-BED PREPARATION

A. Where soils are known to be highly acid (pH 5.5 and lower), apply lime at the rate of two tons per acre (1 #/10 s.f.).

B. Apply fertilizer at a rate of 450 lbs./acre (10 #/1,000 s.f.). Lime and fertilizer shall be incorporated into the top 2 to 4 inches of the soil by tilling.

C. Loosen ground surface by discing, raking or harrowing. If the area has been recently loosened or disturbed, no further roughening shall be required. Remove all large clods, boulders and debris which will interfere with the work. Remove all stones 2" and larger in any given dimension.

3.2 SEEDING

A. Apply seed evenly with a cyclone seeder, drill, culti-packer seeder or hydro-seeder. Small grains shall be planted no more than one inch deep. Grasses and legumes shall be planted no more than ¼ inch deep. Distribution by hand shall not be permitted.

3.3 ROLLING

A. Roll all seeded areas before applying mulch. On steep slopes cover seeds by dragging spiked chains or similar methods.

3.4 MULCHING

A. All seeding in fall for winter cover shall be mulched. Seedings on slopes 4:1 or greater, on adverse soil conditions and in excessively hot or dry weather shall also be mulched.

B. Mulch shall be straw, or hay spread at the rate of approximately two tons/acre, wood cellulose fiber applied at the rate of approximately 1500 lbs./acre. Bituminous treated mulch shall be used on all slopes steeper than 2:1.

C. Seedings made during optimum spring and summer seeding dates, with favorable soil and site conditions shall not require mulch if written permission is received by the Engineer.

3.5 WATERING

A. Provide watering as required to establish and maintain healthy vegetative cover.

3.6 RESEEDING

A. Reseed and provide straw cover for bare areas 1 s.f. and larger to establish and maintain vegetative cover and to prevent sheet and rill erosion. Repair erosion damage as required and reseed.

END OF SECTION 02933

SECTION 02975

CLEANUP AND FINISH

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish labor, materials, and equipment required to complete cleanup of all paving, building, grounds, and all other areas outlined on the drawing.

B. Chemicals, paints, cleaning products, concrete or other waste materials shall not be discarded in the planting beds. If such materials are discharged in the plant beds, the contractor shall remove the contaminated soils and replace with viable topsoil.

C. Debris shall not be dumped on any part of the property or any unauthorized place. All debris, construction material, Contractor's buildings or equipment, stumps, roots, boulders or any other extraneous material deposited during construction shall be removed from the site.

END OF SECTION 02975

SECTION 03300 B
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Concrete reinforcement.

B. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, manholes, and foundations.

C. Concrete curing.

2.02 RELATED REQUIREMENTS

A. Section 03310 B- Concrete Forming and Accessories: Forms and accessories for formwork.

B. Section 03513 B- Concrete Paving: Sidewalks, curbs and gutters.

2.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).

B. ACI 301 - Specifications for Structural Concrete 2016.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

D. ACI 306R - Guide to Cold Weather Concreting 2016.

E. ACI 308R - Guide to External Curing of Concrete 2016.

F. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021.

J. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

K. ASTM C150/C150M - Standard Specification for Portland Cement 2020.

L. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.

M. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).

N. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.

O. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete 2017a.

P. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.

Q. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.

R. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.

2.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.

C. Test Reports: Submit report for each test or series of tests specified.

2.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

4.01 FORMWORK

A. Comply with requirements of Section 03310.

4.02 REINFORCEMENT MATERIALS

4.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C33/C33M.

C. Lightweight Aggregate: ASTM C330/C330M.

D. Fly Ash: ASTM C618, Class C or F.

E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

4.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

D. Accelerating Admixture: ASTM C494/C494M Type C.

E. Water Reducing Admixture: ASTM C494/C494M Type A

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4.05 CURING MATERIALS

A. Curing Compound, Non-dissipating: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C309.

B. Water: Potable, not detrimental to concrete.

4.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:
   1. Reference construction plans.

