OFFICIAL NOTICE TO BIDDERS
STATE OF ILLINOIS

LAKE COUNTY FOREST PRESERVE DISTRICT
LIBERTYVILLE, ILLINOIS
BID #25105

Public notice is hereby given that electronically submitted bids will be received at the **Lake County Forest Preserve District located at 1899 West Winchester Road, Libertyville, Illinois until 11:00 a.m. local time, October 30, 2025 for the following:**

Project Name: CONSTRUCTION OF RECREATION FACILITIES LAKEWOOD FOREST PRESERVE

Plans and specifications for the above are available on line. Bid document(s) including plans and specifications for this project are available on the District website: http://www.LCFPD.org/bids

Bids shall be accompanied by bid security in an amount not less than ten percent (10%) of the amount of the total bid.

Lake County Forest Preserve District, in accordance with laws of State of Illinois, hereby notifies all bidders that the work performed under this contract shall be in accordance with the provisions of the Illinois Prevailing Wage Act 820 ILCS 130/1 et seq.

The successful Bidder will be required to furnish a Performance Bond and a Labor and Material Payment Bond upon award of the Contract in the penal sum of the full amount of the Contract Price as described in the bid package.

By:
Michael Zahalka, Senior Buyer
Lisa Roberts, Purchasing Manager

PUBLISH DATE: October 8, 2025

Lake County
Forest Preserves

1899 West Winchester Road
Libertyville, Illinois 60048
PurchasingDept@LCFPD.org
847-367-6640

CONTRACT FOR

THE CONSTRUCTION OF RECREATION FACILITIES LAKEWOOD FOREST PRESERVE

Project Number: 25105

October 8, 2025

BID PACKAGE

TABLE OF CONTENTS

1. Invitation for Bidder's Proposals
2. General Instructions to Bidders
3. Bidder's Proposal
4. Bidder's Sworn Acknowledgment
5. Bidder's Sworn Work History Statement
6. Bidder's Organizational and Experience Chart
7. Reference Form
8. Subcontractor List
9. Certification of Apprenticeship Program
10. Bid Bond
11. Notice of Award
12. Contract
    Contractor Certification
    Attachment A – Supplemental Schedule of Contract Terms
    Attachment B - Specifications
    Attachment C – List of Drawings
    Attachment D – Special Project Requirements
    Performance Bond
    Labor and Material Payment Bond

INVITATION FOR BIDDER'S PROPOSALS

OWNER: Lake County Forest Preserve District
1899 West Winchester Road
Libertyville, Illinois 60048

1. Invitation to Bid

Owner invites sealed Bidder's Proposals for the Work described in detail in the Contract and generally described as follows:

The Work to be performed under this Contract consists of the complete construction of the Recreation Facilities at Lakewood Forest Preserve in accordance with the Contract Documents. The Work shall also meet the requirements of all permitting agencies. The Work generally includes, but is not limited to all labor, equipment, and materials for: site preparation and removals, construction fencing, temporary erosion control and sediment control measures, grading and earthwork, utilities (storm, electrical, water), asphalt parking lot and striping, concrete paving, stone walls, cast-in-place concrete, floating dock, shelter A (4-season shelter), shelter B (large shelter), metal fabrication (handrails, guardrails, counters, and benches), planting, turf seeding and native seeding.

The Work shall be performed at the following Work Site:

Lakewood Forest Preserve
27277 N. Forest Preserve Road
Wauconda, Illinois 60084

2. Defined Terms

All terms capitalized in this Invitation for Bidder's Proposals and in the other documents included in the Bid Package are defined in the documents included in the Bid Package and shall have such defined meanings wherever used.

3. Inspection and Examination

The Bid Package is fully downloadable on our website at https://lakecntforestpreservedtil.tylerportico.com/va/vendor-access. Registration is not required to view bids; interested bidders **must** register online to participate fully in our purchasing process.

The Bidder whose Bidder's Proposal is accepted will be responsible for all errors in its Bidder's Proposal, including those resulting from its failure or neglect to make a thorough examination and investigation of the Bid Package and the conditions of the Work Site and the surrounding area.

4. Pre-Bid Conference

A non-mandatory pre-bid conference will be held for the project on October 16, 2025 at 9:00 a.m. local time, at 1899 West Winchester Road, Libertyville, Illinois 60048. Each prospective Bidder may conduct an inspection of the Work Site, the surrounding area, and all local conditions, including subsurface, underground, and other concealed conditions, after the pre-bid conference.

5. Questions

If any prospective Bidder is in doubt as to the true meaning of any part of the Bid Package, such prospective Bidder shall submit to Owner an email directed to Owner's Purchasing Department, purchasingdept@LCFPD.org, for an interpretation thereof not later than 11:00 a.m. local time on October 23, 2025.

6a. Bid Submittal.
A Vendor submitting a bid (Bid Proposal Pg 1 through Bid Bond, along with any addenda, if issued) must adequately identify its five-digit bid PROJECT NUMBER on the document upload and submit it on or before the Bid Opening Deadline identified on Invite Pg 2.

Lake County Forest Preserves will be accepting electronic bid submission **ONLY** for this bid.

In Vendor Access: https://lakecntforestpreservedtil.tylerportico.com/va/vendor-access/registration

- You will need to 'Register / Sign-In' as a Vendor to submit a bid.
- Find Bid #25105.
- Click on the Create Proposal link at the top right of the page.
- Utilize Owner provided Excel Schedule of Price to calculate the bid price.
- Populate Total Base Bid Price into the Vendor Access portal.
- When prices are completely entered, there's an option to Save and Quit (you can return to the bid at a later time) or Next.
- Clicking Next takes you to the Attachments page where the documents to upload for bid submittal will display.
- You will be able to review the bid prior to submitting.
- Once submitted, if changes to the bid or bid documents need to be made, you can 'Rescind Proposal' to adjust your bid as needed.

6b. Bid Opening. The Bid Opening for this project is **11:00 a.m local time on October 30, 2025.** If any prospective bidder intends to join the Bid Opening, you may do so by attending in person at Owner's offices noted on Page 1 of this Invite or via a Zoom meeting via your computer, smartphone, or telephone using the information below:
Join Zoom Meeting

https://us06web.zoom.us/j/86958888088?pwd=KVZ0ZjWefCbAFeSJgUgECmimQ2aZHc.1
Meeting ID: 869 5888 8088
Passcode: 801314

One tap mobile
+13092053325,,86958888088#,,,,*801314# US
+13126266799,,86958888088#,,,,*801314# US (Chicago)
Join instructions

https://us06web.zoom.us/meetings/86958888088/invitations?signature=zPgUNZ_1jysqDLLPEp8G7RhjX6M3bkxf6CK60e07LJU

7. Bid Security, Bonds, Insurance, and Apprenticeship Program Requirements
A. Bid Security. Each Bidder's Proposal shall be accompanied by a security deposit of at least 10% of the Bidder's Price Proposal in the form of (1) a cashier's check or certified check drawn on a solvent bank insured by the Federal Deposit Insurance Corporation and payable without condition to Owner; or (2) a Bid Bond in the form included in the Bid Package, or a form otherwise approved by Owner, from a surety company licensed to do business in the State of Illinois with a general rating of A and a financial size category of Class III or better in Best's Insurance Guide. **If the required bid security/bond is not submitted with your bid proposal, your bid proposal will be rejected.**

B. Performance and Payment Bonds. The successful Bidder will be required to furnish a Performance Bond and a Labor and Material Payment Bond upon award of the Contract, each in the penal sum of the full amount of the Contract Price, on forms provided in the Bid Package from such a surety company meeting the requirements set forth above. Each Bidder's Proposal shall be accompanied by a letter from such a surety company stating that it will execute Bonds on forms

provided in the Bid Package upon award of the Contract to Bidder. **If the required letter from your surety company is not submitted with your bid proposal, your bid proposal may be rejected.**

C Insurance. The successful Bidder will be required to furnish certificates and policies of insurance as required by Section 4.2 of the Contract upon award of the Contract. Each Bidder's Proposal shall be accompanied by a letter from Bidder's insurance carrier or its agent certifying that said insurer has read the requirements set forth in the Contract and will issue the required certificates and policies of insurance upon award of the Contract to Bidder. **If the required letter from your insurance carrier/agent is not submitted with your bid proposal, your bid proposal may be rejected.**

D. Apprenticeship Program. The Owner's Purchasing Policy requires each Bidder to certify that it, and each of its subcontractors performing work valued in excess of $30,000.00, participates in an active apprenticeship and training program that is approved and registered with the United States Department of Labor's Office of Apprenticeship. Each Bidder must complete the Certification of Apprenticeship Programs included in this Bid Package. **If the required Certification of Apprenticeship Programs is not submitted with your bid proposal, your bid proposal may be rejected.**

DATED this 8th day of October, 2025

LAKE COUNTY FOREST PRESERVE DISTRICT

By: Michael Zahalka, Senior Buyer
Lisa Roberts, Purchasing Manager

GENERAL INSTRUCTIONS TO BIDDERS
TABLE OF CONTENTS

1. Interpretation of Documents Included in Bid Package 1
2. Calculation of Unit Price Proposals 1
3. Prevailing Wages 1
4. Taxes and Benefits 2
5. Permits and Licenses 2
6. Preparation of Bidder's Proposal 2
7. Signature Requirements 2
8. Bid Security 3
9. Submission of Bidder's Proposal 3
10. Withdrawal of Bidder's Proposal 3
11. Subcontractor List 4
12. Qualification of Bidders 4
13. Disqualification of Bidders 4
14. Award of Contract 5
15. Notice of Award; Effective Date of Award 5
16. Closing of Contract 5
17. Failure to Close 6

GENERAL INSTRUCTIONS TO BIDDERS

1. Interpretation of Documents Included in Bid Package

A. Defined Terms. All terms capitalized in these General Instructions to Bidders and in the other documents included in the Bid Package are defined in the documents included in the Bid Package and shall have such defined meanings wherever used.

B. Implied Terms. If any personnel, equipment, materials or supplies that are not directly or indirectly set forth in the Contract are nevertheless necessary to the proper provision, performance, and completion of the whole of the Work in accordance with the intent of the Contract, each prospective Bidder shall understand such personnel, equipment, materials or supplies to be implied and shall provide for such personnel, equipment, materials or supplies in its Bidder's Proposal as fully as if it were particularly described.

C. Information Provided by Owner. When information pertaining to subsurface, underground or other concealed conditions, soils analysis, borings, test pits, utility locations or conditions, buried structures, condition of existing structures, and other preliminary investigations is distributed with the Bid Package or such information is otherwise made available to any prospective Bidder by Owner, such information is distributed or made available solely for the convenience of such prospective Bidder and is not part of the Bid Package. Owner assumes no responsibility whatsoever in respect to the sufficiency or accuracy of any such information, and there is no guarantee or warranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the Work or the Work Site, or that the conditions indicated are representative of those existing at any particular location, or that different conditions may not be present.

D. Addenda. No interpretation of the documents included within the Bid Package will be made except by written addendum duly issued by Owner ("Addendum"). No interpretation not contained in an Addendum shall be valid or have any force or effect whatsoever, nor entitle any Bidder to assert any claim or demand against Owner on account thereof.

All Addenda issued prior to the opening of Bidder's Proposals shall become a part of the Bid Package. Each prospective Bidder shall be responsible for inquiring from time to time as to the availability of Addenda.

Owner shall use its best efforts to issue Addenda in response to all valid, appropriate, and timely inquiries, but accepts no responsibility for doing so. Inquiries not answered by Addenda shall be considered invalid, inappropriate, or untimely inquiries.

2. Calculation of Unit Price Proposals

Prices entered into Vendor Access items tab shall become the Schedule of Prices within the Bidder's Proposal and Contract.

On any items for which Bidder's Proposals are to be received on a unit price basis, the approximate quantities stated in the Schedule of Prices are Owner's estimates only for Owner's convenience in comparing Bidder's Proposals and shall not be relied upon by prospective Bidders. Each prospective Bidder shall, before submitting its Bidder's Proposal for any Unit Price Items, make its own estimate of the quantities of Unit Price Items required to complete the Work and shall determine its Price Proposal for each Unit Price Item in light of its own estimate.

3. Prevailing Wages

In accordance with the Prevailing Wage Act, 820 ILCS 130/0.01 et seq., not less than the prevailing rate of wages for similar work in the locality in which the Work is to be performed shall be paid to all laborers, workers, and mechanics performing Work under this Contract. Occasionally, the Illinois Department of Labor may revise the prevailing rate of hourly wages to be paid; the revised rate shall apply to this Contract. The prevailing rate of wages in Lake County can be found on the IDOL website: https://www2.illinois.gov/idol/Pages/default.aspx

4. Taxes and Benefits

Owner is exempt from state and local sales, use and excise taxes. Bidder's Price Proposal shall not include any such taxes. A letter of exemption will be provided to the successful Bidder, if necessary. Owner will not reimburse, nor assist the successful Bidder in obtaining reimbursement for, any state or local sales, use or excise taxes paid by the successful Bidder.

Bidder's Price Proposal shall include all other applicable federal, state, and local taxes of every kind or nature applicable to the Work, as well as all taxes, contributions, and premiums for unemployment insurance, old age, or retirement benefits, pensions, annuities or other similar benefits.

5. Permits and Licenses

Except as otherwise expressly provided in Attachment A to the Contract, Bidder's Price Proposal shall include the cost of obtaining all permits, licenses, and other approvals and authorizations required by law for performance of the Work. It shall be the sole responsibility of each prospective Bidder to determine the applicable permits, licenses, and other approvals and authorizations, and no extra compensation shall be paid by Owner for the successful Bidder's failure to include these costs in its Bidder's Proposal.

6. Preparation of Bidder's Proposal

Bidder's Proposals to enter into the Contract for the Work shall be made only on the blank Bidder's Proposal form furnished by Owner and included in the Bid Package. The Bidder's Proposal form included in the Bid Package shall be removed from the Bid Package prior to preparation for submission.

Entries on the Bidder's Proposal form shall be typed or legibly written in ink. Prices entered into Vendor Access items tab shall become the Schedule of Prices within the Bidder's Proposal and Contract.

Prospective Bidders are warned against making alterations of any kind to the Bidder's Proposal form or to any entry thereon. Bidder's Proposals that contain omissions, conditions, alterations, or additions not called for may be rejected or interpreted so as to be most favorable to Owner.

Every Bidder submitting a Bidder's Proposal shall be conclusively deemed to have evidenced an intention to be bound thereby whether or not the requirements for signing Bidder's Proposals found in Section 7 of these General Instructions to Bidder's are satisfied. However, any Bidder's Proposal that fails to comply with Section 7 of these General Instructions to Bidders may nevertheless be rejected.

Bidder's Proposals that are not submitted on the Bidder's Proposal form furnished by Owner or that are not prepared in accordance with these General Instructions to Bidders may be rejected. If a deficiently prepared Bidder's Proposal is not rejected, Owner may demand correction of any deficiency and award the Contract to Bidder upon satisfactory compliance with these General Instructions to Bidders.

7. Signature Requirements

A. Bidders' Proposals. The following requirements shall be observed in the signing of each Bidder's Proposal:

1. Corporations. Each Bidder's Proposal submitted by a corporation shall be signed by the President or other authorized officer of the corporation and shall bear the attesting signature of the Secretary or Assistant Secretary of the corporation.

2. Partnerships. Each Bidder's Proposal submitted by a partnership shall be signed by all of its general partners or by an attorney-in-fact.

3. Individuals. Each Bidder's Proposal submitted by an individual shall be signed by such individual or an attorney-in-fact.

4. Joint Ventures. Each Bidder's Proposal submitted by a joint venture shall be signed by each signatory of the joint venture agreement by which such joint venture was formed in accordance with the applicable provisions of (1), (2), and (3) above or by an attorney-in-fact.

When requested by Owner, satisfactory evidence of the authority of the person or persons signing on behalf of Bidder shall be furnished.

B. Other Documents. The signature requirements set forth in Subsection 7A shall apply to all other documents in the Bid Package required to be executed by Bidder, Bidder's sureties and Bidder's insurance representatives, as well as to the Contract, the Contractor's Certification, and all other required documentation related to the Contract.

8. Bid Security

A. Required Bid Security. Every Bidder's Proposal shall be accompanied by bid security in the form of a cashier's check, certified check or bid bond, as specified in the Invitation for Bidder's Proposals ("Bid Security"), which Bid Security shall stand as a guarantee that (1) Bidder will submit all additional information requested by Owner; (2) if such Bidder's Proposal is accepted, Bidder will timely file (in accordance with Section 16.B of these General Instructions to Bidders) the Bonds and the certificates and policies of insurance required by the Contract; and (3) if such Bidder's Proposal is accepted, Bidder will timely execute (in accordance with Section 16.C of these General Instructions to Bidders) the Contract, the Contractor's Certification, and all other required documentation related to the Contract.

B. Return of Bid Security. Bid Security submitted in the form of cashier's check or certified check will be returned within five (5) days after execution of the Contract by Owner. Bid Bonds will not be returned unless otherwise requested by Bidder.

C. Liquidated Damages. If a Bidder fails to timely submit all additional information requested by Owner; or if the successful Bidder fails to timely and properly submit all required Bonds, certificates and policies of insurance; or if the successful Bidder fails to timely and properly execute the Contract, the Contractor's Certification, and all other required documentation related to the Contract, it will be difficult and impracticable to ascertain and determine the amount of damage that Owner will sustain by reason of any such failure. For such reason, every Bidder shall, by submitting its Bidder's Proposal, be deemed to agree that Owner shall have the right, at its option in the event of any such default, to retain or recover as reasonably estimated liquidated damages, and not as a penalty, the entire amount of the Bid Security or 10% of the Bidder's Price Proposal, whichever is greater, or to exercise any and all equitable remedies it may have against the defaulting Bidder.

9. Submission of Bidder's Proposal

Bids shall be submitted as outlined within the Invitation for Bidder's Proposal Section 6, Invite Pg 2. All Addenda will be considered part of each Bidder's Proposal whether attached or not.

10. Withdrawal of Bidder's Proposal

Any Bidder's Proposal may be withdrawn at any time prior to the opening of any Bidder's Proposal, provided that a request in writing, executed by Bidder in the manner specified in Section 7 of these General Instructions to Bidders, for the withdrawal of such Bidder's Proposal is filed with Owner prior to the opening of any Bidder's Proposal. The withdrawal of a Bidder's Proposal prior to opening of any Bidder's Proposal will not prejudice the right of Bidder to file a new Bidder's Proposal.

No Bidder's Proposal shall be withdrawn without the consent of Owner for a period of ninety (90) days after the opening of any Bidder's Proposal. Any Bidder's Proposal may be withdrawn at any time following the expiration of said ninety (90)-day period, provided that a request in writing,

executed by Bidder in the manner specified in Section 7 of these General Instructions to Bidders, for the withdrawal of such Bidder's Proposal is filed with Owner after said ninety (90)-day period. If no such request is filed, the date for acceptance of such Bidder's Proposal shall be deemed to be extended until such a request is filed or until Owner executes a Contract pursuant to the Invitation for Bidder's Proposals or until Owner affirmatively and in writing rejects such Bidder's Proposal.

11. Subcontractor List

Every Bidder's Proposal shall be accompanied by a fully completed Subcontractor List form provided in the Bid Package. As part of this Subcontractor List form, each Bidder shall provide the names, addresses, work to be performed, and estimated value of work for all subcontractors to be employed on this project.

12. Qualification of Bidders

A. Factors. Owner intends to award the Contract only to a Bidder that furnishes satisfactory evidence that it is a "responsible bidder" with the requisite experience, ability, capital, facilities, plant, organization, and staffing to enable it to perform the Work successfully and promptly, and to complete the Work for the Contract Price and within the Contract Time.

B. Additional Information. Owner reserves the right to require from any Bidder, prior to award of the Contract, a detailed statement regarding the business and technical organizations and plant of Bidder that is available for the Work. Information pertaining to financial resources, experience of personnel, contract defaults, litigation history, and pending construction projects may also be requested.

C. Final Determination. The final selection of the successful Bidder shall be made on the basis of the amount of the Bidder's Price Proposals, Owner's prior experience with the Bidders, Owner's knowledge of the Bidder's performance on other relevant projects, any additional information submitted by Bidders to satisfy Owner that Bidder is a "responsible bidder" and is adequately prepared to fulfill the Contract, and all other relevant facts of matters mentioned in the Bid Package or that Owner may legally consider in making its determination.

13. Disqualification of Bidders

A. More than One Bidder's Proposal. No more than one (1) Bidder's Proposal for the Work described in the Contract shall be considered from any single corporation, partnership, individual, or joint venture, whether under the same or different names and whether or not in conjunction with any other corporation, partnership, individual, or joint venture. Reasonable grounds for believing that any corporation, partnership, individual or joint venture is interested in more than one Bidder's Proposal for the Work may cause the rejection of all Bidder's Proposals in which such corporation, partnership, individual or joint venture is interested. Nothing contained in this Subsection 13A shall prohibit any single corporation, partnership, individual or joint venture, whether under the same or different names and whether or not in conjunction with any other corporation, partnership, individual or joint venture, from submitting a bid or quoting prices to more than one Bidder for equipment, materials, and supplies or labor to be furnished as a subcontractor or supplier.

B. Collusion. If there are reasonable grounds for believing that collusion exists among any Bidders, all Bidders' Proposals of the participants in such collusion will not be considered.

C. Default. If a Bidder is or has been in default on a contract with Owner or in the payment of monies due Owner, its Bidder's Proposal will not be considered.

14. Award of Contract

A. Reservation of Rights. Owner reserves the right to accept the Bidder's Proposal that is, in its judgment, the best and most favorable to the interests of Owner and the public; to reject the low Price Proposal; to accept any item of any Bidder's Proposal; to reject any and all Bidder's Proposals; to accept and incorporate corrections, clarifications or modifications following the opening of the Bidder's Proposals when to do so would not, in Owner's opinion, prejudice the bidding process or create any improper advantage to any Bidder; and to waive irregularities and informalities in the bidding process or in any Bidder's Proposal submitted, provided, however, that the waiver of any defect or informality shall not be considered a waiver of any other defect or informality, and Bidders should not rely upon or anticipate, such waivers in submitting their Bidder's Proposals.

B. Firm Offers. All Bidder's Proposals are firm offers to enter into the Contract and no Bidder's Proposals shall be deemed rejected, notwithstanding acceptance of any other Bidder's Proposal, until the Contract has been executed by both Owner and the successful Bidder or until Owner affirmatively and in writing rejects such Bidder's Proposal.

C. Time of Award. It is expected that the award of the Contract, if it is awarded, will be made within (90) days following the opening of the Bidder's Proposals. Should administrative difficulties be encountered after the opening of the Bidder's Proposals, including the annulment of any award that may delay an award or subsequent award beyond such (90)-day period, Owner may accept any Bidder's Proposal for which the date for acceptance has been extended as provided in Section 10 of these General Instructions to Bidders in order to avoid the need for re-advertisement. No Bidder shall be under any obligation to extend the date for acceptance of its Bidder's Proposal. Failure of one or more of the Bidders or their sureties to extend the date for acceptance of its Bidder's Proposal shall not prejudice the right of Owner to accept any Bidder's Proposal for which the date for acceptance has been extended.

15. Notice of Award; Effective Date of Award

If the Contract is awarded by Owner, such award shall be effective when a Notice of Award in the form included in the Bid Package has been delivered to the successful Bidder ("Effective Date of Award"). Owner will prepare the Contract based upon Bidder's Proposal and route electronically for signatures following Board award, if applicable.

16. Closing of Contract

A. Closing Date. Unless otherwise stated in the Notice of Award, the successful Bidder shall satisfactorily complete all Conditions Precedent to Closing before, and the Contract and all related documents shall be executed, submitted and exchanged by Owner and Bidder ("Closing") on the tenth day following the Effective Date of Award or within such extended period as Owner may, in the exercise of its sole discretion, authorize in writing after issuance of the Notice of Award ("Closing Date").

B. Conditions Precedent to Closing. On or before the Closing Date, the successful Bidder shall: (1) sign (see Section 7), date as of the Closing Date, and submit to Owner all copies of the Contract tendered by the Owner, the Contractor's Certification, and all other required documentation related to the Contract on or before the Closing Date; and (2) submit two (2) executed copies of all required Bonds dated as of the Closing Date and all certificates and policies of insurance (see Contract, Article IV) dated as of the Closing Date ("Conditions Precedent to Closing").

Failure to timely execute or submit any of the aforesaid documents shall be grounds for the imposition of liquidated damages as more specifically set forth in Section 8 above. If the submitted documents or any of them fail to comply with these General Instructions to Bidders or the Contract,

or are not timely executed and submitted, Owner may, in its sole discretion, annul the award or allow the successful Bidder an opportunity to correct the deficiencies.

In no event will Owner execute the Contract until any and all such deficiencies have been cured or Owner has received adequate assurances, as determined by Owner, of complete and prompt performance.

C. Closing. At the Closing, and provided that all documents required to be submitted prior to or at the Closing have been reviewed and determined by Owner to be in compliance with these General Instructions to Bidders and the Contract, or assurances of complete and prompt performance satisfactory to Owner have been received, Owner shall execute the Contract electronically, with a certified copy sent to Owner, Bidder, and surety company.

17. Failure to Close

A. Annulment of Award; Liquidated Damages. The failure or refusal of a successful Bidder to comply with the Conditions Precedent to Closing or to Close shall be just cause for the annulment of the award and the imposition of liquidated damages or the exercise of equitable remedies, both as more specifically set forth in Section 8 above.

B. Subsequent Awards. Upon annulment of an award, Owner may accept and award a Contract based on any other Bidder's Proposal as Owner, in its sole judgment, deems to be the best, or may invite new proposals, or may abandon the bidding process or the Work.