4.07 MIXING

A. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

6.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

6.02 PREPARATION

A. Verify that forms are clean and free of rust before applying release agent.

6.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Ensure reinforcement, inserts, water stops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

C. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

6.04 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

6.05 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
      a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
      b. Spraying: Spray water over floor slab areas and maintain wet.

c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.

2. Final Curing: Begin after initial curing but before surface is dry.

6.06 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

D. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

6.07 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION

SECTION 03310 B
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Form accessories.

C. Form stripping.

2.02 RELATED REQUIREMENTS

A. Section 03300 B - Cast-in-Place Concrete.

2.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete 2016.

B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).

C. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).

PART 2 PRODUCTS

4.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

D. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.

4.02 FORMWORK ACCESSORIES

A. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bug holes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

PART 3 EXECUTION

6.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

6.02 EARTH FORMS

A. Earth forms are not permitted.

6.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

6.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

6.05 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

6.06 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

END OF SECTION

SECTION 03513 B
CONCRETE PAVING

PART 1 GENERAL

2.01 SECTION INCLUDES

A. Concrete sidewalks.

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2.02 RELATED REQUIREMENTS

A. Section 03300 - Cast-in-Place Concrete

B. Section 03310 B- Concrete Forming and Accessories.

C. Section 02205 B- Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.

D. Section 02215 B- Fill: Compacted subbase for paving.

E. Section 02220 B- Aggregate Base Courses:

2.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).

B. ACI 301 - Specifications for Structural Concrete 2016.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

D. ACI 305R - Guide to Hot Weather Concreting 2010.

E. ACI 306R - Guide to Cold Weather Concreting 2016.

F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021.

J. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.

K. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.

L. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types) 2018.

PART 2 PRODUCTS

4.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI 301.

4.02 FORM MATERIALS

A. Form Materials: As specified in Section 03 1000, comply with ACI 301.

4.03 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.

B. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.

C. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

4.04 CONCRETE MATERIALS

A. Concrete Materials: Provide in accordance with State of GA, Department of Transportation standards.

B. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2-inch length.

4.05 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2-inch-deep sealant pocket after removal.
   1. Material: ASTM D1751, cellulose fiber.

4.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

D. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.

E. Concrete Properties:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days: Reference construction plans for details.

4.07 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

6.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

6.02 SUB-BASE

A. See Section 02220 B for construction of base course for work of this Section.

6.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

6.04 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

6.05 REINFORCEMENT

A. Place reinforcement as indicated.

B. Interrupt reinforcement at contraction joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

6.06 COLD AND HOT WEATHER CONCRETING

A. Follow recommendations of ACI 305R when concreting during hot weather.

B. Follow recommendations of ACI 306R when concreting during cold weather.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

6.07 PLACING CONCRETE

A. Coordinate installation of snow melting components.

B. Place concrete in accordance with ACI 304R.

C. Ensure reinforcement, inserts, embedded parts, formed joints and [____] are not disturbed during concrete placement.

D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

E. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

6.08 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

6.09 FINISHING

A. Area Paving: Light broom, texture perpendicular to pavement direction.

B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4-inch radius.

C. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

6.10 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

6.11 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.

B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold, and cure three concrete test cylinders. Obtain test samples for every 100-cu yd or less of each class of concrete placed.
   1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

6.12 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

SECTION 03523

CONCRETE SIDEWALKS

PART 1 - GENERAL

1.01 SCOPE:

A. Concrete sidewalks shall be constructed of Portland cement concrete, at the locations and to the dimensions, lines, grades and cross section indicated on the Drawings or as directed by the Owner and in conformity with the provisions and requirements set out in these Specifications.

B. Concrete sidewalks shall include all the necessary excavation, unless otherwise indicated, subgrade and subbase preparation, backfilling, final clearing up and completing all incidentals thereto, as indicated on the Drawings or as directed by the Project Landscape Architect.

C. All materials and methods of construction for concrete sidewalks and pavement shall conform to the requirements of the Georgia Department of Transportation Standard Specifications and ASTM C 94 "Standard Specification for Ready Mixed Concrete".

D. Turndown edges along the sidewalks shall conform to these specifications and be poured integrally with the sidewalks.

E. Sealant on all exposed concrete surfaces.

1.02 CONDITIONS

A. Weather Limitations:
1. Do not conduct concrete paving operations when surface is saturated, or contains excess of moisture, which would prevent uniform distribution and required penetration.
2. Construct concrete sidewalk sections only when atmospheric temperature in the shade is above 40 degrees F, when the underlying base is dry and when weather is not rainy.
3. Place base course when air temperature is above 35 degrees F and rising. No base course shall be placed on a frozen, saturated, or otherwise unsuitable subgrade material.

B. Grade Control: Establish and maintain the required lines and grades for each course during construction operations.

1.03 INSPECTION AND TESTING:

A. Pavement and base testing will be performed by an independent testing laboratory paid by the Owner.

B. The testing agency shall test in-place courses for compliance with specified density, thickness and surface smoothness requirements.

C. Earthwork and compaction operations shall conform to the requirements of Section 02200 of these specifications.

D. Concrete Strength: One set of acceptance and field cylinders (a total of four) from the same batch of concrete will be made for each 50 cubic yards or fraction thereof, not less than once for each 5,000 square feet of pavement in each day's placing for each class and mix design.
   1. Each batch of concrete shall be tested for slump prior to placement. Slump shall be between 1/2 and 1 1/2 inches as determined by AASHTO Test Method T119.
   2. Acceptance cylinders are compression test cylinders molded in the field, stored and cured in the field for the first 24 hours after molding and thereafter in the laboratory of the testing agency until time of testing. Average breaking strength at 28 days of a set of two acceptance cylinders will comprise test.
   3. Field cylinders are compression test cylinders molded in the field, stored and cured on the work site in the same location and subject to the same exposure as job concrete of which it is a representative. Each set of two acceptance cylinders will have two matching field cylinders.
   4. One field cylinder will be broken at seven days and the remaining will be held in reserve.

E. Allowable Variation in Thickness:
   1. Aggregate Base Course: ±1/2-inch.
   2. Surface Course: ± 1/4-inch.

F. Surface Smoothness: Test finished surface of each course for smoothness using a 16-foot straightedge. Intervals of tests shall be as directed by the Landscape Architect. Surfaces will not be acceptable if exceeding the following:

   1. Base Course: 1/4-inch in 16 feet.
   2. Surface Course: 1/8-inch in 10 feet.

G. Contractor's Duties Relative to Testing:
   1. Notifying laboratory of conditions requiring testing.
   2. Coordinating with laboratory for field-testing.
   3. Paying costs for additional testing performed beyond the scope of that required and for retesting where initial tests reveal non-conformance with specified requirements.
   4. Paying the cost of overlays or pavement removal and replacement which does not comply with the specified testing limits.

H. Samples:

Contractor shall pour at least 3 samples of colored concrete complete with finish and an adjacent integral curb for approval prior to committing to the entire concrete pour.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Materials used in the construction of sidewalks, in addition to Section 03300 and other general requirements of these Specifications, shall conform, unless otherwise stipulated, to the following:
1. Portland cement shall conform to ASTM C 150, Type 1.
2. Graded aggregate base shall be uniform throughout and conform to requirements of Section 815.01 of the Georgia Department of Transportation Specifications.
3. Sand: Dune sand, bank-run sand and manufactured sand are not acceptable. Only builders' sand shall be used.
4. Fiber Reinforcement: Engineered polypropylene fibers designed for secondary reinforcement of concrete slabs.
5. Color: Schofield (Samples to be selected).
6. Premolded joint filler for expansion joints shall conform to the requirements of ASTM D 1751 or ASTM D 1752. The joint sealer for the joints in the concrete pavement shall meet the requirements of Federal Specification SS-S-164 and shall be hot poured type.
7. Concrete Color: Concrete shall include integrated colors in the concrete mix and shall be from same supplier and same batch mixture. Finished concrete shall have a light broom finish parallel to traffic flow on all sidewalk sections.
8. All concrete, except where shown or specified otherwise, shall have the following minimum compressive strengths at 28 days, and slump at time of placement:

Location	Strength	Maximum Aggregate Size	Slump
Footings, Bases	4000 psi	1-1/2"	3.5" (+/-1")
Walls	4000 psi	3/4"	3.5" (+/-1")
Pavement, Sidewalks	4000 psi	1-1/2"	3.5" (+/-1")

2.02 FORM MATERIAL:

A. Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, natal-farmed plywood faced or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to the joint system specified. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

B. Lumber used in construction of wood forms shall be free of bulge or warp, of uniform width, not less than 2-inches in thickness, except that 1-inch thickness may be used on curves and shall be sound and free from loose knots. Stakes shall be not less than 2" x 4" lumber of sufficient length that, when driven, they will hold the forms rigidly in place.

C. Metal forms shall be of approved sections and shall have a flat surface on top. They shall present a smooth surface of the desired contour, sufficiently thick and braced to withstand the weight of the concrete without bulging or becoming displaced.

2.03 SEALANT:

All exposed concrete surfaces shall be sealed with an effective sealant to protect the concrete from water and stain. Contactor shall submit preferred sealants to the Owner's representative for approval.

PART 3 - EXECUTION

3.01 LABOR:

A. For finishing, competent and skilled finishers shall be provided.

3.02 EQUIPMENT:

A. All equipment necessary and required for the construction of concrete sidewalks must be on the Project, proven to be in first class working condition and approved by the Owner, before construction will be permitted to begin.

B. A one bag mixer will be permitted when the total output of concrete, per 10-hour day, does not exceed 25 cubic yards.

C. Satisfactory floats, edgers, spades and tamps shall be furnished. Tamps of not over 8-inch diameter and weighing not less than 25 pounds shall be provided for tamping subgrade. A 10-foot longitudinal float of the inverted T-type with plough handles attached for manipulation, and a rigid float not less than 18-inches longer than the width of the walk being constructed, shall be provided**.**

3.03 REMOVAL OF STRUCTURES AND OBSTRUCTIONS:

A. Unless otherwise indicated or stipulated, the removal of structures, obstructions, etc., will be performed in accordance with the requirements of Section 02060 of these Specifications.

3.04 EARTHWORK AND COMPACTION

A. Earthwork and compaction operations shall be performed in accordance with requirements of Section 02200 of these specifications.

3.05 SUBGRADE PREPARATION:

A. The subgrade for the sidewalk shall be formed by excavation to a depth equal to the thickness of the concrete plus the base course.

B. All subgrade shall be of such width as to permit the proper installation and bracing of the forms.

C. Yielding, or unsuitable material shall be removed and backfilled with satisfactory material in accordance with recommendations and approval of geo-technical consultant. Place 6-inches of graded aggregate base, as determined by the geotechnical sub-consultant, under concrete sidewalks as necessary for subgrade stabilization, compacted thoroughly and finished to a smooth, unyielding surface and proper line, grade and cross section of the proposed construction.

C. Additional stabilization of poor subgrade areas may be necessary to achieve compaction criteria for aggregate base. These additional subgrade stabilization measures shall be performed under the direct supervision of the geo-technical consultant. These measures may include, but are not limited to, placement of

geogrid reinforcement materials, aggregate bridge lifts, undercutting of unsuitable soils and soil cement admixtures.

3.06 FORMS:

A. All forms shall be set upon the prepared subgrade, true to lines and grade, and held rigidly in place so as not to be disturbed or displaced during the placing of the concrete. The top of the form shall be set to exact grade and the height shall be equal to not less than the thickness of the proposed concrete.

B. Design form work to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms complying with ACI 347, to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades level and plumb work in finished structures. Provide for opening, offsets, sinkages, keyways, recesses, moldings, rustifications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like to prevent swelling and for easy removal.

E. Immediately before placing the concrete, the forms shall be given a coat of light oil and where being removed and used again, the forms shall be thoroughly cleaned and oiled each time.

F. Forms shall be removed within 24 hours after placing concrete and no pressure shall be exerted upon the concrete in removing forms.