RETURN THIS COMPLETED DOCUMENT

BIDDER'S PROPOSAL

Full Name of Bidder _____("Bidder")

Principal Office Address _____

Local Office Address _____

Contact Person_____Telephone_____

Fax _____E-Mail _____

TO: Lake County Forest Preserve District ("Owner")
1899 West Winchester Road
Libertyville, Illinois 60048
Attention: Michael Zahalka, Senior Buyer
Lisa Roberts, Purchasing Manager

Bidder warrants and represents that Bidder has carefully examined the Work Site described below and its environs and has reviewed and understood all documents included, referred to, or mentioned in this Bidder's Proposal, including ALL Addenda.

Bidder acknowledges and agrees that all terms capitalized in this Bidder's Proposal shall have the meaning given to them in the documents included in the Bid Package.

1. Work Proposal

A. Contract and Work. If this Bidder's Proposal is accepted, Bidder proposes and agrees that Bidder will contract with Owner, in the form of the Contract included in the Bid Package to provide, perform and complete all Work as defined in Article I of the Contract and to do all other things required of Contractor by the Contract in a proper and workmanlike manner and in full compliance with and as required by or pursuant to the Contract.

B. Manner and Time of Performance. If this Bidder's Proposal is accepted, Bidder proposes and agrees that Bidder will perform the Work in the manner and time prescribed in the Bid Package and according to the requirements of Owner pursuant thereto.

C. General. If this Bidder's Proposal is accepted, Bidder proposes and agrees that Bidder will do all other things required of Bidder or Contractor, as the case may be, by the Bid Package.

2. Contract Price Proposal

If this Bidder's Proposal is accepted, Bidder will, except as otherwise provided in Section 2.1 of the Contract, take in full payment for all Work and other matters set forth under Section 1 above, including overhead and profit; taxes, contributions, and premiums; and compensation to all subcontractors and suppliers, the compensation set forth on the following "Schedule of Prices" ("Price Proposal"), which Schedule of Prices Bidder understands and agrees will be made a part of the Contract.

RETURN THIS COMPLETED DOCUMENT

SCHEDULE OF PRICES

A. Unit Price Contract

Prices entered into Vendor Access items tab shall become the Schedule of Prices within the Bidder's Proposal and Contract.

For providing, performing, and completing all Work, the total Contract Price, which is the sum of the products resulting from multiplying the number of acceptable units of Unit Price Items (including Base Bid Items and Alternate Bid Items) listed below incorporated in the Work by the Unit Price set forth below for such Unit Price Item. Bidder acknowledges that the total Contract Price will depend on the number of Base Bid Items and Alternate Bid Items accepted by Owner and the Unit Prices accepted by Owner:

B. Basis for Determining Prices

It is expressly understood and agreed that:

1. The approximate quantities set forth in this Schedule of Prices for each Unit Price Item (if any) are Owner's estimate only, that Owner reserves the right to increase or decrease such quantities, and that payment for each Unit Price Item shall be made only on the actual number of acceptable units of such Unit Price Item installed complete in place, measured on the basis defined in the Contract;

2. Owner is not subject to state or local sales, use, and excise taxes and no such taxes are included in this Schedule of Prices;

3. All other applicable federal, state, and local taxes of every kind and nature applicable to the Work as well as all taxes, contributions, and premiums for unemployment insurance, old age or retirement benefits, pensions, annuities, or other similar benefits are included in this Schedule of Prices; and

4. All costs, royalties, and fees arising from the use on, or the incorporation into, the Work of patented equipment, materials, supplies, tools, appliances, devices, processes, or inventions are included in this Schedule of Prices.

All claim or right to dispute or complain of any such estimated quantity, or to assert that there was any misunderstanding in regard to the nature or amount of any Unit Price Item to be provided or performed, or to claim any additional compensation by reason of the payment of any such tax, contribution, or premium or any such cost, royalty or fee is hereby waived and released.

3. Contract Time Proposal

If this Bidder's Proposal is accepted, Bidder will commence the Work not later than the "Commencement Date" set forth in Attachment A to the Contract and will perform the Work diligently and continuously and will complete the Work not later than the "Completion Date" set forth in Attachment A to the Contract.

4. Firm Proposal

All prices and other terms stated in this Bidder's Proposal are firm and shall not be subject to withdrawal, escalation or change for a period of ninety (90) days after the date on which any Bidder's Proposal is opened or such extended acceptance date for Bidder's Proposals as may be established pursuant to Sections 10 and 14 of the General Instructions to Bidders.

5. Bidder Representations

A. No Collusion. Bidder warrants and represents that the only persons, firms or corporations interested in this Bidder's Proposal as principals are those named in Bidder's Sworn

RETURN THIS COMPLETED DOCUMENT

Acknowledgment attached hereto and that this Bidder's Proposal is made without collusion with any other person, firm or corporation.

B. Not Barred. Bidder warrants, represents, and certifies that it is not barred by law from contracting with Owner or with any unit of state or local government.

C. Qualified. Bidder warrants and represents that it has the requisite experience, ability, capital, facilities, plant, organization, and staff to enable Bidder to perform the Work successfully and promptly and to commence and complete the Work within the Contract Price and Contract Time proposals set forth above. In support thereof, Bidder submits the attached Sworn Work History Statement. In the event Bidder is preliminarily deemed to be one of the most favorable to the interests of Owner, Bidder hereby agrees to furnish upon request, within two (2) business days or such longer period as may be set forth in the request, such additional information as may be necessary to satisfy Owner that Bidder is adequately prepared to fulfill the Contract.

D. Owner's Reliance. Bidder acknowledges that Owner is relying on all warranties, representations, and statements made by Bidder in this Bidder's Proposal.

6. Surety and Insurance

Bidder herewith tenders surety and insurance commitment letters as specified in Section 7 of the Invitation for Bidder's Proposals.

7. Bid Security

Bidder herewith tenders the Bid Security as specified in Section 7 of the Invitation for Bidder's Proposals in the sum of _____ dollars ($ _____), which is equal to at least ten percent (10%) of Bidder's Price Proposal ("Bid Security").

8. Owner's Remedies

Bidder acknowledges and agrees that should Bidder fail to timely submit all additional information that is requested of it; or should Bidder, if Owner awards Bidder the Contract, fail to timely submit all the Bonds and all the certificates and policies of insurance required of it; or should Bidder, if Owner awards the Bidder the Contract, fail to timely execute the Contract, Contractor's Certification and all other required documentation related to the Contract, it will be difficult and impracticable to ascertain and determine the amount of damage that Owner will sustain by reason of any such failure and, for such reason, Owner shall have the right, at its option in the event of any such default by Bidder, to retain or recover as reasonably estimated liquidated damages, and not as a penalty, the entire amount of the Bid Security or ten percent (10%) of Bidder's Price Proposal, whichever is greater, or to exercise any and all equitable remedies it may have against Bidder.

9. Owner's Rights

Bidder acknowledges and agrees that Owner reserves the right to reject any and all Bidder's Proposals, reserves the right to accept or reject any item of any Bidder's Proposal, and reserves such other rights as are set forth in Section 14 of the General Instructions to Bidders.

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10. Bidder's Obligations

In submitting this Bidder's Proposal, Bidder understands and agrees that it shall be bound by each and every term, condition or provision contained in the Bid Package, which are by this reference incorporated herein and made a part hereof.

DATED this _____ day of _____, 2025

Attest/Witness: _____
Bidder

By: _____

Title: _____

SEE GENERAL INSTRUCTIONS TO BIDDERS, SECTION 7
FOR SIGNATURE REQUIREMENTS

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BIDDER'S SWORN ACKNOWLEDGMENT

_____ ("Deponent"), being first duly sworn on oath, deposes and states that the undersigned Bidder is organized as indicated below and that all statements herein made are made on behalf of such Bidder in support of its Bidder's Proposal for the above Contract and that Deponent is authorized to make them.

Deponent also deposes and states that Bidder has carefully prepared, reviewed, and checked its Bidder's Proposal and that the statements contained in its Bidder's Proposal and in this Acknowledgment are true and correct.

COMPLETE APPLICABLE SECTION ONLY

SUBMIT W9 ALONG WITH BID: https://www.irs.gov/pub/irs-pdf/fw9.pdf

1. CORPORATION

Bidder is a corporation that is organized and existing under the laws of the State of _____, that is qualified to do business in the State of Illinois, and that is operating under the legal name of _____.

The officers of the corporation are as follows:

TITLE	NAME	ADDRESS
President	_____	_____
Vice President	_____	_____
Secretary	_____	_____
Treasurer	_____	_____

2. PARTNERSHIP

Bidder is a partnership that is organized, existing and registered under the laws of the State of _____ pursuant to that certain Partnership Agreement, dated as of _____, that is qualified to do business in the State of Illinois, and that is operating under the legal name of _____.

The general partners of the partnership are as follows:

NAME	ADDRESS
_____	_____
_____	_____
_____	_____
_____	_____

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3. INDIVIDUAL

Bidder is an individual whose full name is _____, whose residence address is _____, and whose business address is _____. If operating under a trade or assumed name, said trade or assumed name is as follows:

_____.

4. JOINT VENTURE

Bidder is a joint venture that is organized and existing under the laws of the State of _____ pursuant to that certain Joint Venture Agreement dated as of _____, that is qualified to do business in the State of Illinois, and that is operating under the legal name of _____.

The signatories to the aforesaid Joint Venture Agreement are as follows:

NAME	(ENTITY TYPE)	ADDRESS
_____	(____)	_____
_____	(____)	_____
_____	(____)	_____

[For each signatory, indicate type of entity (Corporation=C; Partnership=P; Individual=I) and provide, on separate sheets, the information required in Paragraph 1, 2 or 3 above, as applicable.]

DATED this _____ day of _____, 2025

Attest/Witness: _____
Bidder

By: _____ By: _____

Title: _____ Title: _____

Subscribed and Sworn to before me this _____ day of _____, 2025.

My Commission Expires: _____

_____ {SEAL}
Notary Public

SEE GENERAL INSTRUCTIONS TO BIDDERS, SECTION 7,
FOR SIGNATURE REQUIREMENTS

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BIDDER'S SWORN WORK HISTORY STATEMENT

_____ ("Deponent"), being first duly sworn on oath, deposes and states that all statements made in this Sworn Work History Statement are made on behalf of the undersigned Bidder in support of its Bidder's Proposal for the above Contract and that Deponent is authorized to make them.

Deponent also deposes and states that Bidder has carefully prepared, reviewed, and checked this Sworn Work History Statement and that the statements contained in this Sworn Work History Statement are true and correct.

[IF NECESSARY FOR FULL DISCLOSURE, ADD SEPARATE SHEETS]

JOINT VENTURES MUST SUBMIT SEPARATE SWORN WORK HISTORY STATEMENTS FOR THE JOINT VENTURE AND FOR EACH SIGNATORY TO THE JOINT VENTURE AGREEMENT

1. NATURE OF BUSINESS

State the nature of Bidder's business:

_____

2. COMPOSITION OF WORK

During the past three years, Bidder's work has consisted of:

_____ % Federal Forces _____ % as Contractor

_____ % Other Public _____ % as Subcontractor

_____ % Private

3. YEARS IN BUSINESS

State the number of years that Bidder, under its current name and organization, has been continuously engaged in the aforesaid business: _____ years.

4. PREDECESSOR ORGANIZATIONS

If Bidder has been in business under its current name and organization for less than five (5) years, list any predecessor organizations:

NAME	ADDRESS	YEARS
_____	_____	_____
_____	_____	_____

5. BUSINESS LICENSES

List all business licenses currently held by Bidder:

ISSUING AGENCY	TYPE	NUMBER	EXPIRATION
_____	_____	_____	_____
_____	_____	_____	_____

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6. CURRENT WORKLOAD

Provide a complete list of current workload, percent of completion, and expected completion dates.

PROJECT 1 CURRENT

Project Name: _____

Project Location: _____

Type of Work _____

Contract Amount _____ Percent Complete: _____ Expected Completion: _____

Reference Person: _____ Reference Phone _____

PROJECT 2 CURRENT

Project Name: _____

Project Location: _____

Type of Work _____

Contract Amount _____ Percent Complete: _____ Expected Completion: _____

Reference Person: _____ Reference Phone _____

PROJECT 3 CURRENT

Project Name: _____

Project Location: _____

Type of Work _____

Contract Amount _____ Percent Complete: _____ Expected Completion: _____

Reference Person: _____ Reference Phone _____

DATED this _____ day of _____, 2025

Attest/Witness: _____
Bidder

By: _____ By: _____

Title: _____ Title: _____

Subscribed and Sworn to
before me this _____ day of
_____, 2025.

My Commission Expires: _____

_____ {SEAL}
Notary Public

SEE GENERAL INSTRUCTIONS TO BIDDER, SECTION 7, FOR SIGNATURE REQUIREMENTS

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BIDDER ORGANIZATIONAL AND EXPERIENCE CHART

Each Bidder must fully complete the Bidder Organizational and Experience Chart, as provided below:

	NAME	YEARS WITH COMPANY	YEARS EXPERIENCE
Project Manager *Supervises and coordinates all on-site day-to-day operations of the project.*	_____	_____	_____
Superintendent *Supervising all phases of construction, maintaining quality control, ordering materials, scheduling work, remaining current with all as-built quantities.*	_____	_____	_____
Earthwork Foreman *Oversees all phases of the earthwork operation, including ditching, excavation, embankment placement, shaping, topsoil placement, and placement of aggregate subbase.*	_____	_____	_____
Electrical Foreman *Oversees all phases of electrical utility installation.*	_____	_____	_____
Water Foreman *Oversees all phases of water utility installation.*	_____	_____	_____
Storm Foreman *Oversees all phases of storm utility installation.*	_____	_____	_____
Asphalt Foreman *Oversees all phases of the asphalt installation.*	_____	_____	_____
Concrete Foreman *Oversees all phases of the cast-in-place and concrete pavement installation.*	_____	_____	_____
Landscape Foreman *Oversees all phases of the fine grading, trail edge refinement, seeding, planting and erosion control blanket installation.*	_____	_____	_____

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REFERENCE FORM

List three projects most comparable to the Work completed by Bidder, or its predecessors, in the past five (5) years.

PROJECT 1

Owner Name: _____

Owner Address: _____

_____

Contact Person (Reference) _____

Telephone: _____

Type of Work: _____

Contractor: _____
(if Bidder was subcontractor)

Contract Amount _____ Completion Date _____

PROJECT 2

Owner Name: _____

Owner Address: _____

_____

Contact Person (Reference) _____

Telephone: _____

Type of Work: _____

Contractor: _____
(if Bidder was subcontractor)

Contract Amount _____ Completion Date _____

PROJECT 3

Owner Name: _____

Owner Address: _____

_____

Contact Person (Reference) _____

Telephone: _____

Type of Work: _____

Contractor: _____
(if Bidder was subcontractor)

Contract Amount _____ Completion Date _____

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LIST OF SUBCONTRACTORS

Each Bidder shall list below each subcontractor to be engaged by Bidder for the performance of any part of the Work. Although the information provided in the list may be used by Owner to assess the Bidder's Proposal, the requirement that such information be provided shall not be deemed to dictate to Bidder the specific subcontractors it must engage or to indicate that Owner will accept a Bidder's Proposal only if specified individuals are included as subcontractors.

Subcontractor: _____

Address: _____

_____

Phone #: (____) _____

Work to be performed: _____

Estimated value of work to be performed: _____

Subcontractor: _____

Address: _____

_____

Phone #: (____) _____

Work to be performed: _____

Estimated value of work to be performed: _____

Subcontractor: _____

Address: _____

_____

Phone #: (____) _____

Work to be performed: _____

Estimated value of work to be performed: _____

Subcontractor: _____

Address: _____

_____

Phone #: (____) _____

Work to be performed: _____

Estimated value of work to be performed: _____

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CERTIFICATION OF APPRENTICESHIP PROGRAMS

Bidder's Name: _____

Bidder's Business Address: _____

_____ ("Deponent") hereby certifies that all statements made in this Certification of Apprenticeship Programs are true and complete and are made on behalf of the above named Bidder in support of its Bidder's Proposal for the above Contract, and that Deponent is authorized to make this Certification on behalf of Bidder.

Deponent hereby certifies that Bidder and each of its subcontractors that will perform work under the Contract exceeding $30,000.00 (as stated on the foregoing "List of Subcontractors") participates in an active apprenticeship and training program approved and registered with the United States Department of Labor's Office of Apprenticeship.

DEPONENT (on behalf of Bidder):	**ATTEST/ WITNESS:**
_____	_____
Printed Name:_____	Printed Name: _____
By: _____	By: _____
Title: _____	Title: _____
Email Address: _____	Email Address: _____
Phone: _____	Phone: _____

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BID BOND

KNOW ALL MEN BY THESE PRESENTS: that _____,
(Here insert full name and address of Bidder)

as Principal, hereinafter called Bidder, and _____,
(Here insert full name and address of Surety)

as Surety, a corporation organized and existing under the laws of the State of _____, hereinafter called Surety, are held and firmly bound unto Lake County Forest Preserve District, 1899 West Winchester Road, Libertyville, Illinois 60048, as Obligee, hereinafter called Owner, in the full and just sum of _____ Dollars ($ _____), for the payment of which sum of money will and truly be made, Bidder and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Bidder has submitted a Bidder's Proposal dated _____, 2025 to Owner entitled "RECREATION FACILITIES – LAKEWOOD FOREST PRESERVE" – Bidder's proposal" (the "Proposal"), the terms and conditions of which are by this reference incorporated herein as though fully set forth herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if Bidder shall timely submit all additional information that is required of it and, if the Proposal shall be accepted by Owner, Bidder shall (1) timely submit all the Bonds and all the certificates and policies of insurance required of it; (2) timely execute the Contract and the Contractor's Certification, in the form included in the bound Bid Package, and all other required documentation related to the Contract; and (3) in all other respects, perform the agreement created by Owner's acceptance of the Proposal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that the obligations of Surety under this bond shall be in no way impaired or affected by any extension of the time within which Owner may accept the Proposal, and Surety does hereby waive notice of any such extension.

Owner shall have no obligation to actually incur any expense or correct any deficient performance of Bidder in order to be entitled to receive the proceeds of this bond.

No right of action shall accrue on this bond to or for the use of any person or corporation other than Owner or the heirs, executors, administrators or successors of Owner.

Signed and sealed this _____ day of _____, 2025

Attest/Witness:	PRINCIPAL
By: _____	By: _____
Title: _____	Title: _____
Attest/Witness:	SURETY
By: _____	By: _____
Title: _____	Title: _____

SEE GENERAL INSTRUCTIONS TO BIDDERS, SECTION 7,
FOR SIGNATURE REQUIREMENTS

NOTICE OF AWARD

TO: SUCCESSFUL BIDDER
ADDRESS OF SUCCESSFUL BIDDER
CITY, STATE, & ZIP
("Contractor")

FROM: Lake County Forest Preserve District
1899 West Winchester Road
Libertyville, Illinois 60048
("Owner")

ON THE _____ DAY OF _____, _____, Owner found to be most favorable to the interests of Owner, the Bidder's Proposal submitted by Contractor and dated on the _____ day of _____, 2025, in which Contractor proposes to contract with Owner, in the form of the Contract included in the Bid Package to perform the Work (as defined in Article I of the Contract) and to do all other things required of the Contractor by the Contract and to provide, perform and complete all of the foregoing in a proper and workmanlike manner and in full compliance with, and as required by or pursuant to, the Contract.

OWNER ACCORDINGLY AWARDS CONTRACTOR, EFFECTIVE AS OF THE DATE OF DELIVERY OF THIS NOTICE OF AWARD, THE CONTRACT FOR SAID WORK FOR THE LUMP SUM, AS THE CASE MAY BE, SET FORTH IN THE BIDDER'S PROPOSAL.

The Closing will be on the _____ day of _____, _____, at the above-listed office of Owner at which time the Contract will be executed by Owner, provided that all Conditions Precedent to Closing have been satisfied. Contractor must have complied with all Conditions Precedent to Closing set forth in Section 16 of the General Instructions to Bidders included in the Bid Package, on or before the Closing Date.

The failure or refusal to comply with the Conditions Precedent to Closing on or before the Closing Date or to Close on the Closing Date shall result, at Owner's option, in the imposition of liquidated damages and the annulment of this award, or in Owner's exercise of any or all equitable remedies Owner may have, all as more specifically set forth in Sections 8, 16, and 17 of the General Instructions to Bidders.

DATED this _____ day of _____, _____

LAKE COUNTY FOREST PRESERVE DISTRICT

By: Michael Zahalka, Senior Buyer
Lisa Robers, Purchasing Manager

CONTRACT BETWEEN
LAKE COUNTY FOREST PRESERVE DISTRICT
AND
(NAME OF SUCCESSFUL BIDDER)
FOR THE
RECREATION FACILITIES
LAKEWOOD FOREST PRESERVE
PROJECT NUMBER: 25105

TABLE OF CONTENTS

ARTICLE I - THE WORK 1
1.1 Performance of the Work 1
1.2 Commencement and Completion Dates 2
1.3 Required Submittals 2
1.4 Review and Interpretation of Contract Provisions 2
1.5 Conditions at the Work Site; Record Drawings 3
1.6 Technical Ability to Perform 3
1.7 Financial Ability to Perform 4
1.8 Time 4
1.9 Safety at the Work Site 4
1.10 Cleanliness of the Work Site and Environs 4
1.11 Damage to the Work, the Work Site, and Other Property 4
1.12 Subcontractors and Suppliers 5
1.13 Simultaneous Work by Others 5
1.14 Occupancy Prior to Final Acceptance 5
1.15 Owner's Right to Terminate or Suspend Work for Convenience 5

ARTICLE II - CHANGES AND DELAYS 6
2.1 Changes 6
2.2 Delays 6

ARTICLE III - CONTRACTOR'S RESPONSIBILITY FOR DEFECTIVE WORK 6
3.1 Inspection, Testing, Correction of Defects 6
3.2 Warranty of Work 7
3.3 Owner's Right to Correct 7

ARTICLE IV - FINANCIAL ASSURANCES 7
4.1 Bonds 7
4.2 Insurance 8
4.3 Indemnification 8

ARTICLE V - PAYMENT 8
5.1 Contract Price 8
5.2 Taxes and Benefits 8
5.3 Progress Payments 8
5.4 Final Acceptance and Final Payment 9
5.5 Liens 9
5.6 Deductions 10

ARTICLE VI - DISPUTES AND REMEDIES 10
6.1 Dispute Resolution Procedure 10
6.2 Contractor's Remedies 11
6.3 Owner's Remedies 11
6.4 Owner's Special Remedy for Delay 12
6.5 Terminations and Suspensions Deemed for Convenience 12

ARTICLE VII - LEGAL RELATIONSHIPS AND REQUIREMENTS 12
7.1 Binding Effect 12
7.2 Relationship of the Parties 12
7.3 No Collusion/Prohibited Interests 13
7.4 Assignment 13
7.5 Confidential Information 13
7.6 No Waiver 13
7.7 No Third Party Beneficiaries 13
7.8 Notices 14
7.9 Governing Laws 14
7.10 Changes in Laws 14
7.11 Compliance with Laws and Grants 14
7.12 Compliance with Patents 15
7.13 Time 15
7.14 Severability 15
7.15 Entire Agreement 16
7.16 Amendments 16

ATTACHMENT A - Supplemental Schedule of Contract Terms
ATTACHMENT B - Specifications
ATTACHMENT C - List of Drawings
ATTACHMENT D - Special Project Requirements
Performance Bond
Labor and Material Payment Bond

CONTRACT BETWEEN
LAKE COUNTY FOREST PRESERVES
AND
(NAME OF SUCCESSFUL BIDDER)
FOR THE
RECREATION FACILITIES
LAKEWOOD FOREST PRESERVE
PROJECT NUMBER: 25105

In consideration of the mutual promises set forth below, the Lake County Forest Preserve District, 1899 West Winchester Road, Libertyville, Illinois 60048, a public corporation ("Owner"), and (NAME AND ADDRESS OF SUCCESSFUL BIDDER) a (FORM OF ORGANIZATION)("Contractor"), make this Contract as of the _____ day of _____, 2025, and hereby agree as follows:

ARTICLE I
THE WORK

1.1 Performance of the Work

Contractor shall, at its sole cost and expense, provide, perform, and complete all of the following, all of which is herein referred to as the "Work:"

A. Labor, Equipment, Materials, and Supplies. Provide, perform, and complete in the manner described and specified in this Contract, all necessary work, labor, services, transportation, equipment, materials, apparatus, machinery, tools, fuels, gas, electric, water, waste disposal, information, data, and other means and items necessary to accomplish the Project at the Work Site, both as defined in Attachment A, in accordance with the specifications attached hereto as Attachment B, the drawings identified in the list attached hereto as Attachment C, and the Special Project Requirements attached hereto as Attachment D.

B. Permits. Except as otherwise provided in Attachment A, procure and furnish all permits, licenses, and other governmental approvals and authorizations necessary in connection therewith.

C. Bonds and Insurance. Procure and furnish all Bonds and all certificates and policies of insurance specified in this Contract.

D. Taxes. Pay all applicable federal, state, and local taxes.

E. Miscellaneous. Do all other things required of Contractor by this Contract, including, without limitation, arranging for utility and other services needed for the Work and for testing, including the installation of temporary utility lines, wiring, switches, fixtures, hoses, connections, and meters, and providing sufficient sanitary conveniences and shelters to accommodate all workers and all personnel of Owner engaged in the Work.

F. Quality. Provide, perform, and complete all of the foregoing in a proper and workmanlike manner consistent with the highest standards of professional and construction practices and in full compliance with and as required by or pursuant to this Contract; and with the greatest economy, efficiency, and expedition consistent therewith with only new, undamaged, and first quality equipment, materials, and supplies.

1.2 Commencement and Completion Dates

Contractor shall commence the Work not later than the “Commencement Date” set forth on Attachment A and shall diligently and continuously prosecute the Work at such a rate as will allow the Work to be fully provided, performed, and completed in full compliance with this Contract not later than the “Completion Date” set forth in Attachment A. The Commencement Date, the rate of progress (as set forth in the "Work Schedule" to be prepared as set forth in Attachment A), and the Completion Date are referred to in this Contract as the “Contract Time.”