G. When the concrete sidewalk is to be joined to an existing sidewalk, the existing sidewalk, if not in proper condition for the junction, shall be cut to a neat line perpendicular to both the centerline and the surface, or as indicated by the Owner.

3.07 JOINTS:

A. Control joints shall be saw scores. No trowel joint shall be permitted or accepted.

B. Unless otherwise indicated on the Drawings or as directed by the Landscape Architect, premoulded expansion joint filler, 3/4-inch in thickness, shall be placed at the locations and in line with expansion joints in the adjoining pavement, gutter or curb. Transverse expansion joints for concrete sidewalks shall be 3/4-inch thick. When expansion joints are not required in the adjoining pavement or gutter, and not otherwise indicated on the Drawings, a 3/4-inch premoulded expansion joint filler shall be placed at intervals of not over 30 feet apart. All premoulded expansion joint filler must be cut to full width or length of the proposed construction and shall extend to within 1/2-inch of the top or finished surface. All longitudinal expansion joints shall be placed as indicated on the Drawings or as directed by the Project Landscape Architect.

C. All expansion joints shall be true, even and present a satisfactory appearance.

D. All expansion joint material protruding after the concrete has been finished shall be trimmed flush as directed by the Landscape Architect.

E. Construction Joints: Locate and install construction joints not shown on the Drawings, so as not to impair strength and appearance of the structure, as acceptable to the Landscape Architect. Review need for additional joints or scores with the Landscape Architect prior to construction.

F. Control Joints in Slabs-on-Ground: Construct control joints in slabs-on-ground to form panels of patterns as shown. Locate expansion type joint at spacing recommended by Portland Cement Association.

G. Control Joints in Sidewalks: Provide joints in pattern as indicated on the Drawings. Locate expansion type joints at spacing as indicated.

H. Saw joints shall be cut no sooner than 7 hours or less than 24 hours from initial pour.

3.08 MANUFACTURING AND PLACING CONCRETE:

A. Immediately before placing concrete, the depth of the proposed concrete shall be checked by means of a template cut true to the cross section of the proposed construction and any irregularities shall be corrected.

B. Immediately before placing concrete, all subgrade shall be thoroughly sprinkled or wetted.

C. Concrete shall not be placed upon a frozen subgrade or subbase.

D. Construction joints will be permitted only at grooves or at expansion joints, unless otherwise approved by the Owner.

E. The concrete shall be manufactured and placed in accordance with the requirements of Section 03300 of these Specifications.

F. The concrete shall be placed immediately after mixing; the edges, sides, etc. shall be thoroughly spaded and the surfaces tamped sufficiently to thoroughly compact the concrete and bring the mortar to the surface. The concrete shall be deposited and compacted in a single layer.

3.09 FINISHING:

A. The concrete shall be stuck-off with a transverse template resting upon the side forms and then shall be floated with a 10-foot longitudinal float working the float transversely across the concrete with a sawing motion, always maintaining it parallel to the edges of the sidewalk, or driveway, where practicable, and in such a manner that all surplus water, laitance and inert material shall be removed from the surface. This operation shall be continued until the surface of the concrete shows no variation from a 10-foot straightedge. If necessary, additional concrete shall be added to fill depressions, and the longitudinal float used again. The longitudinal float shall not be moved ahead more than one-half its length at any time.

B. When the surface of the concrete is free from water and just before the concrete obtains its initial set, it shall be gone over and finished with a wooden float so as to produce a sandy texture. The longitudinal surface variations shall be not more than 1/4-inch under a 12-foot straightedge, nor more than 1/8-inch on a five-foot transverse section. The surface of the concrete must be finished so as to drain completely at all times.

D. The edges of the sidewalks or driveways shall be carefully finished and rounded with an edging tool having a radius of 1/2-inch.