1.3 Required Submittals

A. Submittals Required. Contractor shall submit to Owner all documents, data, and information specifically required to be submitted by Contractor under this Contract and shall, in addition, submit to Owner all such drawings, specifications, descriptive information, and engineering documents, data, and information as may be required, or as may be requested by Owner, to show the details of the Work, including a complete description of all equipment, materials, and supplies to be provided under this Contract (“Required Submittals”). Such details shall include, but shall not be limited to, design data, structural and operating features, principal dimensions, space required or provided, clearances required or provided, type and brand of finish, and all similar matters, for all components of the Work.

B. Number and Format. Contractor shall provide two (2) complete sets for each Required Submittal. All Required Submittals, except drawings, shall be prepared on white 8.5 inch by 11-inch paper. Two (2) blue line prints and one (1) sepia transparency of each drawing shall be provided. All drawings shall be clearly marked in the lower right-hand corner with the names of Owner/Architect/Engineer and Contractor.

C. Time of Submission and Owner’s Review. All Required Submittals shall be provided to Owner no later than the time, if any, specified in this Contract for their submission or, if no time for submission is specified, in sufficient time, in Owner’s sole opinion, to permit Owner to review the same prior to the commencement of the part of the Work to which they relate and prior to the purchase of any equipment, materials or supplies that they describe. Owner shall have the right to require such corrections as may be necessary to make such submittals conform to this Contract. All such submittals shall, after final processing and review, with no exception noted by Owner, become a part of this Contract. No Work related to any submittal shall be performed by Contractor until Owner has completed review of such submittal with no exception noted. Owner’s review and stamping of any Required Submittal shall be for the sole purpose of examining the general management, design, and details of the proposed Work, shall not relieve Contractor of the entire responsibility for the performance of the Work in full compliance with and as required by or pursuant to this Contract, and shall not be regarded as any assumption of risk or liability by Owner.

D. Responsibility for Delay. Contractor shall be responsible for any delay in the Work due to delay in providing Required Submittals conforming to this Contract.

1.4 Review and Interpretation of Contract Provisions

Contractor represents and warrants that it has carefully reviewed this Contract, including all of its Attachments, and the drawings identified in Attachment C, all of which are by this reference incorporated into and made a part of this Contract. Contractor shall, at no increase in the Contract Price, provide workmanship, equipment, materials, and supplies that fully conform to this Contract. Whenever any equipment, materials or supplies are specified or described in this Contract by using the name or other identifying feature of a proprietary product or the name or other identifying feature of a particular manufacturer or vendor, the specific item mentioned shall be understood as establishing the type, function, and quality desired. Other manufacturers’ or vendors’ products may be accepted, provided that the products proposed are equivalent in

substance and function to those named as determined by Owner in its sole and absolute discretion.

Contractor shall promptly notify Owner of any discrepancy, error, omission, ambiguity, or conflict among any of the provisions of this Contract before proceeding with any Work affected thereby. If Contractor fails to give such notice to Owner, then the subsequent decision of Owner as to which provision of this Contract shall govern shall be final, and any corrective work required shall not entitle Contractor to any damages, to any compensation in excess of the Contract Price, or to any delay or extension of the Contract Time.

When the equipment, materials, or supplies furnished by Contractor cannot be installed as specified in this Contract, Contractor shall, without any increase in the Contract Price, make all modifications required to properly install the equipment, materials, or supplies. Any such modification shall be subject to the prior review and consent of Owner.

1.5 Conditions at the Work Site; Record Drawings

Contractor represents and warrants that it has had a sufficient opportunity to conduct a thorough investigation of the Work Site and the surrounding area and has completed such investigation to its satisfaction. Contractor shall have no claim for damages, for compensation in excess of the Contract Price, or for a delay or extension of the Contract Time based upon conditions found at or in the vicinity of the Work Site. When information pertaining to subsurface, underground or other concealed conditions, soils analysis, borings, test pits, utility locations or conditions, buried structures, condition of existing structures and other investigations is or has been provided by Owner, or is or has been otherwise made available to Contractor by Owner, such information is or has been provided or made available solely for the convenience of Contractor and is not part of this Contract. Owner assumes no responsibility whatsoever in respect to the sufficiency or accuracy of such information, and there is no guarantee or warranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the Work or the Work Site, or that the conditions indicated are representative of those existing at any particular location, or that the conditions indicated may not change, or that different conditions may not be present.

Contractor shall be solely responsible for locating all existing underground installations by prospecting no later than two (2) workdays prior to any scheduled excavation or trenching, whichever is earlier. Contractor shall check all dimensions, elevations, and quantities indicated in this Contract within the same time period as set forth above for prospecting underground installations. Contractor shall lay out the Work in accordance with this Contract and shall establish and maintain such locations, lines, and levels. Wherever pre-existing work is encountered, Contractor shall verify and be responsible for dimensions and location of such pre-existing work. Contractor shall notify Owner of any discrepancy between the dimensions, elevations, and quantities indicated in this Contract and the conditions of the Work Site or any other errors, omissions or discrepancies which Contractor may discover during such inspections. Full instructions will be furnished by Owner should such error, omission or discrepancy be discovered, and Contractor shall carry out such instructions as if originally specified and without any increase in Contract Price.

Before Final Acceptance of the Work, Contractor shall submit to Owner two (2) sets of Drawings of Record, unless a greater number is specified elsewhere in this Contract, indicating all field deviations from Attachment B or the drawings identified in Attachment C.

1.6 Technical Ability to Perform

Contractor represents and warrants that it is sufficiently experienced and competent and has the necessary capital, facilities, plant, organization, and staff to provide, perform, and complete the Work in full compliance with and as required by or pursuant to this Contract. Without limiting the preceding sentence, Contractor shall employ staff with the same or superior experience as the

staff identified in the Bidder Organizational and Experience Chart included in Bidder's Sworn Work History Statement.

1.7 Financial Ability to Perform

Contractor represents and warrants that it is financially solvent and Contractor has the financial resources necessary to provide, perform, and complete the Work in full compliance with and as required by or pursuant to this Contract.

1.8 Time

Contractor represents and warrants that it is ready, willing, able and prepared to begin the Work on the Commencement Date and that the Contract Time is sufficient time to permit completion of the work in full compliance with and as required by or pursuant to this Contract for the Contract Price, all with due regard to all natural and man-made conditions that may affect the Work or the Work Site and all difficulties, hindrances, and delays that may be incidental to the Work.

1.9 Safety at the Work Site

Contractor shall be solely and completely responsible for providing and maintaining safe conditions at the Work Site, including the safety of all persons and property during performance of the Work. This requirement shall apply continuously and shall not be limited to normal working hours. Contractor shall take all safety precautions as shall be necessary to comply with all applicable laws and to prevent injury to persons and damage to property.

Contractor shall conduct all of its operations without interruption or interference with vehicular and pedestrian traffic on public and private rights-of-way, unless it has obtained permits therefor from the proper authorities. If any public or private right-of-way shall be rendered unsafe by Contractor's operations, Contractor shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

1.10 Cleanliness of the Work Site and Environs

Contractor shall keep the Work Site and adjacent areas clean at all times during performance of the Work and shall, upon completion of the Work, leave the Work Site and adjacent areas in a clean and orderly condition.

1.11 Damage to the Work, the Work Site, and Other Property

The Work and everything pertaining thereto shall be provided, performed, completed, and maintained at the sole risk and cost of Contractor from the Commencement Date until Final Payment. Contractor shall be fully responsible for the protection of all public and private property and all persons. Without limiting the foregoing, Contractor shall, at its own cost and expense, provide all permanent and temporary shoring, anchoring, and bracing required by the nature of the Work in order to make all parts absolutely stable and rigid, even when such shoring, anchoring, and bracing is not explicitly specified, and support and protect all buildings, bridges, roadways, conduits, wires, water pipes, gas pipes, sewers, pavements, curbs, sidewalks, fixtures, and landscaping of all kinds, and all other public or private property that may be encountered or endangered in providing, performing, and completing the Work. Contractor shall have no claim against Owner because of any damage or loss to the Work or to Contractor's equipment, materials, or supplies from any cause whatsoever, including damage or loss due to simultaneous work by others. Contractor shall, promptly and without charge to Owner, repair or replace, to the satisfaction of Owner, any damage done to and any loss suffered by the Work, and any damage done to and any loss suffered by the Work Site or other property as a result of the Work. The Contractor is responsible for immediate resolution of any damages and other incidents resulting from the use of chemicals. These incidents include but are not limited to spills, smoke, fumes, and vapors. The contractor will bear all cost for the resolution of these incidents. Notwithstanding any other provision of this Contract, Contractor's obligations under this Section shall exist without regard to, and shall not be construed to be waived by, the availability or unavailability of any

insurance, either of Owner or Contractor, to indemnify, hold harmless or reimburse Contractor for the cost of any repair or replacement work required by this Section.

1.12 Subcontractors and Suppliers

A. Approval and Use of Subcontractors and Suppliers. Contractor shall perform the Work with its own personnel and under the management, supervision, and control of its own organization unless otherwise approved by Owner in writing. All subcontractors, suppliers, and subcontracts used by Contractor shall be acceptable to and approved in advance by Owner. Owner's approval of any subcontractor, supplier, and subcontract shall not relieve Contractor of full responsibility and liability for the provision, performance, and completion of the Work in full compliance with and as required by or pursuant to this Contract. All Work performed under any subcontract shall be subject to all of the provisions of this Contract in the same manner as if performed by employees of Contractor. Every reference in this Contract to "Contractor" shall be deemed also to refer to all subcontractors and suppliers of Contractor. Every subcontract shall include a provision binding the subcontractor or supplier to all provisions of this Contract.

B. Removal of Subcontractors and Suppliers. If any subcontractor or supplier fails to perform the part of the Work undertaken by it in a manner satisfactory to Owner, Contractor shall immediately upon notice from Owner terminate such subcontractor or supplier. Contractor shall have no claim for damages, for compensation in excess of the Contract Price, or for a delay or extension of the Contract Time as a result of any such termination.

1.13 Simultaneous Work by Others

Owner shall have the right to perform or have performed such other work as Owner may desire in, about, or near the Work Site during the performance of the Work by Contractor. Contractor shall make every reasonable effort to perform the Work in such manner as to enable both the Work and such other work to be completed without hindrance or interference from each other. Contractor shall afford Owner and other contractors reasonable opportunity for the execution of such other work and shall properly coordinate the Work with such other work.

1.14 Occupancy Prior to Final Acceptance or Final Payment

Owner shall have the right, at its election, to occupy, use, or place in service any part of the Work prior to Final Acceptance of the Work or Final Payment. Such occupancy, use, or placement in service shall be conducted in such manner as not to damage any of the Work or to unreasonably interfere with the progress of the Work. No such occupancy, use or placement in service shall be construed as an acceptance of any of the Work or a release or satisfaction of Contractor's duty to insure and protect the Work, nor shall it, unless conducted in an unreasonable manner, be considered as an interference with Contractor's provision, performance or completion of the Work.

1.15 Owner's Right to Terminate or Suspend Work for Convenience

A. Termination or Suspension for Convenience. Owner shall have the right for its convenience to terminate or suspend the Work in whole or in part at any time by written notice to Contractor. Every such notice shall state the extent and effective date of such termination or suspension. On such effective date, Contractor shall, as and to the extent directed, stop Work under this Contract, cease all placement of further orders or subcontracts, terminate or suspend Work under existing orders and subcontracts, cancel any outstanding orders or subcontracts that may be canceled, and take any action necessary to protect any property in its possession in which Owner has or may acquire any interest and to dispose of such property in such manner as may be directed by Owner.

B. Payment for Completed Work. In the event of any termination pursuant to Subsection 1.15A above, Owner shall pay Contractor (1) such direct costs, excluding overhead, as Contractor shall have paid or incurred for all Work performed in compliance with and as required by or pursuant to this Contract up to the effective date of termination together with ten percent (10%)

of such costs for overhead and profit; and (2) such other costs pertaining to the Work, exclusive of overhead and profit as Contractor may have reasonably and necessarily incurred as the result of such termination. Any such payment shall be offset by any prior payment or payments and shall be subject to Owner's rights to withhold and deduct as provided in this Contract.

ARTICLE II
CHANGES AND DELAYS

2.1 Changes

Owner shall have the right by written order executed by Owner to make changes in the Contract, the Work, the Work Site, and the Contract Time ("Change Order"). If any Change Order causes an increase or decrease in the amount of the Work, an equitable adjustment in the Contract Price or Contract Time may be made. No equitable adjustments in the Contract Price or Contract Time shall be made or allowed unless embodied in a Change Order. All claims by Contractor for an equitable adjustment in either the Contract Price or the Contract Time shall be made within two (2) business days following receipt of such Change Order and, if not made prior to such time, shall be deemed conclusively to have been waived. No decrease in the amount of the Work caused by any Change Order shall entitle Contractor to make any claim for damages, anticipated profits or other compensation.

2.2 Delays

A. Extensions for Unavoidable Delays. For any delay that may result from causes that could not be avoided or controlled by Contractor, Contractor shall, upon timely written application, be entitled to issuance of a Change Order providing for an extension of the Contract Time for a period of time equal to the delay resulting from such unavoidable cause. No extension of the Contract Time shall be allowed for any other delay in completion of the Work.

B. No Compensation for Delays. No payment, compensation, damages or adjustment of any kind, other than the extension of the Contract Time provided in Subsection 2.2A above, shall be made to or claimed by Contractor because of hindrances or delays from any cause in the commencement prosecution or completion of the Work, whether caused by Owner or any other party and whether avoidable or unavoidable.

ARTICLE III
CONTRACTOR'S RESPONSIBILITY FOR DEFECTIVE WORK

3.1 Inspection, Testing, Correction of Defects

A. Inspection. Until Final Payment, all parts of the Work shall be subject to inspection and testing by Owner or its designated representatives. Contractor shall furnish, at its own expense, all reasonable access, assistance, and facilities required by Owner for such inspection and testing.

B. Re-Inspection. Re-inspection and re-testing of any Work may be ordered by Owner at any time and, if so ordered, any covered or closed Work shall be uncovered or opened by Contractor. If the Work is found to be in full compliance with this Contract, then Owner shall pay the cost of uncovering, opening, re-inspecting, or re-testing, as the case may be. If such Work is not in full compliance with this Contract, then Contractor shall pay such cost.

C. Correction. Until Final Payment, Contractor shall promptly and without charge, repair, correct, or replace all or any part of the Work that is defective, damaged, flawed, or unsuitable or that in any way fails to conform strictly to the requirements of this Contract.

3.2 Warranty of Work

A. Scope of Warranty. Contractor warrants that the Work and all of its components shall be free from defects and flaws in design, workmanship, and materials; shall strictly conform to the requirements of this Contract; and shall be fit, sufficient, and suitable for the purposes expressed in or reasonably inferred from this Contract. The warranty herein expressed shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto Owner.

B. Warranty Period, Repairs, Extension of Warranty. Contractor shall promptly and without charge correct any failure to fulfill the above warranty that may be discovered or develop at any time within one (1) year after Final Payment or such longer period as may be prescribed in Attachment B or Attachment D to this Contract, or by law. The above warranty shall be extended automatically to cover all repaired and replacement parts and labor provided or performed under such warranty and Contractor's obligation to correct Work shall be extended for a period of one (1) year from the date of such repair or replacement. The time period established in this Subsection 3.2B relates only to the specific obligation of Contractor to correct Work and shall not be construed to establish a period of limitation with respect to other obligations that Contractor has under this Contract.

C. Subcontractor and Supplier Warranties. Whenever Attachment B or Attachment D requires a subcontractor or supplier to provide a guarantee or warranty, Contractor shall be solely responsible for obtaining said guarantee or warranty in a form satisfactory to Owner and assigning said guarantee or warranty to Owner. Acceptance of any assigned guarantees or warranties by Owner shall be a precondition to Final Payment and shall not relieve Contractor of any of its guarantee or warranty obligations under this Contract.

3.3 Owner’s Right to Correct

If, within two (2) business days after Owner gives Contractor notice of any defect, damage, flaw, unsuitability, nonconformity or failure to meet warranty subject to correction by Contractor pursuant to Section 3.1 or Section 3.2 of this Contract, Contractor neglects to make or undertake with due diligence to make the necessary corrections, then Owner shall be entitled to make, either with its own forces or with contract forces, the corrections and to recover from Contractor all resulting costs, expenses, losses or damages, including attorneys’ fees and administrative expenses.

ARTICLE IV
FINANCIAL ASSURANCES

4.1 Bonds

Contemporaneous with Contractor’s execution of this Contract, Contractor shall provide a Performance Bond and a Labor and Material Payment Bond, in the forms attached to this Contract, from a surety company licensed to do business in the State of Illinois with a general rating of A and a financial size category of Class X or better in Best’s Insurance Guide, each in the penal sum of the Contract Price (“Bonds”). Contractor shall, at all times while providing, performing or completing the Work, including, without limitation, at all times while correcting any failure to meet warranty pursuant to Section 3.2 of this Contract, maintain and keep in force, at Contractor’s expense, the Bonds required hereunder.

4.2 Insurance

Contemporaneous with Contractor's execution of this Contract, Contractor shall provide certificates and policies of insurance evidencing the minimum insurance coverage and limits set forth in Attachment A. Such policies shall be in a form, and from companies acceptable to Owner. Such insurance shall provide that no change, modification in or cancellation of any insurance shall become effective until the expiration of thirty (30) days, after written notice thereof, shall have been given by the insurance company to Owner. Contractor shall, at all times while providing, performing or completing the Work, including, without limitation, at all times while correcting any failure to meet warranty pursuant to Section 3.2 of this Contract, maintain and keep in force, at Contractor's expense, the minimum insurance coverages and limits set forth in Attachment A.

4.3 Indemnification

Contractor shall indemnify, save harmless, and defend Owner against any and all lawsuits, claims, demands, damages, liabilities, losses, and expenses, including attorneys' fees and administrative expenses that may arise or be alleged to have arisen out of or in connection with Contractor's performance of or failure to perform the Work or any part thereof, whether or not due or claimed to be due in whole or in part to the active, passive or concurrent negligence or fault of Contractor, except to the extent caused by the sole negligence of Owner.

ARTICLE V
PAYMENT

5.1 Contract Price

Owner shall pay to Contractor, in accordance with and subject to the terms and conditions set forth in this Article V and Attachment A, and Contractor shall accept in full satisfaction for providing, performing, and completing the Work, the amount or amounts set forth in Attachment A (the "Contract Price"), subject to any additions, deductions or withholdings provided for in this Contract.

5.2 Taxes and Benefits

Owner is exempt from and shall not be responsible to pay or reimburse Contractor for any state or local sales, use or excise taxes. The Contract Price includes all other applicable federal, state, and local taxes of every kind and nature applicable to the Work, as well as all taxes, contributions, and premiums for unemployment insurance, old age, or retirement benefits, pension, annuities, or other similar benefits. All claim or right to claim additional compensation by reason of the payment of any such tax, contribution, or premium is hereby waived and released by Contractor.

5.3 Progress Payments

A. Payment in Installments. The Contract Price shall be paid in monthly installments in the manner set forth in Attachment A ("Progress Payments").

B. Pay Requests. Contractor shall, as a condition precedent to its right to receive each Progress Payment, submit to Owner a pay request in a form provided by or approved by Owner ("Pay Request"). The first Pay Request shall be submitted not sooner than thirty (30) days following commencement of the Work. Owner may, by written notice to Contractor, designate a specific day of each month on or before which Pay Requests must be submitted. Each Pay Request shall include (a) Contractor's certification of the value of and partial or final waivers of lien covering all Work for which payment is then requested; and (b) Contractor's certification that all prior Progress Payments have been properly applied to the payment or reimbursement of the costs with respect to which they were paid.

C. Work Entire. This Contract and the Work are entire and the Work as a whole is of the essence of this Contract. Notwithstanding any other provision of this Contract, each and every part of this Contract and of the work are interdependent and common to one another and to Owner's obligation to pay all or any part of the Contract price or any other consideration for the Work. Any and all Progress payments made pursuant to this Article are provided merely for the convenience of Contractor and for no other purpose.

5.4 Final Acceptance and Final Payment

A. Notice of Completion. When the Work has been completed and is ready in all respects for acceptance by Owner, Contractor shall notify Owner and request a final inspection ("Notice of Completion"). Contractor's Notice of Completion shall be given sufficiently in advance of the Completion Date to allow for scheduling of the final inspection and for completion or correction before the Completion Date of any items identified by such inspection as being defective, damaged, flawed, unsuitable, nonconforming, incomplete or otherwise not in full compliance with or as required by or pursuant to this Contract ("Punch List Work").

B. Punch List and Final Acceptance. The Work shall be finally accepted when, and only when, the whole and all parts thereof shall have been completed to the satisfaction of Owner in full compliance with and as required by or pursuant to this Contract. Upon receipt of Contractor's Notice of Completion, Owner shall make a review of the Work and notify Contractor in writing of all Punch List Work, if any, to be completed or corrected. Following Contractor's completion or correction of all Punch List Work, Owner shall make another review of the Work and prepare and deliver to Contractor either a written notice of additional Punch List Work to be completed or corrected or a written notice of final acceptance of the Work ("Final Acceptance").

C. Final Payment. As soon as practicable after Final Acceptance, Contractor shall submit to Owner a properly completed final Pay Request in the form provided by Owner ("Final Pay Request"). Owner shall pay to Contractor the balance of the Contract Price after deducting therefrom all charges against Contractor as provided for in this Contract ("Final Payment"). Final Payment shall be made not later than sixty (60) days after Owner approves the Final Pay Request. The acceptance by Contractor of Final Payment shall operate as a full and complete release of Owner of and from any and all lawsuits, claims, demands, damages, liabilities, losses, and expenses of, by or to Contractor for anything done, furnished for, arising out of, relating to, or in connection with the Work or for, or on account, of any act or neglect of Owner arising out of, relating to, or in connection, with the Work.

5.5 Liens

A. Title. Nothing in this Contract shall be construed as vesting in Contractor any right of property in any equipment, materials, supplies, and other items provided under this Contract after they have been installed in, incorporated into, attached to, or affixed to the work or the Work Site. All such equipment, materials, supplies and other items shall, upon being so installed, incorporated, attached or affixed, become the property of Owner, but such title shall not release Contractor from its duty to ensure and protect the Work in accordance with the requirements of this Contract.

B. Waivers of Lien. Contractor shall, from time to time at Owner's request and in any event prior to Final Payment, furnish to Owner such receipts, releases, affidavits, certificates, and other evidence as may be necessary to establish to the reasonable satisfaction of Owner, that no lien against the Work or the public funds held by Owner exists in favor of any person whatsoever for or by reason of any equipment, material, supplies or other item furnished, labor performed or other thing done in connection with the Work or this Contract ("Lien"), and that no right to file any Lien exists in favor of any person whatsoever.

C. Removal of Liens. If at any time, any notice of any Lien is filed, then Contractor shall promptly and without charge, discharge, remove or otherwise dispose of such Lien. Until such discharge, removal, or disposition, Owner shall have the right to retain from any money payable hereunder an amount that Owner, in its sole judgment, deems necessary to satisfy such Lien and to pay the costs and expenses, including attorneys' fees and administrative expenses, of any actions brought in connection therewith or by reason thereof.

D. Protection of Owner Only. This Section shall not operate to relieve Contractor's surety or sureties from any of their obligations under the Bonds, nor shall it be deemed to vest any right, interest, or entitlement in any subcontractor or supplier. Owner's retention of funds pursuant to this Section shall be deemed solely for the protection of its own interests pending removal of such Liens by Contractor, and Owner shall have no obligation to apply such funds to such removal, but may, nevertheless, do so where Owner's interests would thereby be served.

5.6 Deductions

A. Owner's Right to Withhold. Notwithstanding any other provision of this Contract and without prejudice to any of Owner's other rights or remedies, Owner shall have the right at any time or times, whether before or after approval of any Pay Request, to deduct and withhold from any Progress or Final Payment that may be or become due under this Contract such amount as may reasonably appear necessary to compensate Owner for any actual or prospective loss due to: (1) Work that is defective, damaged, flawed, unsuitable, nonconforming or incomplete; (2) damage for which Contractor is liable under this Contract; (3) state or local sales, use or excise taxes from which Owner is exempt; (4) Liens or claims of Lien regardless of merit; (5) claims of subcontractors, suppliers or other persons regardless of merit; (6) delay in the progress or completion of the Work; (7) inability of Contractor to complete the Work; (8) failure of Contractor to properly complete or document any Pay Request; (9) any other failure of Contractor to perform any of its obligations under this Contract; or (10) the cost to Owner, including attorneys' fees and administrative costs, of correcting any of the aforesaid matters or exercising any one or more of Owner's remedies set forth in Section 6.3 of this Contract.

B. Use of Withheld Funds. Owner shall be entitled to retain any and all amounts withheld pursuant to Subsection 5.6A above until Contractor shall have either performed the obligations in question or furnished security for such performance satisfactory to Owner. Owner shall be entitled to apply any money withheld or any other money due Contractor under this Contract to reimburse itself for any and all costs, expenses, losses, damages, liabilities, suits, judgments, awards, attorneys' fees and administrative expenses incurred, suffered or sustained by Owner and chargeable to Contractor under this Contract.

ARTICLE VI
DISPUTES AND REMEDIES

6.1 Dispute Resolution Procedure

A. Notice of Disputes and Objections. If Contractor disputes or objects to any requirement, direction, instruction, interpretation, determination or decision of Owner, Contractor may notify Owner in writing of its dispute or objection and of the amount of any equitable adjustment to the Contract Price or Contract Time to which Contractor claims it will be entitled as a result thereof; provided, however, that Contractor shall, nevertheless, proceed without delay to perform the Work as required, directed, instructed, interpreted, determined or decided by Owner, without regard to such dispute or objection. Unless Contractor so notifies Owner within two (2) business days after receipt of such requirement, direction, instruction, interpretation, determination or decision, Contractor shall be conclusively deemed to have waived all such disputes or objections and all claims based thereon.

B. Negotiation of Disputes and Objections. To avoid and settle without litigation any such dispute or objection, Owner and Contractor agree to engage in good faith negotiations. Within three (3) business days after Owner's receipt of Contractor's written notice of dispute or objection, a conference between Owner and Contractor shall be held to resolve the dispute. Within three (3) business days after the end of the conference, Owner shall render its final decision, in writing, to Contractor. If Contractor objects to the final decision of Owner, then it shall, within three (3) business days, give Owner notice thereof and, in such notice, shall state its final demand for settlement of the dispute. Unless Contractor so notifies Owner, Contractor shall be conclusively deemed (1) to have agreed to and accepted Owner's final decision and (2) to have waived all claims based on such final decision.

6.2 Contractor's Remedies

If Owner fails or refuses to satisfy a final demand made by Contractor pursuant to Section 6.1 of this Contract or to otherwise resolve the dispute which is the subject of such demand to the satisfaction of Contractor within ten (10) days following receipt of such demand, then Contractor shall be entitled to pursue such remedies not inconsistent with the provisions of this Contract, as it may have in law or equity.

6.3 Owner's Remedies

If it should appear at any time prior to Final Payment that Contractor has failed or refused to prosecute or has delayed in the prosecution of the Work with diligence at a rate that assures completion of the Work in full compliance with the requirements of this Contract on or before the Completion Date, or has attempted to assign this Contract or Contractor's rights under this Contract, either in whole or in part, or has falsely made any representation or warranty in this Contract, or has otherwise failed, refused or delayed to perform or satisfy any other requirement of this Contract, or has failed to pay its debts as they come due ("Event of Default"), and has failed to cure any such Event of Default within five (5) business days after Contractor's receipt of written notice of such Event of Default, then Owner shall have the right, at its election and without prejudice to any other remedies provided by law or equity, to pursue any one or more of the following remedies:

(a) Owner may require Contractor, within such reasonable time as may be fixed by Owner, to complete or correct all or any part of the Work that is defective, damaged, flawed, unsuitable, nonconforming or incomplete; to remove from the Work Site any such Work; to accelerate all or any part of the Work; and to take any or all other action necessary to bring Contractor and the Work into strict compliance with this Contract.

(b) Owner may perform or have performed all Work necessary to cure such Event of Default and withhold or recover from Contractor all the cost and expense, including attorneys' fees and administrative costs, incurred by Owner in connection therewith.

(c) Owner may accept the defective, damaged, flawed, unsuitable, nonconforming, incomplete or dilatory Work, or part thereof and make an equitable reduction in the Contract Price.

(d) Owner may terminate this Contract without liability for further payment of amounts due or to become due under this Contract.

(e) Owner may, without terminating this Contract, terminate Contractor's rights under this Contract and, for the purpose of completing or correcting the Work, evict Contractor and take possession of all equipment, materials, supplies, tools, appliances, plans, specifications, schedules, manuals, drawings, and other papers relating to the Work, whether at the Work Site or elsewhere, and either complete or correct the Work with its own forces or contracted forces, all at Contractor's expense.

(f) Upon any termination of this Contract or of Contractor's rights under this Contract, and at Owner's option exercised in writing, any or all subcontracts and supplier contracts of Contractor shall be deemed to be assigned to Owner without any further action being required, but Owner shall not thereby assume any obligation for payments due under such subcontracts and supplier contracts for any Work provided or performed prior to such assignment.

(g) Owner may withhold from any Progress Payment or Final Payment, whether or not previously approved, or may recover from Contractor any and all costs, including attorneys' fees and administrative expenses incurred by Owner as the result of any Event of Default or as a result of actions taken by Owner in response to any Event of Default.

(h) Owner may recover any damages suffered by Owner.

6.4 Owner's Special Remedy for Delay

If the Work is not completed by Contractor in full compliance with and as required by or pursuant to this Contract, within the Contract Time as such time may be extended by Change Order, then Owner may invoke its remedies under Section 6.3 of this Contract or may, in the exercise of its sole and absolute discretion, permit Contractor to complete the Work, but charge to Contractor and deduct from any Progress or Final Payments, whether or not previously approved, administrative expenses and costs for each day completion of the Work is delayed beyond the Completion Date, computed on the basis of the "Per Diem Administrative Charge" set forth in Attachment A, as well as any additional damages caused by such delay.

(a) Per Diem Administrative Charge

Five Hundred Dollars ($ 500.00)

6.5 Terminations and Suspensions Deemed for Convenience

Any termination or suspension of Contractor's rights under this Contract for an alleged default that is ultimately held unjustified shall automatically be deemed to be a termination or suspension for the convenience of Owner under Section 1.15 of this Contract.

ARTICLE VII
LEGAL RELATIONSHIPS AND REQUIREMENTS

7.1 Binding Effect

This Contract shall be binding upon Owner and Contractor, and upon their respective heirs, executors, administrators, personal representatives, and permitted successors and assigns. Every reference in this Contract to a party shall also be deemed to be a reference to the authorized officers, employees, agents, and representatives of such party.

7.2 Relationship of the Parties

Contractor shall act as an independent contractor in providing and performing the Work. Nothing in nor done pursuant to this Contract shall be construed (1) to create the relationship of principal and agent, partners or joint ventures between Owner and Contractor, or (2) except as provided in Paragraph 6.3(f) above to create any relationship between Owner and any subcontractor or supplier of Contractor. No review, inspection, test, audit, measurement, order, determination, decision, disapproval, approval, payment for or use or acceptance of the Work or any other act or omission of Owner shall imply, create any interest in, be deemed to be the issuance of, or require Owner to issue, any license or permit to Contractor or any subcontractor.

7.3 No Collusion/ Prohibited Interests

Contractor hereby represents that the only persons, firms or corporations interested in this Contract as principals are those disclosed to Owner prior to the execution of this Contract and that this Contract is made without collusion with any other person, firm, or corporation. If at any time it shall be found that Contractor has, in procuring this Contract, colluded with any other person, firm or corporation, then Contractor shall be liable to Owner for all loss or damage that Owner may suffer thereby, and this Contract shall, at Owner's option, be null and void.

Contractor hereby represents and warrants that neither Contractor nor any person affiliated with Contractor or that has an economic interest in Contractor or that has or will have an interest in the Work or will participate, in any manner whatsoever, in the Work is acting, directly or indirectly, for or on behalf of any person, group, entity or nation named by the United States Treasury Department as a Specially Designated National and Blocked Person, or for or on behalf of any person, group, entity or nation designated in Presidential Executive Order 13224 as a person who commits, threatens to commit, or supports terrorism, and neither Contractor nor any person affiliated with Contractor or that has an economic interest in Contractor or that has or will have an interest in the Work or will participate, in any manner whatsoever, in the Work is, directly or indirectly, engaged in, or facilitating, the Work on behalf of any such person, group, entity or nation.

7.4 Assignment

Contractor shall not (1) assign this Contract in whole or in part; (2) assign any of Contractor's rights or obligations under this Contract; or (3) assign any payment due or to become due under this Contract without the prior express written approval of Owner, which approval may be withheld in the sole and unfettered discretion of Owner; provided, however, that Owner's prior written approval shall not be required for assignments of accounts, as defined in the Illinois Commercial Code, if to do so would violate Section 9-318 of the Illinois Commercial Code, 810 ILCS 5/9-318. Owner may assign this Contract, in whole or in part, or any or all of its rights or obligations under this Contract, without the consent of Contractor.

7.5 Confidential Information

All information supplied by Owner to Contractor for or in connection with this Contract or the Work shall be held confidential by Contractor and shall not, without the prior express written consent of Owner, be used for any purpose other than performance of the Work.

7.6 No Waiver

No examination, inspection, investigation, test, measurement, review, determination, decision, certificate or approval by Owner; nor any order by Owner for the payment of money; nor any payment for or use, occupancy, possession or acceptance of the whole or any part of the Work by Owner; nor any extension of time granted by Owner; nor any delay by Owner in exercising any right under this Contract; nor any other act or omission of Owner shall constitute or be deemed to be an acceptance of any defective, damaged, flawed, unsuitable, nonconforming, or incomplete Work, equipment, materials or supplies; nor operate to waive or otherwise diminish the effect of any warranty or representation made by Contractor or of any requirement or provision of this Contract or of any remedy, power or right of Owner.

7.7 No Third Party Beneficiaries

No claim as a third party beneficiary under this Contract by any person, firm or corporation other than Contractor shall be made or be valid against Owner.

7.8 Notices

All notices required or permitted to be given under this Contract shall be in writing and shall be deemed received by the addressee thereof when delivered in person on a business day at the address set forth below or on the third business day after being deposited in any main or branch United States post office for delivery at the address set forth below by properly addressed, postage prepaid, certified or registered mail, return receipt requested.

Notices and communications to Owner shall be addressed to, and delivered at, the following address:

LAKE COUNTY FOREST PRESERVE DISTRICT
1899 WEST WINCHESTER ROAD
LIBERTYVILLE, ILLINOIS 60048
ATTENTION: BECKY MATHIS, PROJECT MANAGER

Notices and communications to Contractor shall be addressed to, and delivered to, the following address:

NAME OF SUCCESSFUL BIDDER
ADDRESS OF SUCCESSFUL BIDDER
CITY, STATE, ZIP CODE
ATTENTION:

The foregoing shall not be deemed to preclude the use of other non-oral means of notification or to invalidate any notice properly given by any such other non-oral means. By notice complying with the requirements of this Section, Owner and Contractor each shall have the right to change the address or addressee or both for all future notices to it, but no notice of a change of address shall be effective until actually received.

7.9 Governing Laws

This Contract and the rights of Owner and Contractor under this Contract shall be interpreted according to the internal laws, but not the conflict of laws rules, of the State of Illinois.

7.10 Changes in Laws

Unless otherwise explicitly provided in this Contract, any reference to laws shall include such laws as they may be amended or modified from time to time.

7.11 Compliance with Laws and Grants

Contractor shall give all notices, pay all fees, and take all other action that may be necessary to ensure that the Work is provided, performed, and completed in accordance with all (1) required or applicable governmental permits, licenses, grants, or other approvals and authorizations that may be required in connection with providing, performing, and completing the Work; and (2) applicable statutes, ordinances, rules and regulations, including without limitation, the Prevailing Wage Act, 820 ILCS 130/0/01et seq. (Occasionally, the Illinois Department of Labor may revise the prevailing rate of hourly wages to be paid; the revised rate shall apply to this Contract. The prevailing rate of wages in Lake County can be found on the IDOL website: https://www2.illinois.gov/idol/Pages/default.aspx); any other prevailing wage laws; the Fair Labor Standards Act; any statutes regarding qualification to do business; any statutes requiring preference to laborers of specified classes; the Illinois Steel Products Procurement Act, 30 ILCS 565/1 et seq.; any statutes prohibiting discrimination because of or requiring affirmative action

based on race, creed, color, national origin, age, sex or other prohibited classification, including without limitation, the Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 et seq., the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq.; and the Discrimination in Public Contracts Act, 775 ILCS 10/1 et seq.; any statutes regarding safety or the performance of the Work, including the Illinois Structural Work Act, the Illinois Underground Utility Facilities Damage Prevention Act, and the Occupational Safety and Health Act; and applicable federal labor laws including 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 revising, codifying and enacting without substantive changes the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c).

Contractor shall be solely liable for any fines or civil penalties that are imposed by any governmental or quasi-governmental agency or body that may arise or be alleged to have arisen out of or in connection with Contractor's or its subcontractors' or suppliers' performance of or failure to perform the Work or any part thereof.

Nothing in this Contract shall be construed to waive or limit Owner's authority to regulate any matter falling within its regulatory authority, including the activities of Contractor, its subcontractors, or any other person, or the Work or the Work Site.

Every provision of law required by law to be inserted into this Contract shall be deemed to be inserted herein.

7.12 Compliance with Patents

A. Assumption of Costs, Royalties, and Fees. Contractor shall pay or cause to be paid all costs, royalties, and fees arising from the use on or the incorporation into the Work, of patented equipment, materials, supplies, tools, appliances, devices, processes, or inventions.

B. Effect of Contractor Being Enjoined. Should Contractor be enjoined from furnishing or using any equipment, materials, supplies, tools, appliances, devices, processes or inventions supplied or required to be supplied or used under this Contract, Contractor shall promptly offer substitute equipment, materials, supplies, tools, appliances, devices, processes or inventions in lieu thereof, of equal efficiency, quality, suitability, and market value for review by Owner. If Owner should disapprove the offered substitutes and should elect in lieu of a substitution to have supplied, and to retain and use any such equipment, materials, supplies, tools, appliances, devices, processes or inventions as may by this Contract be required to be supplied, Contractor shall pay such royalties and secure such valid licenses as may be requisite and necessary for Owner to use such equipment, materials, supplies, tools, appliances, devices, processes or inventions without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof. Should Contractor neglect or refuse to make any approved substitution promptly or to pay such royalties and secure such licenses as may be necessary, then Owner shall have the right to make such substitution or Owner may pay such royalties and secure such licenses and charge the cost thereof against any money due Contractor from Owner or recover the amount thereof from Contractor and its surety or sureties notwithstanding that Final Payment may have been made.

7.13 Time

The Contract Time is of the essence of this Contract. Except where otherwise stated, references in this Contract to days shall be construed to refer to calendar days.

7.14 Severability

The provisions of this Contract shall be interpreted when possible to sustain their legality and enforceability as a whole. In the event any provision of this Contract shall be held invalid, illegal or unenforceable by a court of competent jurisdiction in whole or in part, neither the validity of the

remaining part of such provision, nor the validity of any other provisions of this Contract shall be in any way affected thereby.

7.15 Entire Agreement

This Contract sets forth the entire agreement of Owner and Contractor with respect to the accomplishment of the Work and the payment of the Contract Price therefor, and there are no other understandings or agreements, oral or written, between Owner and Contractor with respect to the Work and the compensation therefor.

7.16 Amendments

No modification, addition, deletion, revision, alteration or other change to this Contract shall be effective unless and until such change is reduced to writing and executed and delivered by Owner and Contractor.

IN WITNESS WHEREOF, Owner and Contractor have caused this Contract to be executed in two (2) original counterparts as of the day and year first written above.

(SEAL)

Attest/Witness	LAKE COUNTY FOREST PRESERVE DISTRICT
By: _____	By: _____
Julie Gragnani	Alex Ty Kovach
Title: Board Secretary	Title: Executive Director
Attest/Witness	(NAME OF SUCCESSFUL BIDDER)
By: _____	By: _____
	(EXECUTING OFFICER)
Title: _____	Title: _____

STATE OF ILLINOIS }
SS
COUNTY OF }

CONTRACTOR'S CERTIFICATION

(CONTRACTOR'S EXECUTIVE OFFICER), being first duly sworn on oath, deposes and states that all statements herein made are made on behalf of Contractor, that this deponent is authorized to make them, and that the statements contained herein are true and correct.

Contractor deposes, states, and certifies that Contractor is not barred from contracting with a unit of state or local government as a result of (i) a violation of either Section 33E-3 or Section 33E-4 of Article 33E of the Criminal Code of 1961, 720 ILCS 5/33E-1 et seq.; or (ii) a violation of the USA Patriot Act of 2001, 107 Public Law 56 (October 26, 2001) (the "Patriot Act") or other statutes, orders, rules, and regulations of the United States government and its various executive departments, agencies and offices related to the subject matter of the Patriot Act, including, but not limited to, Executive Order 13224 effective September 24, 2001.

DATED this _____ day of _____, 2025

Attest/Witness

By: _____

Title: _____

(NAME OF SUCCESSFUL BIDDER)

By: _____
(EXECUTING OFFICER)

Title: _____

Subscribed and Sworn to
before me this _____ day of
_____, 2025

My Commission Expires: _____

_____
Notary Public

{SEAL}

ATTACHMENT A
SUPPLEMENTAL SCHEDULE OF CONTRACT TERMS

1. Project:

The Work to be performed under this Contract consists of the complete construction of the Recreation Facilities at Lakewood Forest Preserve in accordance with the Contract Documents. The Work shall also meet the requirements of all permitting agencies. The Work generally includes, but is not limited to all labor, equipment, and materials for: site preparation and removals, construction fencing, temporary erosion control and sediment control measures, grading and earthwork, utilities (storm, electrical, water), asphalt parking lot and striping, concrete paving, stone walls, cast-in-place concrete, floating dock, shelter A (4-season shelter), shelter B (large shelter), metal fabrication (handrails, guardrails, counters, and benches), planting, turf seeding and native seeding.

2. Work Site:

Lakewood Forest Preserve
27277 N. Forest Preserve Road
Wauconda, Illinois 60084

3. Permits, Licenses, Approvals, and Authorizations:

Contractor shall obtain all required governmental permits, licenses, approvals, and authorizations, except:

PERMITS, LICENSES & APPROVALS OBTAINED OT TO BE OBTAINED BY OWNER

- Lake County Planning, Building & Development: Building Permits
- Illinois Environmental Protection Agency (IEPA): NOI, NPDES Permit, SWPPP
- Lake County Stormwater Management Commission (LCSMC): Watershed Development Permit

NO EXCEPTIONS

4. Commencement Date:

The date of execution of the Contract by Owner or Spring 2026 as soon as conditions allow.

5. Completion Date:

September 4, 2026, for all work within the wetland, including, but not limited to, earthwork, cast-in-place abutments, shoreline wall, floating dock, concrete pavement, seeding, and the removal of the turbidity barrier. Work within the wetland that does not impact the ground can be completed later, including the abutment guardrail and platform bench. (Extensions, if needed, will require a permit extension which shall be paid for by the Contractor and shall include updating the wetland delineation report and submittal / approval by Lake County Stormwater Management Commission.)

October 1, 2026, for all turf seeding, plus extensions, if any, authorized by a Change Order issued pursuant to Article II of the Contract for all work.

May 21, 2027, for final completion and certificate of occupancy, plus extensions, if any, authorized by a Change Order issued pursuant to Article II of the Contract for all work.

6. Insurance Coverages

All insurance policies shall be issued from insurance companies holding at least an "A5" or better rating as rated by A.M. Best Company. All policies shall include the District named as additional insured.

A. Worker's Compensation and Employer's Liability with limits not less than:

(1) Worker's Compensation: Statutory

(2) Employer's Liability:

a. $1,000,000 - injury per occurrence

b. $ 500,000 - disease per employee

c. $ 500,000 - disease policy limit

Such insurance shall evidence that coverage applies in the State of Illinois.

B. Comprehensive Motor Vehicle Liability with limits for vehicles owned, non-owned or rented, not less than:

(1) Bodily Injury:

a. $ 500,000 - per person

b. $1,000,000 - per occurrence

(2) Property Damage:

a. $ 500,000 - per occurrence

b. $ 1,000,000 - aggregate

All employees shall be included as insured's.

C. Comprehensive General Liability: If such CGL insurance contains a general aggregate limit, it shall apply separately to this project. With coverage written on an "occurrence" basis with limits no less than:

(1) General Aggregate: $2,000,000

(2) Bodily Injury:

a. $ 2,000,000 - per person

b. $ 2,000,000 - per occurrence

(3) Property Damage:

a. $ 2,000,000 - per occurrence

b. $ 2,000,000 - aggregate

(4) Other Coverages:

- Premises/Operations
- Products/Completed Operations (to be maintained for two years following Final Payment)
- Independent Vendors
- Personal Injury (with Employment Exclusion deleted)
- Broad Form Property Damage Endorsement
- Blanket Contractual Liability (must expressly cover the indemnity provisions of the Contract)
- Bodily Injury and Property Damage "X", "C", and "U" exclusions shall be deleted

Railroad exclusions shall be deleted if Work Site is within 50 feet of any railroad tracks.

All employees shall be included as insured's.

D. Builders Risk Insurance. This insurance shall be written in completed value form, shall protect Vendor and Owner against "all risks" of direct physical loss to buildings, structures,

equipment, and materials to be used in providing, performing, and completing the Work, including without limitation fire extended coverage, vandalism and malicious mischief, sprinkler leakage, flood, earth movement and collapse, and shall be designed for the circumstances that may affect the Work.

This insurance shall be written with limits not less than the insurable value of the Work at completion. The insurable value shall include the aggregate value of Owner-furnished equipment and materials to be constructed or installed by Vendor.

This insurance shall include coverage while equipment or materials are in warehouses, during installation, during testing, and after the Work is completed, but prior to Final Payment. This insurance shall include coverage while Owner is occupying all or any part of the Work prior to Final Payment without the need for the insurance company's consent.

E. Umbrella Policy. The required coverages may be in any combination of primary, excess, and umbrella policies. Any excess or umbrella policy must provide excess coverage over underlying insurance on a following-form basis such that, when any loss covered by the primary policy exceeds the limits under the primary policy, the excess or umbrella policy becomes effective to cover such loss.

F. Deductible. Each policy shall have a deductible or self-insured retention of not more than $10,000.00.

G. Owner and Architect / Engineer as Additional Insured. Owner and Architect / Engineer shall be named as an Additional Insured on the following policies:

- Comprehensive Motor Vehicle Liability
- Comprehensive General Liability

The Additional Insured endorsement shall identify Owner and Architect / Engineer as follows:

Lake County Forest Preserve District (Owner)

Bleck & Bleck Architects, LLC (Architect)

Pearson Brown & Associates, Inc. (Engineer)

H. Indemnification Clause. The Vendor shall protect, indemnify, hold and save harmless and defend the District, its officers, officials, employees, volunteers, and agents against any and all claims, costs, causes, actions and expenses, including but not limited to attorney's fees incurred by reason of a lawsuit or claim for compensation arising in favor of any person, including the employees, or volunteers or officers or independent Vendors or subcontractors of the District, on account of personal injuries or death, or damages to property occurring, growing out of, incidental to, or resulting directly or indirectly from the use and performance by or on behalf of the Vendor.

J. Evidence of Insurance. Company shall furnish District with a certificate(s) of insurance and applicable policy endorsement(s), executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth above. Failure of District to demand such certificate, endorsement or other evidence of full compliance with these insurance requirements or failure of District to identify a deficiency from evidence that is provided shall not be construed as a waiver of Company’s obligation to maintain such insurance. District shall have the right, but not the obligation, of prohibiting Company from entering the premises until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and approved by District. Failure to maintain the required insurance may result in termination of this Contract at District’s option. Company shall provide certified copies

of all insurance policies required above within 10 days of Districts' written request for said copies.

K. Owner's and Contractor's Protective Liability Insurance ***(required if hiring sub-contractors)***. Contractor, at its sole cost and expense, shall purchase this insurance in the name of Owner with a combined single limit for bodily injury and property damage of not less than $1,000,000.

7. Contract Price SCHEDULE OF PRICES

A. Unit Price Contract

Prices entered into Vendor Access items tab shall become the Schedule of Prices within the Bidder's Proposal and Contract.

For providing, performing, and completing all Work, the total Contract Price, which is the sum of the products resulting from multiplying the number of acceptable units of Unit Price Items (including Base Bid Items and Alternate Bid Items) listed in the Schedule of Prices by the Unit Price set forth for such Unit Price Item. Bidder acknowledges that the total Contract Price will depend on the number of Base Bid Items and Alternate Bid Items accepted by Owner and the Unit Prices accepted by Owner. The Schedule of Prices, by this reference, is incorporated into the Contract.

8. Progress Payments

A. General. Owner shall pay to Contractor ninety percent (90%) of the Value of Work determined in the manner set forth below, installed and complete in place up to the day before the Pay Request, less the aggregate, of all previous Progress Payments (the "Value of Work"). When 50% of the Value of Work has been completed, Owner shall pay to Contractor ninety-five percent (95%) of the completed portion of the Value of Work.

B. Value of Work. The Value of the Work shall be determined as follows:

(1) Unit Price Items. For all Work to be paid on a unit price basis, the value of such Work shall be determined by Owner on the basis of the actual number of acceptable units of Unit Price Items installed and complete in place, multiplied by the applicable Unit Price set forth in the Schedule of Prices. The actual number of acceptable units installed and complete in place shall be measured on the basis described in Attachment B to the Contract or, in the absence of such description, on the basis determined by Owner. The number of units of Unit Price Items stated in the Schedule of Prices are Owner's estimate only and shall not be used in establishing the Progress or Final Payments due Contractor. The Contract Price shall be adjusted to reflect the actual number of acceptable units of Unit Price Items installed and complete in place upon Final Acceptance.

C. Application of Payments. All Progress and Final Payments made by Owner to Contractor shall be applied to the payment or reimbursement of the costs with respect to which they were paid and shall not be applied to or used for any pre-existing or unrelated debt between Contractor and Owner or between Contractor and any third party.

ATTACHMENT B
SPECIFICATIONS

"Specifications for the Construction of Recreation Facilities at Lakewood Forest Preserve" dated October 1, 2025, and "Architectural Specifications Recreational Facilities at Lakewood Forest Preserve" dated September 24, 2025.

ATTACHMENT C
DRAWINGS

“Recreation Facilities at Lakewood Forest Preserve” prepared by Pearson, Brown and Associates, Inc. dated August 29, 2025.

“Evaporator Restroom Facility at Lakewood Forest Preserve” prepared by Wells P. Wheeler dated September 24, 2025.

“Recreation Facilities: 4-Season Shelter and Large Shelter at Lakewood Forest Preserve” prepared by Bleck and Bleck Architects dated September 24, 2025.

ATTACHMENT D
SPECIAL PROJECT REQUIREMENTS

1. Construction Limits

Contractor shall work within the construction limits indicated in the drawings listed in Attachment C (the "Drawings"). The approximate location of Contractor's access to the Work Site is shown on such drawings or if not shown will be determined in the field by Owner and Contractor. Owner reserves the right to alter the construction limits to avoid damage to environmentally sensitive areas. Contractor may maintain uncovered storage and construction parking only in those areas designated by Owner.

2. Other Contracts

Owner may have separate contracts in force at the same time and in the same area of the Work Site. Contractor shall schedule the Work and cooperate with others at the Work Site pursuant to Section 1.13 of the Contract.