E. Finish: The finished surface of the concrete shall be a light broom finish perpendicular to the flow of traffic.

F. The edges of the concrete at contraction joints shall be rounded with an edging tool having a radius of 1/4-inch. The top and ends, where practicable, of expansion joint material shall be cleaned of all concrete and the expansion joint material shall be trimmed so as to be slightly below the surface of the concrete. All marks caused by edging shall be removed with a wetted brush or wooden float.

G. The surface of sidewalks shall be divided into blocks by use of a grooving tool. Grooves shall be placed so as to cause contraction joints to be placed at a groove line, where practical. The grooves shall be spaced equal to the sidewalk width, but not to exceed 10’ spacing between joints. The grooves shall be cut to a depth of not less than 1-inch. The edges of the grooves shall be edged with an edging tool having a radius of 1/4-inch, and any marks caused by edging or otherwise shall be removed with a wetted brush or wooden float so as to give the surface an uniform texture and finish

3.10 PROTECTION AND CURING:

A. Immediately after finishing the concrete, it shall be covered and cured in accordance with the requirements of Section 03300 of these Specifications. Curing materials shall conform to the requirements of ASTM C 309 (liquid membrane compound) or ASTM C 171. If the temperature falls to below freezing, satisfactory heating devices shall be placed under suitable covers to keep the temperature around the concrete at above 45 degrees F.

B. Pedestrians will not be allowed upon concrete sidewalks until 12 hours after finishing concrete, and no vehicles or loads shall be permitted upon any sidewalk or driveway until the concrete has attained sufficient strength for such traffic.

C. The Contractor shall construct such barricades and protection devices as are necessary to keep pedestrians and traffic off the sidewalks.

H. If any sidewalk is damaged at any time previous to final acceptance of the project, it shall be repaired by removing all concrete within the limits of the grooves, and be replaced, at the Contractor's expense, with concrete of the type, kind and finish in the original construction.

3.11 SEALANT:

Apply industry standard concrete sealant to all exposed concrete surfaces in accordance with the manufactures specifications. Sealant shall be applied after the concrete surface has been adequately cleaned and prepared to receive the sealant.

3.12 BACKFILLING:

A. Immediately after the concrete has set sufficiently, the spaces along the sides or edges of the sidewalk shall be refilled with suitable material, this material shall be compacted in layers of not over 4-inches each, until firm and solid.

3.13 CLEANING:

A. All excess or unsuitable material shall be removed and disposed of in accordance with requirements of Section 02200 of these Specifications.

B. Final clean up shall be performed in accordance with the requirements of these Specifications prior to applying the concrete sealant.

C. All material becoming the property of the Owner shall be stored in a manner and at locations near or on the Project as directed by the Owner.

END OF SECTION 02523

SECTION 06100

ROUGH CARPENTRY

1.1 GENERAL

A. Coordination: Other sections that apply: Section 02845 Guardrails
Section 01340 Shop Drawings

B. Submittals: Submit the following:

1. Contractor shall remove a treatment tag from each lumber delivery and provide the Landscape Architect and Owner with a copy of the tag, manifest and delivery date. Include in daily reports and provide at regular on-site project meetings.
2. Contractor shall provide material certificates for dimension lumber specified to comply with minimum allowable unit stresses.
3. Wood treatment data, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials.
4. Research or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence code compliance of engineered wood products, foam-plastic sheathing, air-infiltration barriers, metal framing anchors, power-driven fasteners, and fire-retardant-treated wood.

1.2 PRODUCTS

A. Lumber, General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.

1. For exposed lumber, furnish pieces with grade stamps or tags applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
3. Provide lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. All permeant wood products making contact with the ground or exposed to the natural elements shall be **GROUND CONTACT** treated wood. No exceptions shall be made. Every piece of lumber shall have a treatment tag attached to one end and shall conform to AWPA Category Use Chart for UC4B .60 CCA, .31CA-C or equal.

Wood-Preservative-Treated Materials: Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Above Ground Lumber: Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.40 lb/cu. Ft or equal such as .23 MCA or .31 CA-C. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

    a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
    b. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
    c. Wood framing members less than 18 inches above grade.
    d. Wood floor plates installed over concrete slabs directly in contact with earth.