3. Utilities

Owner is not required to provide any utility services. Contractor shall provide, and pay all costs for, necessary temporary electrical, heat, sanitary sewer, and water hook-ups.

4. Layout of Work

Refer to Section 01000 – General Project Requirements, Article 1.06 of the Specifications within Attachment B.

5. Site Access

Contractor's access to the Work Site is from IL Route 176 through the main entrance to Lakewood Forest Preserve via Forest Preserve Road only. No construction access will be allowed using Ivanhoe Road, which has a 6-ton weight limit. Refer to Section 02100 – Temporary Access and Facilities of the Specifications within Attachment B for more information.

Contractor shall maintain access to the Work Site at no additional cost to Owner. If dirt and debris are tracked onto adjacent public streets or highways or Owner's trails, drives, parking areas or other property, Contractor shall thoroughly clean the pavement by 3:00 p.m. each workday or as often as required by Owner. If any municipality or public agency, including Owner, is called to clean the pavement, all resulting expenses shall be paid by the Contractor.

6. Construction Noise

To minimize the effect of construction noise in the area surrounding the Work Site, Contractor shall comply, and cause its subcontractors to comply, with the following requirements:

a. All engines and engine-driven equipment used for hauling or construction shall be (i) equipped with an adequate residential rated muffler in constant operation and (ii) properly maintained to prevent excessive or unusual noise.

b. Any machine or device or part thereof, which is regulated by or becomes regulated by government noise standards shall conform to those standards.

7. Construction Debris

For any new construction, renovation, and / or demolition project of 1,500 square feet or greater gross floor area, a Lake County Construction and Demolition Debris Recycling Plan is required. The Contractor shall be responsible for submitting prior to building permit issuance. The Contractor shall be responsible for compliance and verification that 75% of all construction and demolition debris is diverted from area landfills.

8. Existing Utilities

Known public and private utilities are shown on the Drawings. Refer to Section 02300 – Site Resource Protection, Article 3.02 of the Specifications within Attachment B for more information.

Contractor (a) shall familiarize itself with the location of all utilities and structures that may be found in the vicinity of the construction; (b) assumes responsibility for all utilities; and (c) acknowledges that the actual locations and/or elevations of the utilities may be different than indicated.

If any damages occur to utilities because of Contractor's acts or omissions, Contractor shall repair such damages, at its expense, in a manner acceptable to the Owner and/or engineer. The Contractor shall notify all utility companies of its construction schedule and coordinate construction operations with the utility companies so that relocation of utility lines and structures may proceed in an orderly manner.

9. Existing Public Access

The Work Site shall be closed to public vehicular use. The remainder of the Forest Preserve outside of the Work Areas will remain open to the public for non-vehicular use.

10. Incidental Site Restoration

Contractor shall take all necessary and reasonable precautions to prevent any damage to existing trees, foliage, plant materials, wetlands, structures, roads, parking lots, trails, turf areas, finished topsoil areas, and other property of Owner, the public, or private entities. Refer to Section 02300 – Site Resource Protection of the Specifications within Attachment B for more information.

11. Protection and Care of Trees and Shrubs that are to Remain

Refer to Section 02300 – Site Resource Protection of the Specifications within Attachment B for more information.

12. Protection of Streams, Lakes, Reservoirs

Contractor shall provide adequate planning and supervision during the Work for implementing construction methods, processes, and clean-up procedures necessary to prevent water pollution and to control erosion. Refer to Section 02300 – Site Resource Protection of the Specifications and Section 02400 – Soil Erosion and Sediment Control within Attachment B for more information.

13. Protection and Care of Carsonite Boundary Markers

Prior to commencing work, Contractor shall review all drawings, existing survey data and shall conduct a thorough investigation of the Work Site and the surrounding area to determine the location and extant of all Yellow Carsonite Boundary Markers. Refer to Section 02300 – Site Resource Protection, Article 3.01 of the Specifications within Attachment B for more information

14. Approved Schedule

As a required Submittal pursuant to Section 1.3 of this Contract, Contractor shall submit to Owner within ten days after the execution of this Contract, a detailed schedule of the Work showing the time of beginning and completion for at least every major component of the Work. Such schedule shall logically and realistically relate the performance of each component of the Work to each other component of the Work and to the whole of the Work so as to demonstrate that sufficient time has been allowed for the completion of each component without interference or delay from or to any other component. The schedule shall demonstrate Contractor's ability to comply with the requirements of the Contract. If the schedule so submitted is not in all respects satisfactory and in full compliance with the requirements of this Contract, Owner shall return a copy of the schedule to Contractor with such exceptions noted as Owner may deem appropriate and Contractor shall submit a revised schedule to Construction Coordinator within two business days.

If, and when, the schedule so submitted or resubmitted is in all respects satisfactory, and in full compliance with the requirements of this Contract, Owner shall return a copy of the schedule to the Contractor with no exceptions noted ("Approved Schedule"). Owner may require the Approved Schedule to be revised or updated as frequently as Owner may deem necessary prior to Final Acceptance of the Work.

ATTACHAMENT E
SUPPLEMENTAL INFORMATION – GEOTECHNICAL INVESTIGATION

“Summary of Geotechnical Investigations (Borings) for Lakewood Forest Preserve. Attachment E contains four (4) complete Geotechnical Reports by Soil and Material Consultants, Inc.

BOND #_____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that FULL NAME AND ADDRESS OF CONTRACTOR, as Principal, hereinafter called Contractor, and FULL NAME AND ADDRESS OF SURETY, as Surety, a corporation organized and existing under the laws of the State of STATE, hereinafter called Surety, are held and firmly bound unto Lake County Forest Preserve District, 1899 West Winchester Road, Libertyville, Illinois 60048, as Obligee, hereinafter called Owner, in the full and just sum of CONTRACT PRICE Dollars for the payment of which sum of money well and truly to be made, Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents, said amount to include payment of actual costs and damages and for attorneys' fees, architectural fees, design fees, engineering fees, accounting fees, testing fees, consulting fees, administrative costs, court costs, interest and any other fees and expenses resulting from or occurred by reason of Contractor's failure to promptly and faithfully perform its Contract with Owner, said Contract being more fully described below, and to include attorneys' fees, court costs and administrative and other expenses necessarily paid or incurred in successfully enforcing performance of the obligation of Surety under this bond.

WHEREAS, Contractor has entered into a written agreement dated DATE OF CONTRACT AGREEMENT, with Owner entitled "Contract Between Lake County Forest Preserve District and CONTRACTOR'S NAME for RECREATION FACILITIES, LAKEWOOD FOREST PRESERVE" (the "Contract"), the terms and conditions of which are by this reference incorporated herein as though fully set forth herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if Contractor shall well, truly, and promptly perform all the undertakings, covenants, terms, conditions and agreements of said Contractor under the Contract, including, but not limited to, Contractor's obligations under the Contract: (1) to provide, perform, and complete at the Work Site and in the manner specified in the Contract all necessary work, labor, services, transportation, equipment, materials, apparatus, machinery, tools, fuels, gas, electric, water, waste disposal, information, data and other means and items necessary for RECREATION FACILITIES, LAKEWOOD FOREST PRESERVE; (2) to procure and furnish all permits, licenses and other governmental approvals and authorizations necessary in connection therewith except as otherwise expressly provided in the Supplemental Schedule of Contract Terms; (3) to procure and furnish all bonds, certificates and policies of insurance specified in the Contract; (4) to pay all applicable federal, state and local taxes; (5) to do all other things required of Contractor by the Contract; and (6) to provide, perform, and complete all of the foregoing in a proper and workmanlike manner and in full compliance with and as required by and pursuant to the Contract, all of which is herein referred to as the "Work," whether or not any of said Work enter into and become component parts of the improvement contemplated, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no changes, modifications, alterations, omissions, deletions, additions, extension of time or forbearance on the part of either Owner or Contractor to the other in or to the terms of said Contract; in or to the schedules, plans, drawings or specifications; in or to the method or manner of performance of the Work; in or to Owner-furnished facilities, equipment, materials, service or sites; or in or to the mode or manner of payment therefor, shall in any way release Contractor and Surety or either or any of them, or any of their heirs, executors, administrators, successors or assigns or affect the obligations of Surety on this bond, all notice of any and all of the foregoing changes, modifications, alterations, omissions, deletions, additions, extensions of time or forbearances, and notice of any and all defaults by Contractor or of Owner's termination of Contractor being hereby waived by Surety.

Notwithstanding anything to the contrary in the foregoing paragraph, in no event shall the obligations of Surety under this bond, in the event of Contractor's default, be greater than the obligations of Contractor under the Contract in the absence of such Contractor default.

In the event of a default or defaults by Contractor, Owner shall have the right to take over and complete the Work upon thirty (30) calendar days' written notice to Surety, in which event Surety shall pay Owner all costs incurred by Owner in taking over and completing the Contract. At its option, Owner may instead request that Surety take over and complete the Contract, in which event Surety shall take reasonable steps to proceed promptly with completion no later than thirty (30) calendar days from the date on which Owner notifies Surety that Owner wants Surety to take over and complete the Contract.

Owner shall have no obligation to actually incur any expense or correct any deficient performance of Contractor to be entitled to receive the proceeds of this bond.

No right of action shall accrue on this bond to or for the use of any person or corporation other than Owner of the heirs, executors, administrators, or successors of Owner.

Signed and sealed this _____ day of _____, _____

Attest/Witness	PRINCIPAL: NAME OF CONTRACTOR
By: _____	By: _____ (EXECUTING OFFICER)
Title: _____	Title: _____
Attest/Witness	SURETY: NAME OF SURETY
By: _____	By: _____
Title: _____	Title:_____

SEE GENERAL INSTRUCTIONS TO BIDDERS, SECTION 7
FOR SIGNATURE REQUIREMENTS

BOND #_____

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that FULL NAME AND ADDRESS OF CONTRACTOR, as Principal, hereinafter called Contractor, and FULL NAME AND ADDRESS OF SURETY, as Surety, a corporation organized and existing under the laws of the State of STATE, hereinafter called Surety, are held and firmly bound unto Lake County Forest Preserve District, 1899 West Winchester Road, Libertyville, Illinois 60048, as Obligee, hereinafter called Owner, for the use and benefit of itself and of claimants as hereinafter defined, in the full and just sum of CONTRACT PRICE Dollars, to be paid to it or the said claimants or its or their assigns, to which payment well and truly to be made, Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents, said amount to include attorneys' fees, court costs, and administrative and other expenses necessarily paid or incurred in successfully enforcing performance of the obligation of Surety under this bond.

WHEREAS, Contractor has entered into a written agreement dated DATE OF CONTRACT AGREEMENT with Owner entitled "Contract Between Lake County Forest Preserve District and CONTRACTOR'S NAME for RECREATION FACILITIES, LAKEWOOD FOREST PRESERVE" (the "Contract"), the terms and conditions of which are by this reference incorporated herein as though full set forth herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if Contractor shall promptly pay or cause to be paid all sums of money that may be due to any claimant with respect to Contractor's obligations under the Contract: (1) to provide, perform, and complete at the Work Site, and in the manner specified in the Contract, all necessary work, labor, services, transportation, equipment, materials, apparatus, machinery, tools, fuels, gas, electric, water, waste disposal, information, data and other means and items necessary for RECREATION FACILITIES, LAKEWOOD FOREST PRESERVE; (2) to procure and furnish all permits, licenses and other governmental approvals and authorizations necessary in connection therewith except as otherwise expressly provided in the Supplemental Schedule of Contract Terms; (3) to procure and furnish all bonds, certificates and policies of insurance specified in the Contract; (4) to pay all applicable federal, state and local taxes; (5) to do all other things required of Contractor by the Contract; and (6) to provide, perform, and complete all of the foregoing in a proper and workmanlike manner and in full compliance with and as required by and pursuant to the Contract, all of which is herein referred to as the "Work," whether or not any of said work enter into and become component parts of the improvement contemplated, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

For purpose of this bond, a claimant is defined as one having a direct contract with Contractor or with a subcontractor of Contractor to provide, perform, or complete any part of the Work.

Contractor and Surety hereby jointly and severally agree that every claimant who has not had all just claims for the furnishing of any part of the Work paid in full, including, without limitation, all claims for amounts due for materials, lubricants, oil, gasoline, rentals of, or service or repairs on, machinery, equipment, and tools consumed or used in connection with the furnishing of any part of the Work, may sue on this bond for the use of such claimant, may prosecute the suit to final judgment for such sum or sums as may be justly due such claimant, and may have execution therein; provided, however, that Owner shall not be liable for the payment of any costs or expenses of any such suit. The provisions of 30 ILCS 550/1 and 30 ILCS 550/2 shall be deemed inserted herein, including the time limits within which notices of claim must be filed and actions brought under this bond.

Contractor and Surety hereby jointly agree that Owner may sue on this bond if Owner is held liable to or voluntarily agrees to pay any claimant directly, but nothing in this bond shall create any duty on the part of Owner to pay any claimant.

Surety, for value received, hereby stipulates and agrees that no changes, modifications, alterations, omissions, deletions, additions, extensions of time or forbearance on the part of Owner or Contractor to the other in or to the terms of said Contract; in or to the schedules, plans, drawings or specifications; in or to the method or manner of performance of the Work; in or to Owner-furnished facilities, equipment, material, services or sites; or in or to the mode or manner of payment therefor shall in any way release Contractor and Surety or either or any of them, or any of their heirs, executors, administrators, successors or assigns, or affect the obligations of said Surety on this bond, all notice of any and all of the foregoing changes, modifications, alterations, omissions, deletions, additions, extensions of time or forbearances and notice of any and all defaults by Contractor or of Owner's termination of Contractor being hereby waived by Surety.

Signed and sealed this _____ day of _____, _____

Attest/Witness	PRINCIPAL: NAME OF CONTRACTOR
By: _____	By: _____ (EXECUTING OFFICER)
Title: _____	Title: _____
Attest/Witness	SURETY: NAME OF SURETY
By: _____	By: _____
Title: _____	Title:_____

SEE GENERAL INSTRUCTIONS TO BIDDERS, SECTION 7
FOR SIGNATURE REQUIREMENTS

Lakewood Forest Preserve: Recreation Facilities, 25105

Vendor: <insert vendor name>

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
A. SITE PREPARATION AND PROTECTION (02000)							
	Mobilization and Temporary Site Access	02100	02-01	1	LS		$ -
	Stabilized Construction Entrance [Contingent]	02100	02-02	466	SY		$ -
	Temporary Construction Fence, 4' [Contingent]	02300	02-03	3,226	LF		$ -
	Temporary Chain Link Fence, 6'	02300	02-04	800	LF		$ -
	Temporary Chain Link Gate, 12'	02300	02-05	2	EA		$ -
	Silt Fence [Contingent]	02400	02-06	1,070	LF		$ -
	Filter Sock	02400	02-07	1,070	LF		$ -
	Temporary Ditch Check [Contingent]	02400	02-08	5	EA		$ -
	Permeable Plastic Ditch Check	02400	02-09	2	EA		$ -
	Drain Inlet Protection (Pavement)	02400	02-10	3	EA		$ -
	Drain Inlet Filter (Lawn)	02400	02-11	4	EA		$ -
	Temporary Seed [Contingent]	02400	02-12	1,000	SY		$ -
	Hydromulch, Slopes 2:1 or less [Contingent]	02400	02-13	1,000	SY		$ -
	Turbidity Barrier	02400	02-14	142	LF		$ -
	Dewatering [Contingent]	02400	02-15	1	LS		$ -
	Tree Removal with Stump Grinding, 16-30" DBH [Contingent]	02500	02-16	1	EA		$ -
	Tree Root Pruning [Contingent]	02500	02-17	100	LF		$ -
	Tree Branch Pruning, 6-12" Diameter [Contingent]	02500	02-18	5	EA		$ -
	Tree Branch Pruning, 13-24" Diameter [Contingent]	02500	02-18	5	EA		$ -
	Field Mowing [Contingent]	02500	02-19	2.0	AC		$ -
	Asphalt Pavement Removal, Full Depth	02600	02-20	3,017	SY		$ -
	Asphalt Pavement Removal, 1-1/2"	02600	02-21	15	SY		$ -
	Concrete Pavement Removal, Full Depth	02600	02-22	993	SY		$ -
	Aggregate Removal, Full Depth	02600	02-23	89	SY		$ -
	Curb and Gutter Removal [Contingent]	02600	02-24	100	LF		$ -
	Saw Cuts, Full Depth	02600	02-25	71	LF		$ -
	Utility Line Removal and Disposal, Complete	02600	02-26	564	LF		$ -
	Utility Manhole Removal and Disposal (Various)	02600	02-27	12	EA		$ -
	Utility Structure Removal and Disposal (Various)	02600	02-28	3	EA		$ -
						A. SITE PREPARATION AND PROTECTION SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
B. EARTHWORK AND DRAINAGE							
	Site Grading, Complete	03100	03-01	1	LS		$ -
	Excavation of Unsuitable Materials [Contingent]	03110	03-02	20	CY		$ -
	On-Site Disposal of Unsuitable Materials [Contingent]	03110	03-03	20	CY		$ -
	Geotextile Ground Stabilization [Contingent]	03110	03-04	20	SY		$ -
	Porous Granular Embankment (PGE), CA-1 [Contingent]	03110	03-05	20	CY		$ -
	Topsoil Furnish and Placement, 4" depth [Contingent]	03120	03-06	2,000	SY		$ -
	Finish Grading	03120	03-07	22,530	SY		$ -
	Culvert Crossing, Complete	03200	03-08	1	EA		$ -
	Storm Sewer, 4" PVC	03300	03-09	120	LF		$ -
	Storm Sewer, 6" PVC	03300	03-09	53	LF		$ -
	Storm Sewer, 12" PVC	03300	03-09	326	LF		$ -
	Storm Sewer, 15" PVC	03300	03-09	43	LF		$ -
	Inlet #3, 6" Yard Drain with NDS 6"x6" Grate	03300	03-10	1	EA		$ -
	Inlet #7, 2' Type A with Type 8 Grate	03300	03-10	1	EA		$ -
	Inlet #8, 2' Type A with Type 8 Grate	03300	03-10	1	EA		$ -
	Manhole #1, 4' Type A with Type 1 Frame and Closed Lid	03300	03-11	1	EA		$ -
	Manhole #2, 4' Type A with Type 8 Grate	03300	03-11	1	EA		$ -
	Manhole #4, 4' Type A with R-2504 Grate	03300	03-11	1	EA		$ -
	Manhole #5, 4' Type A with R-2504 Grate	03300	03-11	1	EA		$ -
	Manhole #6, 4' Type A with R-2504 Grate	03300	03-11	1	EA		$ -
	Manhole, 4' Type A with Type 1 Frame and Closed Lid	03300	03-11	2	EA		$ -
						B. EARTHWORK AND DRAINAGE SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
C. UTILITIES							
	Utility Sleeve, 4", PVC, Open Trench	04100	04-01	581	LF		$ -

Lakewood Forest Preserve: Recreation Facilities, 25105

Vendor: <insert vendor name>

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
	Utility Sleeve, 4", PVC, Directional Drill	04110	04-02	209	LF		$ -
	Electrical Underground Line	04200	04-03	547	LF		$ -
	Electrical Service Connection	04200	04-04	1	LS		$ -
	Water Service Line, 1-1/4" Type K Copper, Open Trench	04310	04-05	17	LF		$ -
	Water Service Line, 2" HDPE, Open Trench	04310	04-06	224	LF		$ -
	Water B-Box Valve	04310	04-07	1	EA		$ -
	Water Treatment System, Complete	ARCH	04-08	2	LS		$ -
	Drinking Fountain	04320	04-09	1	EA		$ -
	Drinking Fountain Vault, 5', Complete	04321	04-10	1	EA		$ -
						C. UTILITIES SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
D. PAVEMENTS AND SURFACES							
	Subgrade Preparation	05100	05-01	4,891	SY		$ -
	Aggregate Base Course, 5" minimum	05200	05-02	2,109	SY		$ -
	Aggregate Base Course, 8" minimum [Contingent]	05200	05-02	345	SY		$ -
	Aggregate Base Course, 9" minimum	05200	05-02	55	SY		$ -
	Aggregate Base Course, 12" minimum	05200	05-02	2,727	SY		$ -
	Hot-Mix Asphalt Surface Course, Mix "D", N50, 3" [Contingent]	05200	05-03	306	SY		$ -
	Hot-Mix Asphalt Binder Course, IL-19.0, N50, 2 ¼"	05300	05-04	2,678	SY		$ -
	Bituminous Prime Coat	05300	05-05	2,678	SY		$ -
	Hot-Mix Asphalt Surface Course, Mix "D", N50, 1 ¾"	05300	05-06	2,678	SY		$ -
	Pavement Marking Line, 4", White, Thermoplastic	05310	05-07	1,390	LF		$ -
	Pavement Marking Line, 6", White, Thermoplastic	05310	05-07	55	LF		$ -
	Pavement Marking Line, 12", White, Thermoplastic	05310	05-07	64	LF		$ -
	Pavement Marking Line, 24", White, Thermoplastic	05310	05-07	24	LF		$ -
	Pavement Marking Line, 4", Yellow, Epoxy	05310	05-07	155	LF		$ -
	Pavement Marking Letters and Symbols, Yellow, Epoxy	05310	05-08	2	EA		$ -
	Concrete Pavement, 5"	05400	05-09	1,943	SY		$ -
	Concrete Pavement, 7"	05400	05-10	55	SY		$ -
	Concrete Pavement, 5", Specialty Finish	05401	05-11	820	SY		$ -
	Concrete Pavement Thickened Edge	05420	05-12	958	LF		$ -
	Concrete Curb and Gutter, B6.12	05420	05-13	152	LF		$ -
	Concrete Curb and Gutter, Depressed	05420	05-14	86	LF		$ -
	Concrete Curb and Gutter, Tapered	05420	05-15	40	LF		$ -
	Detectable Warnings	05430	05-16	32	SF		$ -
						D. PAVEMENTS AND SURFACES SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
E. WALLS							
	Boulder Slope Treatment	06100	06-01	7	SY		$ -
	Limestone Shoreline Wall, 4 Courses, Complete	06100	06-02	94	LF		$ -
						E. WALLS AND STAIRS SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
F. STRUCTURES							
	Cast-in-Place Concrete, Abutment	07300	07-01	2	EA		$ -
	Cast-in-Place Concrete, Stairs and Cheekwall	07300	07-02	1	LS		$ -
	Cast-in-Place Concrete, Footing	07300	07-03	2	EA		$ -
	Floating Dock	07400	07-04	1	LS		$ -
	Shelter A (4-Season Shelter)	ARCH	07-05	1	LS		$ -
	Shelter B (Large Shelter)	ARCH	07-06	1	LS		$ -
	Dairy Barn Selective Demolition and Restoration	ARCH	07-07	1	LS		$ -
	Evaporator Restroom Facility Vault	07511	07-08	1	EA		$ -
						F. STRUCTURES SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
G. METAL FABRICATION							

Lakewood Forest Preserve: Recreation Facilities, 25105

Vendor: <insert vendor name>

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
	Handrail, Ramp	08800	08-01	136	LF		$ -
	Handrail, Stair	08800	08-02	24	LF		$ -
	Guardrail	08800	08-03	82	LF		$ -
	Guardrail, Abutment	08800	08-04	22	LF		$ -
	Counter, 3'-6" Height	08800	08-05	32	LF		$ -
	Counter, 2'-10' Height	08800	08-06	24	LF		$ -
	Platform Bench	08800	08-07	1	EA		$ -
	Bench	08800	08-08	2	EA		$ -
						G. SITE AMENITIES SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
H. LANDSCAPE							
	Herbicide, Glyphosate, Non-Aquatic	09110	09-01	2.5	AC		$ -
	Herbicide, Aquatic [Contingent]	09110	09-02	2.5	AC		$ -
	Herbicide, Broadleaf, Turf, Post-emergent [Contingent]	09110	09-03	2.5	AC		$ -
	Shade Tree, Acer saccharum, Sugar Maple (ACSA), 2.5" caliper	09200	09-04	3	EA		$ -
	Shade Tree, Carya ovata, Shagbark Hickory (CAOV), 2.5" caliper	09200	09-04	10	EA		$ -
	Shade Tree, Gleditsia triacanthos var. inermis, Thornless Honey Locust (GLTR), 2.5" caliper	09200	09-04	7	EA		$ -
	Shade Tree, Quercus alba, White Oak (QUAL), 2.5" caliper	09200	09-04	12	EA		$ -
	Shade Tree, Quercus bicolor, Swamp White Oak (QUBI), 2.5" caliper	09200	09-04	5	EA		$ -
	Shade Tree, Quercus macrocarpa, Burr Oak (QUMA), 2.5" caliper	09200	09-04	12	EA		$ -
	Shade Tree, Quercus rubra, Red Oak (QURU), 2.5" caliper	09200	09-04	10	EA		$ -
	Ornamental Tree, Amelanchier canadensis, Shadblow Serviceberry (AMCA), 6' height	09200	09-05	8	EA		$ -
	Ornamental Tree, Carpinus caroliniana, American Hornbeam (CACA), 6' height	09200	09-05	8	EA		$ -
	Ornamental Tree, Cercis canadensis, Eastern Redbud (CECA), 6' height	09200	09-05	3	EA		$ -
	Ornamental Tree, Crataegus crus-galli var. inermis, Thornless Cockspur Hawthorny (CRCR), 6' height	09200	09-05	7	EA		$ -
	Ornamental Tree, Hamamelis vernalis, Vernal Witch-hazel (HAVE), 6'	09200	09-05	3	EA		$ -
	Shrub, Ceanothus americanus, New Jersey Tea (CEAM), 5 gallon	09200	09-06	21	EA		$ -
	Shrub, Corylus americana, American Hazelnut (COAM), 4' height	09200	09-06	3	EA		$ -
	Grasses, Carex brevior, Plains Oval Sedge (CABE), 4" pot	09200	09-07	1,262	EA		$ -
	Grasses, Eragrostis spectabilis, Purple Love Grass (ERSP), 4" pot	09200	09-07	803	EA		$ -
	Grasses, Koeleria macrantha, June Grass (KOMA), 4" pot	09200	09-07	1,056	EA		$ -
	Grasses, Sporobolus heterolepis, Prairie Dropseed (SPHE), 4" pot	09200	09-07	559	EA		$ -
	Forbs, Allium cernuum, Nodding Onion (ALCE), 4" pot	09200	09-08	891	EA		$ -
	Forbs, Baptisia leucophaea, Cream Wild Indigo (BALE), 1 gallon	09200	09-08	61	EA		$ -
	Forbs, Dodecatheon meadia, Shooting Star (DOME), 4" pot	09200	09-08	442	EA		$ -
	Forbs, Echinacea pallida, Pale Purple Coneflower (ECPA), 4" pot	09200	09-08	230	EA		$ -
	Forbs, Rudbeckia hirta, Black-eyed Susan (RUHI), 4" pot	09200	09-08	200	EA		$ -
	Fine Hardwood Mulch, 3" Depth	09200	09-09	841	SY		$ -
	Supplemental Watering [Contingent]	09200	09-10	6	OCC		$ -
	Tree Bark Protection	09200	09-11	59	EA		$ -
	Seeding - LCFP Parkland Mix	09300	09-12	11,881	SY		$ -
	Erosion Control Blanket	09300	09-13	11,881	SY		$ -
	Fertilization - Mown Turf, Supplemental [Contingent]	09300	09-14	11,881	SY		$ -
	Turf Mowing [Contingent]	09300	09-15	2.2	AC		$ -
	Seeding - LCFP Cover Crop Mix	09310	09-16	2.2	AC		$ -
	Seeding - LCFP Shortgrass Prairie Mix	09310	09-17	2.2	AC		$ -
	Hydromulch, Slopes 2:1 or less	09310	09-18	2.2	AC		$ -
	Field Mowing [Contingent]	09310	09-19	2.2	AC		$ -
	Herbicide Treatment - Native Seeded Areas [Contingent]	09310	09-20	2.2	AC		$ -
						H. LANDSCAPE SUBTOTAL	**$ -**

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
I. ALLOWANCE							
	The CONTRACTOR shall include an allowance of $150,000.00 to be included in the base bid to account for any unforeseen conditions. All or portions of allowance to be utilized only at the direction of Owner.	NA	NA	NA	NA	NA	$ 150,000.00

Lakewood

Lakewood Forest Preserve: Recreation Facilities, 25105

Vendor: <insert vendor name>

BASE BID ITEMS		SPEC. SECTION	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
					I. ALLOWANCE SUBTOTAL		$ 150,000.00
					TOTAL BASE BID PRICE		$ 150,000.00

ALTERNATES		SHEET	M & P ITEM	NO. OF UNITS	UNIT	UNIT PRICE	EXTENSION
J. ALTERNATES							
1	Deduct Alternate: Omit base bid door and window glazing (Arnold Glass, Corp. - Ornilux Mikado A70 bird protection glass) and replace with alternate (PPG Glass, Corp. - fritted glass 2"x2" dotted pattern).	A-0	09-21	1	LS	$ -	$ -
2	Alternate: Provide pre-fabricated custom large shelter in configuration of this design assembled and finished on site. Acceptable pre-fabrication suppliers: Poligon, Icon, Scenic Shelters, or approved equal.	A-6.1, A-6.2, A-6.3, A-6.4	09-22	1	LS	$ -	$ -
3	Deduct Alternate: Omit window (3 panes side and 2 panes high) and close openings. Sheath siding over existing structure and siding to match.	DBA-1.1	09-23	4	EA	$ -	$ -
4	Deduct Alternate: Omit window (3 panes side and 2 panes high) and close openings. Sheath siding over existing structure and siding to match.	DBA-1.1	09-24	1	EA	$ -	$ -
5	Add Alternate: Add insect and rodent screen to second story and cupola vent openings (2 x 2 galvanized steel cloth, .063" diameter wire and 18x14 galvanized wire mesh, .009" diameter wire).	DBA-1.1	09-25	192	SF	$ -	$ -

SPECIFICATIONS FOR

THE CONSTRUCTION OF RECREATION FACILITIES AT LAKEWOOD FOREST PRESERVE

Bid Spec Number: 25105

October 1, 2025

ATTACHMENT B

SPECIFICATIONS

SECTION 01000 – GENERAL PROJECT REQUIREMENTS

SECTION 01010 – MEASUREMENT AND PAYMENT

SECTION 02100 – TEMPORARY ACCESS AND FACILITIES

SECTION 02300 – SITE RESOURCE PROTECTION

SECTION 02400 – SOIL EROSION AND SEDIMENT CONTROL

SECTION 02500 – VEGETATION REMOVAL

SECTION 02600 – DEMOLITION AND REMOVALS

SECTION 03100 – EARTHWORK AND GRADING

SECTION 03110 – GROUND STABILIZATION

SECTION 03120 – FINISH GRADING AND TOPSOIL

SECTION 03200 – CULVERT CROSSINGS

SECTION 03300 – DRAINAGE STRUCTURES

SECTION 04100 – UTILITY SLEEVES

SECTION 04110 – DIRECTIONAL DRILLING

SECTION 04200 – ELECTRICAL SERVICE AND DISTRIBUTION

SECTION 04310 – WATER DISTRIBUTION

SECTION 04320 – DRINKING FOUNTAIN

SECTION 04321 – DRINKING FOUNTAIN VAULT

SECTION 05100 – SUBGRADE PREPARATION

SECTION 05200 – TRAILS

SECTION 05300 – ROADS AND PARKING

SECTION 05310 – PAVEMENT MARKINGS

SECTION 05400 – CONCRETE PAVEMENT

SECTION 05401 – CONCRETE PAVEMENT, SPECIALTY FINISH

SECTION 05420 – CONCRETE CURBS

SECTION 05430 – DETECTABLE WARNINGS

SECTION 06100 – STONE WALLS

SECTION 07300 – CONCRETE STRUCTURES, CAST-IN-PLACE

SECTION 07400 – PIERS AND DOCKS

SECTION 07511 – EVAPORATOR RESTROOM FACILITY VAULT

SECTION 08800 – METAL FABRICATIONS

SECTION 09110 – HERBICIDE TREATMENT

SECTION 09200 – WOODY AND HERBACEOUS PLANTS

SECTION 09300 – TURF SEEDING

SECTION 09310 – NATIVE SEEDING

SECTION 01000
GENERAL PROJECT REQUIREMENTS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Summary of the Work
2. Coordination and Meetings
3. Permits and Regulations
4. Plans and Specifications
5. Layout and Staking
6. Quality Assurance and Guarantee
7. Materials
8. Shop Drawings, Product Data and Samples

1.02 SUMMARY OF THE WORK

A. The Work to be performed under this Contract consists of the complete construction of the Recreation Facilities at Lakewood Forest Preserve in accordance with the Contract Documents. The Work shall also meet the requirements of all permitting agencies. The Work generally includes, but is not limited to all labor, equipment, and materials for:

- Site preparation and removals,
- Construction fencing,
- Temporary erosion control and sediment control measure,
- Grading and earthwork,
- Utilities (storm, electrical, water)
- Asphalt parking lot surface course and striping,
- Concrete paving,
- Stone walls,
- Cast-in-place concrete,
- Fishing pier,
- Shelter A (four-season shelter),
- Shelter B (large shelter, open-air)
- Metal fabrication (handrails, guardrails, counters and benches),
- Turf and native seeding, and
- Planting.

B. Furnish all labor, materials, equipment, tools, and transportation which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in this Contract or not.

C. Whenever the performance of work is indicated within the Contract Documents and no item is included in the Contract for payment, the work shall be considered incidental to the Contract, and additional compensation will not be allowed.

D. Repair, replace, or otherwise settle with the Owner and/or any other affected property owners, any damage to property or existing facilities of any kind due to the actions of the Contractor.

1.03 COORDINATION AND MEETINGS

A. The Contractor shall be required to attend a pre-construction meeting prior to beginning the Work to review the Contract Documents (including, but not limited to, Plans, Specifications and other supporting documents), construction scheduling, personnel contacts, quality controls and inspect the site. The Contractor shall submit a schedule of construction within one week from the pre-construction meeting for approval by the Owner.

B. The Contractor shall communicate the work progress and upcoming project tasks to the Owner via phone or email at least every 48 hours. The Contractor shall also schedule on-site progress meetings to review and coordinate the Work.

C. The Contractor shall become thoroughly familiar with the required Owner and permit agency inspections and promptly notify the respective parties before the required inspection is due. Failure to have the Work inspected as required may result in denial of payment for said Work.

D. The Contractor shall notify the Owner of any interruption or stoppage of work lasting two days or more before the work stoppage. The Contractor shall inform the Owner of all changes in the construction schedule as soon as they become apparent.

E. The Contractor shall be fully responsible for the coordination of its Work and the Work of its employees, subcontractors, and suppliers and to assure compliance with schedules. The Contractor is responsible for any and all coordination required for public and private utility compliance.

F. The Owner may have separate contracts in force at the same time and in the same areas as the Work. The Contractor shall coordinate the Work so as to not cause delays or obstructions or affect the quality of work by others and shall otherwise cooperate with others at the Work Site.

1.04 PERMITS, BONDS AND REGULATIONS

A. The Owner shall obtain, at its expense, all required governmental permits as described in Attachment A of this Contract. All other provisions and requirements contained in any and all other required governmental permits associated with the Work are the responsibility of the Contractor and shall be considered to be part of this Contract. The Contractor shall be solely responsible for performing all Work in establishing and maintaining compliance with the same governmental permits.

B. The Contractor shall, at its sole expense, procure and furnish all bonds and all certificates and policies of insurance required by all applicable permitting agencies. The Contractor shall obtain, at its expense, all other required licenses, approvals and authorizations.

C. The Contractor shall be responsible for scheduling and attending all permit inspections and meetings.

D. The Contractor shall comply with all state and federal safety regulations, as outlined in the latest revisions of the Federal Construction Safety Standards (Series 1926), and with applicable provisions and regulations of the Occupation Safety and Health Administrative (OSHA) standards of the Williams-Steiger Occupational Health State Safety Act of 1970 (revised).

1.05 PLANS AND SPECIFICATIONS

A. Only complete sets of plans approved by the Owner and specifically marked "FOR CONSTRUCTION" (Plans) shall be used to construct the Work. Prior to bidding and commencement of construction, the Contractor shall verify all dimensions and conditions affecting their work with the actual conditions at the job site. If there are any discrepancies from what is shown on the Plans, the Contractor must immediately report same to the Owner before performing any work; otherwise, the Contractor assumes full responsibility. In the event of disagreement between the Plans, Specifications, and/or details, the Contractor shall secure written instructions from the Owner prior to proceeding with any part of the work affected by omissions or discrepancies. Failing to secure such instruction, the Contractor shall be considered to have proceeded at its own risk and expense. In the event of any doubt or question arising with respect to the true meaning of the Plans or Specifications, the decision of the Owner shall be final and conclusive.

B. The Contractor shall keep a set of Contract Documents, including approved Plans and Specifications at the Work Site and shall maintain a legible record on said Plans of any changes, modifications, or alterations to the Work. Upon completion of the Contractor's work, said Plans and information shall be provided to the Owner as the Record Drawings. Final Contract Payment shall not be made until the Record Drawings have been received by the Owner.

C. In the event of a conflict between any provision in any of the following component parts of these Contract Documents, the provision in the component part first listed below shall govern over any other component part which follows it, except as may otherwise specifically stated. Said component parts are the following:

1. Plans
2. Addendum to the Specifications
3. Special Provisions
4. Specifications

D. All work shall conform to the following Standards and Manuals:

1. "Standard Specifications for Road and Bridge Construction in Illinois," including "Supplemental Specifications and Recurring Special Provisions" as prepared by the Illinois Department of Transportation, hereinafter referred to as the "IDOT Standard Specifications."
2. "Standard Specifications for Water and Sewer Main Construction in Illinois," (SSWS) shall govern all water and sewer main construction.
3. "Illinois Highway Standards for Traffic Control," (IHSTC) as published by the Illinois Department of Transportation.
4. "Manual for Uniform Traffic Control Devices" (MUTCD) as published by the Federal Highways Administration.

5. "Illinois Urban Manual," as prepared for the Illinois Environmental Protection Agency (IEPA) by Illinois Urban Manual Technical Review Committee and Steering Committee.

E. Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of the Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern. In case of conflict between the referenced specifications or standards and this Contract, this Contract shall govern.

F. Wherever the following abbreviations are used in these Specifications or on the Plans, they are to be construed as the respective expressions represented:

1. Abbreviations:

a. AA	–	Aluminum Association
b. AASHTO	–	American Association of State Highway and Transportation Officials
c. ACI	–	American Concrete Institute
d. ANSI	–	American National Standards Institute
e. ASTM	–	ASTM International
f. AWS	–	American Welding Society
g. AWWA	–	American Water Works Association
h. CRSI	–	Concrete Reinforcing Steel Institute
i. FSS	–	Federal Specifications and Standards
j. NEC	–	National Electrical Code
k. NECA	–	National Electrical Contractors Association
l. NEMA	–	National Electrical Manufacturers Association
m. OSHA	–	U.S. Department of Labor, Occupational Safety and Health Administration
n. PS	–	United States Products Standards
o. STD. SPEC.	–	IDOT Standard Specifications for Road and Bridge Construction
p. SSPC	–	Society for Protective Coatings
q. UL	–	Underwriters Laboratories

2. Definitions:

a. Architect	–	The Owner's authorized representative.
b. Contract	–	The written Agreement between the Owner and the Contractor setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, the furnishing of labor and materials, and the basis of payment. See "Contract" in the "Bid Package Table of Contents" for more detail.
c. Engineer	–	The Owner's authorized representative.
d. Pay Item	–	A specifically described unit of work for which a price is provided in the Contract.

e. Plans – The Contract drawings, or exact reproductions thereof, that show the location, character, dimensions, and details of the work to be done. Contract drawings include, but are not limited to, the approved plans, profiles, typical cross sections, detail drawings, shop drawings, working drawings, layout drawings, supplemental drawings, and IDOT Highway Standards.

f. Specifications – The body of directions, provisions, and requirements contained herein, or in any supplement adopted by the Owner, together with written agreements and all documents of any description made or to be made pertaining to the method or manner of performing and paving for the work, the quantities, and the quality of materials to be furnished under the contract.

1.06 LAYOUT AND STAKING

A. Control data, benchmarks and other data for construction purposes may be provided by the Owner in digital format for use by the Contractor. Use of control data and points at the site other than that which has been approved by the Owner to construct the Work may result in rejection of that Work and all related payment denied.

B. The Owner may have performed staking for trail alignments or other improvements for pre-construction purposes such as vegetation clearing and / or alignment testing. The Contractor may utilize these points for construction with approval of the Owner. Otherwise, the Contractor shall be responsible for providing and maintaining all layout and staking for the improvements specified. All layout shall utilize either traditional electronic survey equipment (total station, etc.) or GPS and shall be accurate in both the horizontal and vertical planes to +/- one tenth (.1) of a foot. Only a qualified Registered Land Surveyor (RLS) or a person trained under a RLS shall be utilized to provide construction staking.

C. The Owner shall retain the right to review and inspect any layout and staking before commencement of the Work if so requested beforehand by the Owner.

1.07 QUALITY ASSURANCE AND GUARANTEE

A. Before acceptance and final payment by the Owner, all work shall be quantified, inspected and approved by the Owner. Final payment shall be made after all of the Work has been approved and accepted, and in accordance with the Contract Documents.

B. After final acceptance by the Owner and all applicable government permitting agencies, all Work performed under this Contract shall be guaranteed against defects in materials and workmanship of any nature for a period of twelve months by the Contractor and his/her surety.

C. Special attention is drawn to Article 105.06 of the IDOT Standard Specifications, which requires the Contractor to have a competent superintendent on the project site at all times, irrespective of the amount of work sublet. The superintendent shall be capable of reading and understanding the Plans and Specifications, shall have full authority to execute orders to expedite Work, and shall be responsible

for scheduling and have control of all work as the agent of the Contractor. Failure to comply with this provision will result in a suspension of work.

D. The Work described in this Contract requires specialized knowledge, experience, skills and equipment to successfully complete. The Contractor shall possess the full capability to execute the work as specified, including trained, experienced and skilled personnel and possession or access to the required equipment.

E. The Owner is not responsible for the construction means, methods, techniques, sequences or procedures, time of performance, programs or for any safety precautions used by the Contractor. The Contractor is solely responsible for execution of his/her work, in accordance with the Contract.

F. The Contractor shall indemnify the Architect/Engineer, their agents, the Owner and its agents and all applicable permit agencies (as required) from all liability involved in the construction, installation and testing of the Work and name them as additionally insured.

1.08 MATERIALS

A. General

1. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the Owner before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.

2. All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the Work. If in place, faulty materials shall be removed by Contractor at its expense and replaced with acceptable material unless permitted otherwise by the Owner. No defective materials that have been subsequently corrected shall be reused until approval has been given.

3. Upon failure of Contractor to comply immediately with any order of the Owner to remove and replace defective material, the Owner shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to Contractor. Failure to reject any defective materials or Work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the Owner to issue its final acceptance.

B. Manufactured materials and products shall be delivered to the Work Site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.

C. Contractor shall be responsible for protection and preservation of all materials until final payment.

D. Contractor shall provide temporary protection of the Work from damage by the elements and protect finished surfaces to prevent any damage resulting from the Work of any trade.

E. Substitutions and Product Options

1. The intent of these Specifications is to provide the Owner with a high-quality project without discouraging competitive bidding. Substitutions may be submitted and will be evaluated as specified herein.

2. For products specified by reference standards only, Contractor may provide a product complying with the specified standard with proof of compliance.

3. For products specified by performance and descriptive methods, without naming manufacturer's products, Contractor may provide the products of any manufacturer complying with the Contract Documents, subject to the review of product data and approval by the Owner as specified herein.

4. For products specified by naming one or more manufacturer's products followed by the words "or approved equal", Contractor may provide any of the named products or may submit a product by another manufacturer as an equal for the review and approval by the Owner as specified herein and subject to conditions specified elsewhere. If requirements are specified in addition to naming manufacturer's products, any product provided must comply with all of the specified requirements.

5. If Contractor wishes to provide a product other than one named in the Specifications, Contractor shall submit sufficient information to the Owner for evaluation and determination of acceptability of the product prior to purchase and delivery of the product. Contractor is responsible for obtaining information required by the Owner for the evaluation of products, which includes complete manufacturer’s literature and technical data. The Owner is responsible for determination of the equality of products, and Owner's decision shall be final, except as otherwise provided by Law.

6. The substitution requirements of this Section are in addition to the requirements of the General Conditions and Supplementary Conditions.

1.09 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Descriptions

1. Shop Drawings

   a. Shop Drawings shall be original drawings, specifications and calculations prepared by a contractor, subcontractor, supplier, manufacturer or distributor, which illustrates some portion of the Work.
   b. Shop Drawings shall be prepared by a qualified detailer specifically for this project and not from other unrelated projects. They shall include the project name, Owner’s project number, location, date and be identified by reference to sheet and detail numbers on the Plans.
   c. Reproductions for submittal shall be full size prints clearly stamped and signed by the Contractor.
   d. Shop Drawings shall include all plans, elevations, sections, details, labels and notes to fully describe material type, quantity, quality and size; layout, orientation, location, fabrication, erection and setting of assemblies; and references and industry standards to govern the construction.

e. Product data are manufacturer's standard schematic drawings, catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. This includes applicable warranties, operating manuals, and/or maintenance instructions.
f. Standard drawings shall be modified to delete information that is not applicable to the Work and supplemented to provide additional information applicable to the Work.
g. Catalog sheets, brochures, etc., shall be clearly marked to identify pertinent materials, products, or models.

2. Samples are physical examples to illustrate materials, equipment, or workmanship and to establish standards by which Work is to be evaluated.

B. Contractor's Responsibilities

1. Prior to submission, the Contractor shall thoroughly check Shop Drawings, product data, and samples for completeness, material availability and for compliance with the Contract Documents and shall verify all quantities, dimensions and field conditions and shall coordinate the Shop Drawings with the requirements for other related Work.

2. The Contractor's responsibility for errors and omissions in submittals is not relieved by the Owner’s review of submittals.

3. The Contractor shall notify the Owner, in writing at the time of submission, of deviations in submittals from the requirements of the Contract Documents. Contractor's responsibility for deviations in submittals from the requirements of the Contract Documents is not relieved by the Owner's review of submittals, unless the Owner gives written acceptance of specific deviations.

4. Begin no Work that requires submittals until return of submittals with the Owner’s stamp and initials or signature indicating the submittal has been accepted.

5. Prompt delivery and removal of all sample materials to and from the Work site shall be the responsibility of the Contractor.

C. Submission Requirements and Owner’s Review

1. The Owner will retain one copy of approved Shop Drawings and product data. Submit the number of samples indicated in the individual Specification sections.

2. Shop Drawings, product data, and samples shall be submitted by Contractor to the Owner. Submittals shall be properly identified with the name of the Contract, dated, and each lot submitted shall be accompanied by a letter of transmittal referring to the name of the Work and to the Specification page number and/or Plan number for identification of each item. Submittals for each type of Work shall be numbered consecutively, and the numbering system shall be retained throughout all revisions.

3. Submittals shall bear Contractor's stamp of approval certifying that they have been checked. Submittals without Contractor's initialed or signed certification stamp and submittals which, in the Owner's opinion are incomplete contain errors or have not been properly checked, will be returned unchecked by the Owner for resubmission.

4. At the time of each submission, Contractor shall give the Owner specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents and shall cause a specific notation to be made on each Shop Drawing submitted of each such variation.

5. The Owner will review submittals with reasonable promptness. The Owner's review of submittals shall not be construed as a complete check, and shall not relieve Contractor from responsibility for complete compliance with the Contract requirements. The Owner's review will be only for conformance with the design concept of the Work and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate approval of the assembly in which the item functions. No corrections, changes, or deviations indicated on submittals reviewed by the Owner shall be considered as a Change Order.

6. Contractor shall make corrections required by the Owner and shall return the required number of corrected copies of Shop Drawings for review. Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Owner on previous submittals.

7. In the event a third submittal is required, due to previous submittals of incomplete or incorrect data or not in compliance with the Contract Documents, the Contractor will be charged one-half of the cost incurred by the Owner for the review of the third submittal. The Contractor shall bear the total cost incurred by the Owner for all subsequent reviews. The costs charged to the Contractor will be deducted by the Owner from payments due to the Contractor.

8. Distribution of copies of acceptable submittals will be as mutually determined by Contractor and Owner on an individual item basis during or following the preconstruction conference.

END OF SECTION 01000

SECTION 01010

MEASUREMENT AND PAYMENT

1. GENERAL

1.01 DESCRIPTION

A. All applications for payment shall be with the Owner's approved forms and completed, signed, and notarized by the Contractor. The Owner may request additional backing documents, spreadsheets, delivery tickets, or other proof or measurement of the work being billed.

B. Payment for all work done in compliance with the Contract, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this Project, will be made under the Payment Items listed in Part 2 of this Section 01010. Incidental work required by the Contract for which there is no specific Payment Item is still required to be performed and no additional compensation will be allowed for such work.

C Quantities necessary to complete the work as shown in Attachment A to the Contract shall govern over those estimated in the Bidder's Proposal. The Contractor shall take no advantage of any apparent error or omission in the Plans or Specifications, and the Owner shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract.

D. All work shall be completed per the Contract Documents. Where shown, references to specific sections of the Specifications and/or sheets in the Plans should be consulted to determine the full scope of the work.

E. All measurement and payment provisions of the IDOT Standard Specifications are deleted.

F. The Subsections in Part 2 below describe the measurement of and payment for the Work to be completed under the Contract Unit Price Items listed in the Schedule of Prices. The following terms and abbreviations are synonymous:

1.	Acre	=	AC
2.	Each	=	EA
3.	Cubic Yard	=	CY
4.	Face Square Foot	=	FSF
5.	Lineal Foot	=	LF
6.	Lump Sum	=	LS
7.	Square Yard	=	SY
8.	Ton	=	TN

2. MEASUREMENT AND PAYMENT

02 SITE PREPARATION AND PROTECTION

02-01 MOBILIZATION AND TEMPORARY SITE ACCESS

A. Measurement

1. This work shall not be measured for payment but shall be paid for according to the following schedule. The amount which a Contractor shall be paid for mobilization under the schedule below is limited to three percent (3%) of the original Contract amount. Should the bid for mobilization exceed three percent, the amount over three percent shall not be paid until the final pay application.

    a. Upon execution of the contract, fifty percent (50%) of the pay item may be paid.

    b. When ten percent (10%) of the original Contract amount has been earned, an additional forty-five percent (45%) may be paid.

    c. Upon completion of the Contract, the remaining five percent (5%) of the pay item may be paid, along with any amount in excess of the three percent of the original contract amount. Specifications are included in Section 02100.

B. Payment

1. This work shall be paid for at the contract unit price of Lump Sum for MOBILIZATION AND TEMPORARY SITE ACCESS.

02-02 STABILIZED CONSTRUCTION ENTRANCE [CONTINGENT]

A. Measurement

1. This work shall be measured for payment as counted in place per square yard, complete per the Contract Documents. Specifications are included in Section 02100. Fifty percent (50%) of the pay item shall be paid out upon installation of the stabilized entry. Final payment shall be made upon Owner’s final approval of each restored entrance location.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for STABILIZED CONSTRUCTION ENTRANCE [CONTINGENT].

02-03 TEMPORARY CONSTRUCTION FENCE, 4′ [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02300.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for TEMPORARY CONSTRUCTION FENCE, 4′ [CONTINGENT].

02-04 TEMPORARY CHAIN LINK FENCE, 6′

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02300.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for TEMPORARY CHAIN LINK FENCE, 6′.