2. Ground Contact Lumber: Pressure treat ground contact wood members or freshwater with waterborne preservatives to a minimum retention of 0.60 lb/cu. ft. or approved equal such as .23 MCA or .31 CA-C.
3. Water Contact: Lumber, posts or piles in constant contact with fresh water shall be Marine Grade treatment or .UC4C - .80 CCA or equal for piles only.
   Saltwater or brackish contract for posts or piles shall be UC5B - 2.5 CCA
4. Deck boards shall be .80 CCA for all lumber exposed to surface water or over wetlands, water bodies or ground contact.
4. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.
5. Exterior Type: Use for exterior locations and where indicated.
6. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

C. Dimension Lumber: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

    1. Non-Load-Bearing Interior Partitions: Provide Standard, Stud, or No. 3 grade and any of the following species:

        a. Species: Mixed southern pine; SPIB.

    2. Framing Other than Non-Load-Bearing Partitions: Provide Construction or No. 2 grade and any of the following species:

        a. Species: Southern pine; SPIB.

    3. Exposed Framing: Provide material hand-selected from lumber of species and grade indicated below for uniformity of appearance and freedom from characteristics and would impair finish appearance.

        a. Species and Grade: Southern pine, Select Structural; SPIB.

D. Concealed Boards: Provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Species and Grade: Eastern softwoods, No. 3 Common per NELMA rules.
2. Species and Grade: Northern species, No. 3 Common or Standard per NLGA rules.
3. Species and Grade: Mixed southern pine, No. 2 per SPIB rules.
4. Species and Grade: Western woods, Standard per WCLIB rules or No. 3 Common per WWPA rules.

E. Miscellaneous Lumber: Provide No. 3 or Standard grade lumber of any species for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, and similar members.

F. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.

1. Power-Driven Fasteners: CABO NER-272.
2. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
3. Nails shall be hot dipped galvanized ring shank sinker.
4. Screws shall be hot dipped galvanized exterior screws.

G. Simpson Post Connector: OWT Ornamental Wood Ties,
(4x4 FPBIW) 51789 Faux Post Base.

H. Surface Wood Sealant:
Contractor shall seal the surface of all exposed wooden deck and railing with a clear water sealant. Contractor shall submit manufacturers product data and schedule on the selected sealant for approval by the Client before application.

1.3 EXECUTION

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

B. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

C. Construct per details included on the Drawings.

D. Prepare Shop Drawings where required

E. Apply wood surface water sealant as last action prior to turning over the site.

END OF SECTION 06100

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 02060 Demolition" for disposition of waste resulting from partial demolition of, structures, and site improvements, and for disposition of hazardous waste.
2. Section 02100 "Site Preparation" for disposition of waste resulting from site clearing and removal of above and below grade improvements.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including but not limited to the following:

1. Demolition Waste:
   a. Rip rap on dam.
   b. Concrete paving.
   c. Concrete reinforcing steel.
   d. Concrete masonry units.
   e. Rough hardware.
   f. Supports and hangers.
   g. Electrical conduit.

h. Copper wiring.
i. Lighting fixtures.
j. Electrical devices.

2. Construction Waste:
   a. Masonry and CMU.
   b. Lumber.
   c. Wood sheet materials.
   d. Metals.
   e. Piping.
   f. Metal rebar.
   g. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      6) Wood crates.
      7) Plastic pails.

1.4 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator and refrigerant recovery technician.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.5 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED-Accredited Professional, certified by the USGBC, as waste management coordinator.

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

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference: Conduct conference at Project site. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: Materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.

4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for demolition waste. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in hauling and tipping fees by donating materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

E. Waste Management in Historic Zones or Areas: Hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches or more.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.

B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 4-inch size.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Clean and stack undamaged, whole masonry units on wood pallets.

E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

F. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

J. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

K. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

L. Carpet Tile: Remove debris, trash, and adhesive.

1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

a. Comply with requirements in Section 329300 "Plants" for use of clean sawdust as organic mulch.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

a. Comply with requirements in Section 329300 "Plants" for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

D. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419