02-05 TEMPORARY CHAIN LINK GATE, 12′

A. Measurement

1. This work shall be measured for payment in place in each, complete per the Contract Documents. Specifications are included in Section 02300.

B. Payment

1. This work shall be paid for at the contract unit price per Each for TEMPORARY CHAIN LINK GATE, 12′.

02-06 SILT FENCE [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02400. Seventy percent (70%) of the pay item shall be paid out upon installation of the silt fence. Final payment shall be made upon Owner’s final approval of the removed silt fence and restoration of the work areas.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for SILT FENCE [CONTINGENT].

02-07 FILTER SOCK

A. Measurement

1. This work shall be measured for payment in place in lineal feet, for the installation, maintenance, and removal of the filter sock, complete per the Contract Documents. Specifications are included in Section 02400. Seventy percent (70%) of the pay item shall be paid out upon installation of the filter sock. Final payment shall be made upon Owner’s final approval of the removed filter sock.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for FILTER SOCK.

02-08 TEMPORARY DITCH CHECK [CONTINGENT]

A. Measurement

1. This work shall be measured for payment as counted in place per each location which shall consist of 2 units at 7′ in length each and complete per the Contract Documents. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Each for TEMPORARY DITCH CHECK [CONTINGENT].

02-09 PERMEABLE PLASTIC DITCH CHECK

A. Measurement

1. This work shall be measured for payment as counted in place per each location which shall consist of 5 units at 3.3′ in length each and complete per the Contract Documents. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Each for PERMEABLE PLASTIC DITCH CHECK.

02-10 DRAIN INLET PROTECTION (PAVEMENT)

A. Measurement

1. This work shall be counted in place per inlet location, complete per the Contract Documents and as required by the applicable soil erosion and sediment control permits, regulations, and industry standards. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Each for DRAIN INLET PROTECTION (PAVEMENT).

02-11 DRAIN INLET FILTER (LAWN)

A. Measurement

1. This work shall be counted in place per inlet location, complete per the Contract Documents and as required by the applicable soil erosion and sediment control permits, regulations, and industry standards. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Each for DRAIN INLET FILTER (LAWN).

02-12 TEMPORARY SEED [CONTINGENT]

A. Measurement

1. This work shall be measured in place per square yard, complete per the Contract Documents and as required by the applicable soil erosion and sediment control permits, regulations, and industry standards. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for TEMPORARY SEED [CONTINGENT].

02-13 HYDROMULCH, SLOPES 2:1 OR LESS [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Areas which receive erosion control blanket shall not be included in this measurement. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for HYDROMULCH, SLOPES 2:1 OR LESS [CONTINGENT].

02-14 TURBIDITY BARRIER

A. Measurement

1. This work shall be measured for payment in place in lineal feet, for the installation, maintenance, and removal of the turbidity barrier, complete per the Contract Documents. Specifications are included in Section 02400. Seventy percent (70%) of the pay item shall be paid out upon installation of the turbidity barrier. Final payment shall be made upon Owner’s final approval of the removed turbidity barrier.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for TURBIDITY BARRIER.

02-15 DEWATERING [CONTINGENT]

A. Measurement

1. This work shall not be measured for payment but will be considered complete upon final approval by the Owner and all relevant governing agencies per the Contract Documents and all applicable permits, regulations, and standards. Dewatering shall remain active when needed for the duration of the contract. Specifications are included in Section 02400.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for DEWATERING [CONTINGENT].

02-16 TREE REMOVAL WITH STUMP GRINDING, (16-30″ DBH) [CONTINGENT]

A. Measurement

1. This work shall be measured for payment as counted in place, before removal, complete per the Contract Documents. Measurement for each tree shall be diameter in inches at breast height (DBH) made prior to the removal of the tree. Specifications are included in Section 02500.

B. Payment

1. This work shall be paid for at the contract unit price Per Each for: TREE REMOVAL WITH STUMP GRINDING, 16″ to 30″ DBH and TREE [CONTINGENT].

02-17 TREE ROOT PRUNING [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in lineal feet, complete per the Contract Documents. Specifications are included in Section 02500.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for TREE ROOT PRUNING [CONTINGENT].

02-18 TREE BRANCH PRUNING, (VARIOUS SIZE RANGES) [CONTINGENT]

A. Measurement

1. This work shall be measured for payment per each tree, complete per the Contract Documents. Specifications are included in Section 02500.

B. Payment

1. This work shall be paid for at the contract unit price per Each for TREE BRANCH PRUNING, 6″ – 12″ DIAMETER [CONTINGENT] and TREE BRANCH PRUNING, 13″ – 24″ DIAMETER [CONTINGENT].

02-19 FIELD MOWING [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in acres or portions of acres complete per the Contract Documents. Specifications are included in Section 02500.

B. Payment

1. This work shall be paid for at the contract unit price per Acres for FIELD MOWING [CONTINGENT].

02-20 ASPHALT PAVEMENT REMOVAL, FULL DEPTH

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for ASPHALT PAVEMENT REMOVAL, FULL DEPTH.

02-21 ASPHALT PAVEMENT REMOVAL, 1-1/2″

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for ASPHALT PAVEMENT REMOVAL, 1-1/2″.

02-22 CONCRETE PAVEMENT REMOVAL, FULL DEPTH

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for CONCRETE PAVEMENT REMOVAL, FULL DEPTH.

02-23 AGGREGATE PAVEMENT REMOVAL, FULL DEPTH

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for AGGREGATE PAVEMENT REMOVAL, FULL DEPTH.

02-24 CURB AND GUTTER REMOVAL [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for CURB AND GUTTER REMOVAL [CONTINGENT].

02-25 SAW CUTS, FULL DEPTH

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for SAW CUTS, FULL DEPTH.

02-26 UTILITY LINE REMOVAL AND DISPOSAL, COMPLETE

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Feet for UTILITY LINE REMOVAL AND DISPOSAL, COMPLETE.

02-27 UTILITY MANHOLE REMOVAL AND DISPOSAL (VARIOUS)

A. Measurement

1. This work shall not be measured for payment but will be considered complete upon the Owner's approval and as indicated on the Plans. This work shall include all manholes shown on the Plans. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Each for UTILITY MANHOLE REMOVAL AND DISPOSAL (VARIOUS).

02-28 UTILITY STRUCTURE REMOVAL AND DISPOSAL (VARIOUS)

A. Measurement

1. This work shall not be measured for payment but will be considered complete upon the Owner's approval and as indicated on the Plans. This work shall include all various utility structure removal items shown on the Plans, including, but not necessarily limited to: electrical stands, transformers and handholes; water spigots, hand pumps, hydrants valve vaults; gas valves; and septic cleanouts. Specifications are included in Section 02600.

B. Payment

1. This work shall be paid for at the contract unit price per Each for UTILITY STRUCTURE REMOVAL AND DISPOSAL (VARIOUS).

03 EARTHWORK AND DRAINAGE

03-01 SITE GRADING, COMPLETE

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as indicated in the Contract Documents. Specifications are included in Section 03100.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for SITE GRADING, COMPLETE.

03-02 EXCAVATION OF UNSUITABLE MATERIALS [CONTINGENT]

A. Measurement

1. This work shall be performed only upon the Owner's approval. This work shall be measured for payment in place in their original positions by

means of topographic survey or by the method of average end areas and as per the Contract Documents. Specifications are included in Section 03110.

B. Payment

1. This work shall be paid for at the contract unit price per Cubic Yard for EXCAVATION OF UNSUITABLE MATERIALS [CONTINGENT]. Any work performed without the Owner's approval may result in denial of payment.

03-03 ON-SITE DISPOSAL OF UNSUITABLE MATERIALS [CONTINGENT]

A. Measurement

1. This work shall be performed only upon the Owner's approval. This work shall be measured for payment in place in Cubic Yards and as per the Contract Documents. Specifications are included in Section 03110.

B. Payment

1. This work shall be paid for at the contract unit price per Cubic Yard for ON-SITE DISPOSAL OF UNSUITABLE MATERIALS [CONTINGENT]. Any work performed without the Owner's approval may result in denial of payment.

03-04 GEOTEXTILE GROUND STABILIZATION [CONTINGENT]

A. Measurement

1. This work shall be performed only upon the Owner's approval for areas of unsuitable materials. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 03110.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for GEOTEXTILE GROUND STABILIZATION [CONTINGENT]. Any work performed without the Owner's approval may result in denial of payment.

03-05 POROUS GRANULAR EMBANKMENT (PGE), CA-1 [CONTINGENT]

A. Measurement

1. This work shall be performed only upon the Owner's approval. This work shall be measured for payment in place in cubic yards, complete per the Contract Documents. Measurement shall be performed directly after excavation and before PGE has been installed. Specifications are included in Section 03110.

B. Payment

1. This work shall be paid for at the contract unit price per Cubic Yard for POROUS GRANULAR EMBANKMENT (PGE), CA-1 [CONTINGENT]. Any work performed without the Owner's approval may result in denial of payment.

03-06 TOPSOIL FURNISH AND PLACEMENT, 4″ [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in square yards per the specified depth and as per the Contract Documents. Specifications are included in Section 03120.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for TOPSOIL FURNISH AND PLACEMENT, 4″ [CONTINGENT].

03-07 FINISH GRADING

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Measurements for finish grading shall match total measurements for all seeding. Specifications are included in Section 03120.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for FINISH GRADING.

03-08 CULVERT CROSSING, COMPLETE

A. Measurement

1. This work shall be measured for payment as counted in place, complete per the Contract Documents. This pay item shall include the installation of culvert pipe, bedding, backfill, inlets, metal flared end sections and riprap at the outfall of the culvert. Specifications are included in Section 03200.

B. Payment

1. This work shall be paid for at the contract unit price Per Each as listed individually in the Schedule of Prices for CULVERT CROSSING, COMPLETE.

03-09 STORM SEWER (VARIOUS)

A. Measurement

1. This work shall be measured for payment in lineal feet for storm sewers as counted in place for other drainage structures, complete per the Contract Documents. Specifications are included in Section 03300.

B. Payment

1. This work shall be paid for at the contract unit price of Linear Foot as listed individually in the Schedule of Prices for STORM SEWER (VARIOUS).

03-10 INLET (VARIOUS)

A. Measurement

1. This work shall be measured for payment as counted in place, complete per the Contract Documents. This pay item shall include the installation of inlet, type A, frames, and lids. Specifications are included in Section 03300.

B. Payment

1. This work shall be paid for at the contract unit price Per Each as listed individually in the Schedule of Prices for INLET (VARIOUS).

03-11 MANHOLE (VARIOUS)

A. Measurement

1. This work shall be measured for payment as counted in place, complete per the Contract Documents. This pay item shall include the installation of manholes, risers, frames, and lids. Specifications are included in Section 03300.

B. Payment

1. This work shall be paid for at the contract unit price Per Each as listed individually in the Schedule of Prices for MANHOLE (VARIOUS).

04 UTILITIES

04-01 UTILITY SLEEVE, 4″, PVC, OPEN TRENCH

A. Measurement

1. This work shall be measured for payment in lineal feet, complete per the Contract Documents. Specifications are included in Section 04100.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for UTILITY SLEEVE, 4″, PVC, OPEN TRENCH.

04-02 UTILITY SLEEVE, 4″, PVC, DIRECTIONAL DRILL

A. Measurement

1. This work shall be measured for payment in lineal feet, complete per the Contract Documents. Specifications are included in Section 04100.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for UTILITY SLEEVE, 4″, PVC, DIRECTIONAL DRILL.

04-03 ELECTRICAL UNDERGROUND LINE

A. Measurement

1. This work shall be measured for payment in lineal feet, complete per the Contract Documents. Specifications are included in Section 04200 and Section 04200.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for ELECTRICAL UNDERGROUND LINE.

04-04 ELECTRICAL SERVICE CONNECTION

A. Measurement

1. This work shall not be measured for payment but will be considered complete upon final approval by the Owner and all relevant governing

agencies per the Contract Documents and all applicable permits, regulations, and standards. Specifications are included in Section 04200.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for ELECTRICAL SERVICE CONNECTION. Payment may be made in part or in full dependent on the requirements of the project.

04-05 WATER SERVICE LINE, 1-1/4″ TYPE K COPPER, OPEN TRENCH

A. Measurement

1. This work shall be measured for payment in place in lineal feet, for the installation of water service piping, complete per the Contract Documents. Specifications are included in Section 04310.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for WATER SERVICE LINE, 1-1/4″ TYPE K COPPER, OPEN TRENCH.

04-06 WATER SERVICE LINE, 2″ HDPE, OPEN TRENCH

A. Measurement

1. This work shall be measured for payment in place in lineal feet, for the installation of water service piping, complete per the Contract Documents. Specifications are included in Section 04310.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for WATER SERVICE LINE, 2″ HDPE, OPEN TRENCH.

04-07 WATER B-BOX VALVE

A. Measurement

1. This work shall be measured for payment as counted in place per each furnished and installed and complete per the Contract Documents. Specifications are included in Section 04310.

B. Payment

1. This work shall be paid for at the contract unit price per Each for WATER B-BOX VALVE.

04-08 WATER TREATMENT SYSTEM, COMPLETE

A. Measurement

1. This work shall not be measured for payment but will be considered complete upon final approval by the Owner and all relevant governing agencies per the Contract Documents and all applicable permits, regulations, and standards.

B. Payment

1. This work shall be paid for at the contract unit price per Each for WATER TREATMENT SYSTEM, COMPLETE.

04-09 DRINKING FOUNTAIN

A. Measurement

1. This work shall be measured for payment as counted in place per each drinking fountain furnished and installed and complete per the Contract Documents. Specifications are included in Section 04320.

B. Payment

1. This work shall be paid for at the contract unit price per Each for DRINKING FOUNTAIN.

04-10 DRINKING FOUNTAIN VAULT, 5′, COMPLETE

A. Measurement

1. This work shall be measured for payment as counted in place per each drinking fountain vault furnished and installed and complete per the Contract Documents. Specifications are included in Section 04320.

B. Payment

1. This work shall be paid for at the contract unit price per Each for DRINKING FOUNTAIN VAULT, 5′, COMPLETE.

05 PAVEMENTS AND SURFACES

05-01 SUBGRADE PREPARATION

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Measurements for length for trails shall be taken along the centerline of the trail. For trails the standard width measurement shall be one foot (1′) greater than the specified finished trail width. For roads and parking areas, the measurements shall include an additional one foot (1′) past the finished pavement edges along all perimeters of the pavement. Specifications are included in Section 05100.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for SUBGRADE PREPARATION.

05-02 AGGREGATE BASE COURSE (VARIOUS)

A. Measurement

1. This work utilizes aggregate base course. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Measurements for length shall be taken along the centerline of the walks and flatwork. Measurements for width shall be one foot (1′) greater than the finished width of the pavement. Specifications are included in Section 05200.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for AGGREGATE BASE COURSE, 5″ MINIMUM

AGGREGATE BASE COURSE, 8″ MINIMUM [CONTINGENT]
AGGREGATE BASE COURSE, 9″ MINIMUM
AGGREGATE BASE COURSE, 12″ MINIMUM

05-03 HOT-MIX ASPHALT SURFACE COURSE, Mix “D”, N50, 3” [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 05300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for HOT-MIX ASPHALT SURFACE COURSE, Mix “D”, N50, 3” [CONTINGENT].

05-04 05HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 2 ¼″

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 05300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50, 2 ¼″.

05-05 BITUMINOUS PRIME COAT

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Measurements for area shall equal that of the applicable Hot-Mix Asphalt Binder Course. Specifications are included in Section 05300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for BITUMINOUS PRIME COAT.

05-06 HOT-MIX ASPHALT SURFACE COURSE, MIX “D”, N50, 1 ¾″

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 05300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for HOT-MIX ASPHALT SURFACE COURSE, 1 ¾″.

05-07 PAVEMENT MARKING LINE

A. Measurement

1. This work shall be measured for payment in place in lineal feet per specified line width complete per the Contract Documents. Specifications are included in Section 05310.

B. Payment

1. The following work shall be paid for at the contract unit price per Lineal Foot:

PAVEMENT MARKING LINE, 4″, WHITE, THERMOPLASTIC
PAVEMENT MARKING LINE, 6″, WHITE, THERMOPLASTIC
PAVEMENT MARKING LINE, 12″, WHITE, THERMOPLASTIC
PAVEMENT MARKING LINE, 24″, WHITE, THERMOPLASTIC
PAVEMENT MARKING LINE, 4″, YELLOW, EPOXY

05-08 PAVEMENT MARKING LETTERS AND SYMBOLS

A. Measurement

1. This work shall be measured for payment per each per specified symbol complete per the Contract Documents. Specifications are included in Section 05310.

B. Payment

1. The following work shall be paid for at the contract unit price per Each:

PAVEMENT MARKING LETTERS AND SYMBOLS, YELLOW, EPOXY.

05-09 CONCRETE PAVEMENT, 5″

A. Measurement

1. This work shall not be measured for payment but shall be per the dimensions indicated in the Contract Documents. Specifications are included in Section 05400.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for CONCRETE PAVEMENT, 5″.

05-10 CONCRETE PAVEMENT, 7″

A. Measurement

1. This work shall not be measured for payment but shall be per the dimensions indicated in the Contract Documents. Specifications are included in Section 05400.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for CONCRETE PAVEMENT, 7″.

05-11 CONCRETE PAVEMENT, 5″, SPECIALTY FINISH

A. Measurement

1. This work shall not be measured for payment but shall be per the dimensions indicated in the Contract Documents. Specifications are included in Section 05401.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for CONCRETE PAVEMENT, 5″, SPECIALTY FINISH.

05-12 CONCRETE PAVEMENT, THICKENED EDGE

A. Measurement

1. This work shall be measured for payment in place in linear foot per the Contract Documents. Specifications are included in Section 05420.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for CONCRETE PAVEMENT, THICKENED EDGE.

05-13 CONCRETE CURB AND GUTTER, B-6.12

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 05420.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for CONCRETE CURB AND GUTTER, B-6.12.

05-14 CONCRETE CURB AND GUTTER, DEPRESSED

A. Measurement

1. This work shall be measured for payment in place in Lineal Foot, complete per the Contract Documents. Specifications are included in Section 05420.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for CONCRETE CURB AND GUTTER, DEPRESSED.

05-15 CONCRETE CURB AND GUTTER, TAPERED

A. Measurement

1. This work shall be measured for payment in place in Lineal Foot, complete per the Contract Documents. Specifications are included in Section 05420.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for CONCRETE CURB AND GUTTER, TAPERED.

05-16 DETECTABLE WARNINGS

A. Measurement

1. This work shall be measured for payment in place in square feet, complete per the Contract Documents. Specifications are included in Section 05430.

B. Payment

1. This work shall be paid for at the contract unit price per Square Foot for DETECTABLE WARNINGS

06 WALLS

06-01 BOULDER SLOPE TREATMENT

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 06100.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for BOULDER SLOPE TREATMENT.

06-02 LIMESTONE SHORELINE WALL, 4 COURSES, COMPLETE

A. Measurement

1. This work shall be measured for payment in place in lineal feet along the wall face. This pay item shall include excavation, subgrade preparation, geotextile fabric, aggregate base (3″ stone; 6″ to 9″ granite cobble stone; aggregate base course – CA-6, type B; aggregate backfill, CA-7); limestone slabs; finish grading). Specifications are included in Section 06100.

B. Payment

1. The following work shall be paid for at the contract unit price per Lineal Foot for LIMESTONE SHORELINE WALL, 4 COURSES, COMPLETE.

07 STRUCTURES

07-01 CAST-IN-PLACE CONCRETE, ABUTMENT

A. Measurement

1. This work shall be measured for payment in place per Each, complete per the Contract Documents. This pay item shall include excavation; subgrade preparation; compacted aggregate base courses; cast-in-place concrete; rebar reinforcement; expansion joints; and concrete finishing. Specifications are included in Section 07300.

B. Payment

1. This work shall be paid for at the contract unit price per Each for CAST-IN-PLACE CONCRETE, ABUTMENT.

07-02 CAST-IN-PLACE CONCRETE, STAIRS AND WALLS

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. This pay item shall include excavation; subgrade preparation; compacted aggregate base courses; cast-in-place concrete cheekwalls and stairs; rebar reinforcement; expansion joints; and concrete finishing. Specifications are included in Section 07300.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for CAST-IN-PLACE CONCRETE, STAIRS AND CHEEKWALL.

07-03 CAST-IN-PLACE CONCRETE, FOOTING

A. Measurement

1. This work shall be measured for payment in place per Each complete per the Contract Documents. This pay item shall include excavation; subgrade preparation; compacted aggregate base courses; cast-in-place concrete; rebar reinforcement; expansion joints; and concrete finishing. Specifications are included in Section 07300.

B. Payment

1. This work shall be paid for at the contract unit price per Each for CAST-IN-PLACE CONCRETE, FOOTING.

07-04 FLOATING DOCK

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. This pay item shall include all components of the floating dock including but not limited to anchorage system, skirting and rub rails, ramps, decking, piers, and attachment to the abutment. The pay item does not include abutments or the guardrails on the abutment or ramp sections. Specifications are included in Section 07400.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for FLOATING DOCK.

07-05 SHELTER A (4-SEASON SHELTER)

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. This pay item shall include all components of the shelter. Specifications are included in Architectural Specifications prepared by Bleck & Bleck Architects.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for SHELTER A (4-SEASON SHELTER).

07-06 SHELTER B (LARGE SHELTER)

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. This pay item shall include all components of the shelter. Specifications are included in Architectural Specifications prepared by Bleck & Bleck Architects.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for SHELTER B (LARGE SHELTER).

07-07 DAIRY BARN SELECTIVE DEMOLITION AND RESTORATION

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. This pay item shall include all components of the shelter. Specifications are included in Architectural Specifications prepared by Bleck & Bleck Architects.

B. Payment

1. This work shall be paid for at the contract unit price per Lump Sum for DAIRY BARN SELECTIVE DEMOLITION AND RESTORATION.

07-08 EVAPORATOR RESTROOM FACILITY VAULT

A. Measurement

1. This work shall not be measured for payment but will be considered to be complete upon the Owner's approval and as per the Contract Documents. Specifications are included in Section 07511.

B. Payment

1. This work shall be paid for at the contract unit price per Each for EVAPORATOR RESTROOM FACILITY VAULT.

08 METAL FABRICATIONS

08-01 HANDRAIL, RAMP

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Feet for HANDRAIL, RAMP.

08-02 HANDRAIL, STAIRS

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Feet for HANDRAIL, STAIRS.

08-03 GUARDRAIL

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for GUARDRAIL.

08-04 GUARDRAIL, ABUTMENT

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for GUARDRAIL, ABUTMENT.

08-05 COUNTER, 3′-6″ HEIGHT

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for COUNTER, 3′-6″ HEIGHT.

08-06 COUNTER, 2′-10″ HEIGHT

A. Measurement

1. This work shall be measured for payment in place in lineal feet, complete per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Lineal Foot for COUNTER, 2′-10″ HEIGHT.

08-07 PLATFORM BENCH

A. Measurement

1. This work shall be counted in place per bench location, complete upon the Owner's approval and as per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Each for PLATFORM BENCH.

08-08 BENCH

A. Measurement

1. This work shall be counted in place per bench location, complete upon the Owner's approval and as per the Contract Documents. Specifications are included in Section 08800.

B. Payment

1. This work shall be paid for at the contract unit price per Each for BENCH.

09 LANDSCAPE

09-01 HERBICIDE, GLYPHOSATE, NON-AQUATIC

A. Measurement

1. This work shall be measured for payment in place in acres or partial acres complete per the Contract Documents. Specifications are included in Section 09110.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for HERBICIDE, GLYPHOSATE, NON-AQUATIC.

09-02 HERBICIDE, AQUATIC [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in acres or partial acres complete per the Contract Documents. Specifications are included in Section 09110.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for HERBICIDE, AQUATIC [CONTINGENT].

09-03 HERBICIDE, BROADLEAF, TURF, POST EMERGENT [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in acres or partial acres complete per the Contract Documents. Specifications are included in Section 09110.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for HERBICIDE, BROADLEAF, TURF, POST EMERGENT [CONTINGENT].

per Acre for SEEDING – SHORTGRASS PRAIRIE MIX.

09-04 SHADE TREE

A. Measurement

1. This work shall be counted in place per each type and size of plant, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for SHADE TREE. Unit price shall include procurement and installation.

09-05 ORNAMENTAL TREE

A. Measurement

1. This work shall be counted in place per each type and size of plant, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for ORNAMENTAL TREE. Unit price shall include procurement and installation.

09-06 SHRUB

A. Measurement

1. This work shall be counted in place per each type and size of plant, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for SHRUB. Unit price shall include procurement and installation.

09-07 GRASSES

A. Measurement

1. This work shall be counted in place per each type and size of plant, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for GRASSES. Unit price shall include procurement and installation.

09-08 FORBS

A. Measurement

1. This work shall be counted in place per each type and size of plant, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for FORBS. Unit price shall include procurement and installation.

09-09 MULCH – FINE HARDWOOD, 4″ DEPTH [TREE RING INCIDENTAL]

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 09200. Fine Hardwood Mulch around Tree Rings shall be incidental to contract and included in the unit price for Each plant type.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for MULCH – FINE HARDWOOD, 4″ DEPTH. Unit price shall include procurement and installation.

09-10 SUPPLEMENTAL WATERING [ALL PLANTS PER OCCURRENCE (OCC) – CONTINGENT]

B. Payment A. Measurement

1. Upon Owner's authorization, this work shall be counted per Occurrence. Each occurrence should include full saturation of each plant type – SHADE TREE, ORNAMENTAL TREE, SHRUB, GRASSES, and FORBS, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Occurrence (OCC) for SUPPLEMENTAL WATERING.

09-11 TREE BARK PROTECTION

A. Measurement

1. This work shall be counted in place per single-stem tree location, complete per the Contract Documents. Specifications are included in Section 09200.

B. Payment

1. This work shall be paid for at the contract unit price per Each for TREE BARK PROTECTION. Unit price shall include procurement and installation.

09-12 SEEDING – LCFP PARKLAND MIX

A. Measurement

This work shall be measured for payment in place in square yards, complete per the Contract Documents, including seed bed preparation, fertilization, seeding, and guarantee. Specifications are included in

Section 09300. Erosion control blanket, hydromulch, watering, and turf mowing shall be paid separately.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for SEEDING – PARKLAND MIX.

09-13 EROSION CONTROL BLANKET

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 09300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for EROSION CONTROL BLANKET.

09-14 FERTILIZATION – MOWN TURF, SUPPLEMENTAL [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 09300.

B. Payment

1. This work shall be paid for at the contract unit price per Square Yard for FERTILIZATION – MOWN TURF, SUPPLEMENTAL [CONTINGENT].

09-15 TURF MOWING [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in square yards, complete per the Contract Documents. Specifications are included in Section 09300.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for TURF MOWING [CONTINGENT].

09-16 SEEDING – LCFP COVER CROP MIX

A. Measurement

1. This work shall be measured for payment in place in acres, complete per the Contract Documents. Specifications are included in Section 09310.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for SEEDING – LCFP COVER CROP MIX.

09-17 SEEDING – SHORTGRASS PRAIRIE MIX

A. Measurement

1. This work shall be measured for payment in place in acres, complete per the Contract Documents. Specifications are included in Section 09310.

B. Payment

1. This work shall be paid for at the contract unit price.

09-18 HYDROMULCH, SLOPES 2:1 OR LESS

A. Measurement

1. This work shall be measured for payment in place per acre, complete per the Contract Documents. Areas which receive erosion control blanket shall not be included in this measurement. Specifications are included in Section 09300.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for HYDROMULCH, SLOPES 2:1 OR LESS.

09-19 FIELD MOWING [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in acres, complete per the Contract Documents. Specifications are included in Section 09310.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for FIELD MOWING [CONTINGENT].

09-20 HERBICIDE TREATMENT – NATIVE SEEDED AREAS [CONTINGENT]

A. Measurement

1. This work shall be measured for payment in place in acres, complete per the Contract Documents. Specifications are included in Section 09310.

B. Payment

1. This work shall be paid for at the contract unit price per Acre for HERBICIDE TREATMENT – NATIVE SEEDED AREAS [CONTINGENT]

END OF SECTION 01010

SECTION 02100
TEMPORARY ACCESS AND FACILITIES

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Mobilization costs, temporary construction and facilities and transportation required to perform the permanent improvements.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02200 – Temporary Traffic Control
2. Section 02300 – Site Resource Protection

C. The Contractor shall, at its sole expense, procure and furnish all bonds required by other agencies and jurisdictions in order to access the work site.

2. PRODUCTS

2.01 STABILIZED CONSTRUCTION ENTRANCE

A. Aggregate shall be an angular crushed stone meeting the requirements of IDOT CA-1, also known locally as 3″ Stone.

B. Geotextile fabric

1. Geotextile fabric shall be non-woven, needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects.

2. The geotextile fabric shall be:

a. Thrace-LINQ GTF-225EX

b. or approved equivalent meeting the following criteria:

Grab Tensile Strength	215 lbs
Elongation	50%
Puncture	600 lbs
Permittivity	1.3 sec^{-1}

2.02 TEMPORARY CULVERTS AND CROSSINGS

A. Aggregate surface for temporary crossings shall meet the requirements of IDOT CA-1, locally known as 3″ Stone.

B. Geotextile fabric shall be non-woven, needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects such as:

1. Thrace-LINQ GTF-225EX

2. or approved equivalent meeting the following criteria:

Grab Tensile Strength	215 lbs
Elongation	50%

Puncture	600 lbs
Permittivity	1.3 sec^{-1}

C. Pipe size and type for temporary crossing shall be as indicated on the Plans.

3. EXECUTION

3.01 SITE ACCESS AND CONSTRUCTION LIMITS

A. All site access shall be limited to the designated locations either shown on the Plans or otherwise designated by the Owner. Under no circumstances shall the Contractor attempt to access the site from an unauthorized public right-of-way without expressed permission or permit from the Owner and the appropriate jurisdiction.

B. The Contractor shall work within construction limits as designated by the Owner. The Owner reserves the right to reduce construction limits to avoid damage to environmentally sensitive areas. Material storage and construction parking may occur only in those areas designated by the Owner. Do not unreasonably encumber the site with materials or equipment. All haul roads which are located outside of the immediate construction zone or shall impact the site in any way shall be approved by the Owner before put in use. All site impacts caused by material storage, access and transportation shall be restored to their original conditions as specified in this Contract.

C. When the project requires a specific construction sequence, the work shall follow construction sequencing as shown on the Plans or otherwise indicated by the Owner and the Contractor shall not be allowed to begin work on the next project phase until the previous phase has been fully completed and approved by the Owner. Once a phase has been completed and approved, the Contractor shall completely barricade off the work area with 4-foot high orange construction fence to prevent construction traffic and the general public from entering completed phase. Any changes to the sequencing shown on the Plans shall be approved in writing by the Owner.

D. This project is being constructed on public lands, and as such, portions of the site within or outside of the construction limits may remain open to the public. The Contractor shall assure the safety of all persons encountered during the work and grant them Right-of-Way regardless of whether the locations has been closed, fenced or signed as a construction zone. When operating machinery in areas that are open to the public, the Contractor shall provide adequate safety personnel on the ground to monitor the work and public conflicts.

E. All construction facilities and temporary controls shall be maintained in a secure, safe and useful condition until removed from the Work Site. The Contractor shall be solely responsible for any material losses due to vandalism, theft, weather occurrences or Acts of God. The Contractor shall provide a daily inspection of Work Area and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the Work Site, both day and night. Any and all security or construction fencing will be the responsibility of the Contractor. If present, the Contractor shall be responsible for locking and unlocking gates of the Owner.

F. The Contractor shall be solely responsible for all access and logistical considerations outside of the Owner’s property, including permissions, permits, road bonds and any associated costs.

3.02 UTILITIES

A. The Owner will not provide any utility services unless specifically noted on the Plans. The Contractor shall provide and pay all costs for necessary temporary electrical, heat, and water. The Contractor shall provide water for all construction and testing purposes. The Contractor shall provide all temporary piping, hoses, etc., required to transport water to the point of usage.

3.03 MOBILIZATION AND TEMPORARY SITE ACCESS

A. When included in the Schedule of Prices, the Contractor shall be paid for indirect costs necessary to initiate and complete the Work. These costs may include mobilizing equipment and materials, temporary construction office trailer, temporary sanitary facilities, permit boxes, surveying, construction layout, temporary utilities, water sources, concrete washout facilities, signage and other temporary indirect costs associated with the Work.

3.04 STABILIZED CONSTRUCTION ENTRANCE

A. Install stabilized construction entrance at the location indicated on the Plans.

B. If the Contractor utilizes any other location(s) for construction access, a stabilized construction entrance must be installed where the construction entrance(s) access public right-of-ways, streets, or any paved surfaces. Any such additional construction entrances must be approved by the Owner, the jurisdictional authority and Designated Erosion Control Inspector (DECI). The cost of any additional construction entrances shall be based on the unit price established in the Schedule of Prices.

C. Aggregate must be underlain by the specified geotextile fabric in all areas; using full width rolls with end seams overlapped a minimum of 4 feet.

D. Any sediment reaching paved surfaces shall be removed immediately.

E. The Contractor shall maintain the stabilized construction entrance in good working condition, including but not limited to replacement of rock and removal of accumulated sediment, throughout the duration of the project until removal.

F. Stabilized construction entrance shall be removed by the Contractor at the end of the project or as otherwise directed by the DECI. Ground beneath stabilized construction entrance and any incidental disturbed areas shall be restored as per sections 03130 – Finish Grading and Topsoil and 09300 – Seeding.

3.05 TEMPORARY CULVERTS AND CROSSINGS

A. Install temporary culverts and crossings at the location(s) indicated on the Plans.

B. Unless shown in the Plans and details, the means and methods used to create temporary crossings shall be determined by the Contractor and approved by the Owner. The method chosen should provide a stable crossing with a minimum level of disturbance to the site. Timbers, temporary road mats or other methods which do not require filling may be used outside of drainage flows.

C. The contractor shall maintain temporary crossings in good working condition, including but not limited to the addition or replacement of aggregate, throughout the duration of the project until removal.

D. Temporary crossings shall be removed by the Contractor at the end of the project or as otherwise directed by the Owner.

3.06 TEMPORARY SANITARY FACILITIES

A. Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and Local Health Regulations and Ordinances.

3.07 PERMIT BOX

A. Provide permit box to safely store and protect required permit paperwork on site throughout the duration of construction. Permit paperwork to include Stormwater Pollution Prevention Plan (SWPPP), LCSMC Permit, and any other papers required by permitting agencies.

3.08 CONCRETE WASHOUT FACILITIES

A. Provide temporary concrete washout facilities to manage liquid and solid wastes from concrete usage. Maintain during construction and remove when facilities are no longer needed for proposed work.

3.09 SITE RESTORATION

A. Areas disturbed during construction due to required stabilized entries, haul roads, staging areas, temporary crossings or other site access areas approved by the Owner shall be restored as directed by the Owner. This work shall be performed as per Sections 03120 – Finish Grading and Topsoil, 09300 – Turf Seeding and 09310 – Native Seeding and measured for payment.

END OF SECTION 02100

SECTION 02300
SITE RESOURCE PROTECTION

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Requirements for the preservation and protection of natural resources and man-made facilities at the Work Site and restrictions on construction impacts.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02400 – Soil Erosion and Sediment Control
2. Section 02500 – Vegetation Removal
3. Section 03100 – Earthwork and Grading

2. PRODUCTS

2.01 TEMPORARY CONSTRUCTION FENCE

A. Fencing shall be heavy duty orange polyethylene or fabric fence, 4′ in height. Steel posts shall be heavy duty “T” posts, 5′ minimum in length. Wood posts shall be a minimum of 2″ x 2″ x 5′ minimum in length.

2.02 TEMPORARY CHAIN LINK FENCE AND GATES

A. Chain link fence and gates shall consist of metal fabric with 0.148 diameter wire and woven on 2″ spacing and meeting AASHTO M 181. Fence fabric shall be adequately supported and attached to metal rails and supports with steel or aluminum hog rings. Chain link fence shall be 6′ in height. Chain link gates shall be 6′ in height and 12′ in length with hinge post bracing and support wheel. All fence and gates shall be supplied in excellent condition and free from torn, distorted or otherwise damaged fabric.

B. Metal posts, rail, braces and gate frames shall meet the requirements of AASHTO M 181 and shall be provided as driven posts for open ground and / or with base supports for paved areas. Metal posts and support members shall be straight and free from defects.

3. EXECUTION

3.01 EXISTING FACILITIES

A. The Contractor shall be responsible for the care and protection of all existing buildings, structures, pavements, roadways, trails, fences, utilities and any other existing facilities or improvements on the work site, whether under the direct jurisdiction of the Owner or not.

B. With the exception of approved site access disturbances as described in Section 02100 – Temporary Access and Facilities, any damage to existing facilities shall be repaired or replaced to the satisfaction of the Owner or appropriate agency at no additional cost to the Owner. No additional compensation will be allowed

under this Contract for the repair, replacement, or restoration of existing site elements as identified herein.

C. Upon completion of the Contract, any and all debris, construction materials, equipment or other items associated with the project shall be removed from the site. Any disturbed areas shall be fine graded to ensure positive drainage and seeded according to these specifications.

D. Burning of any material within or adjacent to the work area is prohibited unless approved by the Owner.

E. During the Contract period, the Contractor shall be responsible for the protection and maintenance of all property boundary and utility markers, whether set by the Owner, other agencies or adjacent landowners. This shall include the standard yellow or white Carsonite markers utilized by the Owner. If any such markers are removed, damaged or burned, the Contractor shall re-establish those exact locations through standard land survey methods and replace the marker with the exact same marking material as was originally in place. All land survey, material and installation costs shall be paid for by the Contractor.

3.02. UTILITIES

A. Easements for existing utilities, both public and private, and utilities within public rights-of-way may be shown on the Plans, according to available records and are provided only for the convenience of the Contractor. The Contractor shall be responsible for determining the exact location in the field of these utility lines, clearly marking them as such and assuring their protection from damage due to construction operations.

B. Electric, telephone, natural gas, and other utility companies may have underground and/or overhead service facilities in the vicinity of the proposed work. The Contractor shall be solely responsible for having the utility companies locate their facilities in the field prior to construction, and shall also be responsible for maintenance and preservation of these facilities. The Contractor shall call J.U.L.I.E. at (800) 892-0123 or 811 for utility locations at least 48 hours prior to start of construction. The Contractor shall coordinate construction operations and schedules with the utility companies to avoid potential conflicts and damages. No relocation of utility lines and/or structures may proceed unless specific written permission has been granted by the Owner and utility company. If utilities of any nature are encountered, either located by J.U.L.I.E. or not, and found to conflict in location with new construction, the Contractor shall notify the Owner and utility company immediately so that the conflict may be resolved.

C. Should any damages occur due to any action by the Contractor, repairs shall be made by the Contractor, at its expense, in a manner acceptable to the Owner and utility company.

D. Overhead or aerial utilities which may interfere with the construction activities shall be properly flagged and caution signs posted.

3.03. DUST AND MUD CONTROL

A. Take all necessary precautions to control dust and mud associated with the Work of this Contract, subject to the approval of the Owner. In dry weather, spray dusty areas daily with water in order to control dust. Take necessary steps to prevent the tracking of mud onto adjacent streets and highways. If indicated on the Plans

or deemed necessary by the Owner, the Contractor shall provide and operate a wash station to clean equipment and vehicles before they access any pavement.

B. At a minimum, all streets and highways impacted by the construction shall be cleaned at the end of each working day using mechanical street sweeping equipment. If adequate precautions to control dust and mud are not taken by the Contractor, additional street sweeping shall be performed at the direction of the Owner and at no additional cost to the Owner.

C. If the Contractor does not take sufficient precautions in the opinion of the Owner to control dust and mud associated with the Work of this Contract, the Owner reserves the right to stop Contractor's Work without extension to the Contract until Contractor provides acceptable dust and mud control.

3.04 CONSTRUCTION NOISE

A. All engines and engine-driven equipment used for hauling or construction shall be equipped with an adequate muffler in constant operation and properly maintained to prevent excessive or unusual noise.

B. Any machine or device which is regulated by Federal or State of Illinois noise standards shall conform to those standards.

C. When equipment noise is generated in a work area located near other jurisdictions or residential areas, the Contractor shall abide by the appropriate municipal ordinances regulating work hours for purposes of limiting construction noise.

3.05 CONTAMINATION

A. The Contractor shall be solely responsible for the use, storage and transportation of any potential contaminants during the execution of the Contract. Fuels, oils, pesticides, chemicals or any other material that may cause harm to the site shall be cleaned, removed and disposed of according to local, state and federal guidelines. All equipment and vehicles shall be properly maintained to prevent contamination and shall be promptly removed from the site upon first evidence of leakage or spills. Under no circumstances shall fuels of any type be stored on the site.

B. If the Contractor does not take sufficient precautions in the opinion of the Owner to safeguard the site from contamination or adequately mitigate contaminant damage, the Owner reserves the right to stop the Contractor's work without extension to the Contract and remedy the contamination by other means, with the cost of any such work deducted from the Contract.

3.06 TEMPORARY CONSTRUCTION AND CHAIN LINK FENCE AND GATES

A. The Contractor shall erect the temporary fencing and / or gates at locations shown on the Plans or as directed by the Owner. The Owner reserves the right to specify additional fencing installation locations not shown on the Plans and/or to eliminate fence installation locations.

B. Steel fence posts shall be firmly driven into the ground and spaced to adequately support the fencing. The fencing shall be drawn tight to the posts and secured such that no sagging of the fencing may occur.

C. Temporary construction fencing shall remain in place and be properly maintained until final seeding and restoration is complete, unless directed otherwise by the Owner. Upon removal, all fencing materials shall be removed from the site.

3.07 NATURAL AND CULTURAL RESOURCE PROTECTION ZONES

A. Areas outside of the primary construction zone which are separated by temporary construction fence may be designated as Natural and/or Cultural Resource Protection Zones. These areas contain trees, vegetation, soils and/or other sensitive resources. Access to these areas by foot, vehicle or other equipment for any purpose is strictly prohibited.

B. If at any time the Contractor believes that access to the Natural and Cultural Resource Protection Zone is necessary to accomplish the work, the Contractor shall immediately request a site inspection and meeting with the Owner to determine the course of action. The Contractor shall not initiate any work within the Natural Resource Protection Zone until receiving approval by the Owner and a determination of procedure and possible mitigation requirements.

3.08 TREE PRESERVATION

A. Prior to the start of construction, the Contractor shall meet with the Owner at the site to inspect the existing trees which are to remain and determine potential impacts that may be caused by construction activities. Overhanging branches and tree root zones shall be noted and if required, the method of pruning or other procedure shall be determined and approved by the Owner.

B. The Contractor shall not damage, cut, prune, transplant or remove any tree; attach any rope, wire, nail or other object to any tree; allow any gaseous, liquid or solid substance or equipment to contact any tree or the soil located within the drip line of any tree; impair normal surface drainage around any tree; allow any fire to burn which will injure any tree or act in any way to affect the vigor or appearance of any tree, except as such action is specifically authorized by the Plans for individually designated trees or groups of trees. Any necessary action by the Contractor that would affect trees, which have not been specifically designated, must be approved in advance by the Owner.

C. If during grading or other construction it becomes necessary to expose or sever tree roots, the Contractor shall cleanly cut such roots with a sharp saw, pruner, or power trencher so that ripping or tearing is avoided.

3.09 NATURAL AND CULTURAL RESOURCE DAMAGE OR LOSS AND OWNER'S COMPENSATION

A. The Contractor shall be liable for any damage or loss of any natural or cultural resource, including, but not limited to, trees, shrubs, herbaceous plants, soils, wetlands, streams, rivers, lakes, ponds, archeological sites or other natural habitat which is caused by the Contractor due to negligence or violation of any provision in these specifications. The Owner reserves the right to receive just compensation for any such damage or loss in a form acceptable to the Owner, including repair, restoration to original conditions, replacement of comparable kind and quantity or monetary restitution by Contract amount adjustment or direct payment.

B. In the event that trees, shrubs or other plants are irreparably damaged or destroyed by actions of the Contractor as outlined above, the plant material shall be replaced by the Contractor with like kind, size and quantity at no cost to the

Owner or shall reimburse the Owner by direct payment. In the event that a plant species is unavailable, the Owner shall determine a replacement species. In the event that a damaged or destroyed plant is large and/or irreplaceable in size, the plant shall be replaced by an equivalent quantity of smaller plants, i.e., a tree measuring 24″ in trunk diameter may be replaced with 12 trees measuring 2″ in trunk diameter. Replacement of all plant materials shall include the furnishing and planting of the materials with a one-year guarantee for subsequent replacement should the plant material fail to survive.

END OF SECTION 02300

SECTION 02400
SOIL EROSION AND SEDIMENT CONTROL

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Provide all temporary soil erosion and sediment control (SESC) measures as shown on the Plans and as required by the project permits and applicable agencies during the life of the Contract.

B. Other specification sections which may directly relate to the work of this section include, but are not limited to, the following:

1. Section 02100 – Temporary Access and Facilities
2. Section 02300 – Site Resource Protection
3. Section 02500 – Vegetation Removal
4. Section 03100 – Earthwork and Grading
5. Section 03120 – Finish Grading and Topsoil
6. Section 09300 – Turf Seeding
7. Section 09310 – Native Seeding

1.02 REGULATIONS, REQUIREMENTS AND INSPECTIONS

A. The Contractor shall comply with all project permits, regulations and applicable federal, state and local statutes relating to the prevention and abatement of soil erosion, sediment control and water pollution. The local permit authority is the Lake County Stormwater Management Commission (LCSMC), 500 West Winchester Road, Suite 201, Libertyville, IL 60048, (847) 337-7700.

B. In the event of conflict between the requirements of these specification and the pollution control laws, rules or regulations for federal, state or local agencies, the more restrictive laws, rules or regulations shall govern.

C. Refer to the Plans for LCSMC's "Soil Erosion and Sediment Control Construction Notes".

D. The Contractor must employ a Designated Erosion Control Inspector (DECI) as approved by LCSMC for this project.

E. The Contractor/DECI shall be responsible for the oversight of all required soil erosion and sediment control regulations and measures as required by LCSMC, including inspections, recording and distribution of Field Observation Reports, and maintenance of the Storm Water Pollution Prevention Plan (SWPPP). Any fines or other penalties imposed by the governing agencies upon the Owner as a result of the Contractor's actions or inactions shall be the responsibility of the Contractor.

F. The DECI shall distribute all Field Observation Reports to the Owner and LCSMC within 48 hours of the report date, unless a violation is noted, upon which the Owner, LCSMC, and Contractor shall be notified with 24 hours. Upon Observation Reports to the Contractor and the satisfactory completion of the

construction and site stabilization, the DECI shall provide the Owner with a complete project history including reports.

1.03 COORDINATION WITH PERMANENT CONTROL FEATURES

A. The temporary control provisions contained herein shall be coordinated with permanent erosion control features to the extent practical to assure economical, effective, and continuous soil erosion and sediment control throughout the construction and post construction period.

1.04 QUALITY ASSURANCE

A. SESC measures shall at all times meet the requirements of the applicable permits and regulations. Should the Contractor fail to meet these requirements or, in the opinion of the Owner, performs the requirements in an unsatisfactory manner, the Owner may suspend the performance of any or all construction until the unsatisfactory condition has been corrected. Such suspension shall not be the basis of any claim by the Contractor for additional compensations from the Owner nor for an extension of time to complete the Work.

1.05 REFERENCE DOCUMENTS

A. Utilize the latest versions of the following:

B. Guidance Manual – “Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices” (EPA 832-R-005).

C. Summary of Guidance Manual – “Strom Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices” (EPA)

D. Lake County Stormwater Management Commission. Watershed Development Ordinance. (LCSMC WDO)

E. Illinois Urban Manual. USDA Natural Resources Conservation Service, Illinois Environmental Protection Agency

F. Standard Specification for Geotextile Specification for Highway Applications. AASHTO Designation: M 288-00.

2. PRODUCTS

2.01 GENERAL

A. The following products may be shown on the Plans or specified for this Contract:

2.02 SILT FENCE

A. Silt fence shall be non-wire backed and meet the requirements of the Lake County Watershed Development Ordinance (AASHTO M288-00 specifications).

2.03 FILTER SOCK

A. Filter sock shall meet the requirements established by AASHTO, the US Army Corps of Engineers, the Natural Resource Conservation Service and / or the USEPA National Pollutant Discharge Elimination System.

2.04 TEMPORARY DITCH CHECKS

A. Temporary ditch checks shall be Triangular Silt Dikes by the Triangular Silt Dike Company, www.tri-siltdike.com

B. or approved equal

2.05 PERMEABLE PLASTIC DITCH CHECKS

A. Permeable plastic ditch checks shall be GeoRidge® permeable plastic berms as manufactured by Nilex (www.nilex.com).

B. or approved equal

2.06 DRAIN INLET PROTECTION

A. Silt fence, filter sock and/or ditch checks meeting the material specifications above shall be installed and maintained at each culvert as specified.

B. or approved equal

2.07 DRAIN INLET FILTER

A. Drain inlet protection shall be Flexstorm Inlet Filter with standard zinc-plated framing and Type FX filter bag, as manufactured by Inlet and Pipe Protection, Inc., Naperville, IL, (866) 287-8655, flexstorminletfilters.com.

B. or approved equal

2.08 TEMPORARY SEED

A. Seed for temporary vegetative stabilization of stockpiles and other ungraded areas shall be Annual Rye Grass.

2.09 HYDROMULCH

A. Hydromulch for slopes 2:1 or less shall be:

1. ProMatrix Engineered Fiber Matrix (EFM), a hydraulically-applied seeding mulch composed of 100% recycled Thermally Refined wood fibers, crimped interlocking man-made biodegradable fibers and naturally derived polymers. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

   PROFILE Products LLC
   750 Lake-Cook Road – Suite 440
   Buffalo Grove, IL 60089
   (800) 366-1180
   www.profileproducts.com

2. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

B. Hydromulch for slopes greater than 2:1 shall be:

1. Flexterra HP-FGM, a hydraulically-applied, 100% biodegradable seeding mulch composed of thermally refined wood fibers (80%), cross-linked biopolymers and water absorbents (10%), crimped, man-made interlocking fibers (5%) and micro-pore granules (5%). The material shall be phytosanitized and free from plastic netting. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

PROFILE Products LLC
750 Lake-Cook Road – Suite 440
Buffalo Grove, IL 60089
(800) 366-1180
www.profileproducts.com

2. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

2.10 TURBIDITY BARRIER

A. Turbidity Barrier shall meet the following criteria:
   1. Fabric shall be first quality material and have a notarized material certification sent to the construction engineer.
   2. All pocket seems shall test out to 92% of the strength of the fabric.
   3. Foam floats shall be 7″x7″x8″.
   4. Mooring cable shall be 5/16″ galvanized aircraft cable.
   5. Chain ballast shall be 5/16" G30 Zinc plated proof coil chain.
   6. All section lengths of the curtain shall be attached together.
   7. Depth of the curtain shall be the depth of the water plus any additional depth to account for water fluctuations.
   8. Turbidity Barrier is to be as distributed by:
      a. Hanes Geo Components
         1820 Internationale Blvd.
         Glendale Heights, IL 60139
         (630) 279-0915
         hanesgeo.com
      b. or approved equal.

2.11 DEWATERING

A. The Contractor shall determine the means and methods to accomplish the dewatering including the choice of products and equipment to be used. The Contractor is responsible for the design, installation, operation, and removal of the dewatering materials and equipment for the work site.

C. Description of dewatering techniques and equipment shall be submitted for Owner approval.

2.11 OTHER MATERIALS

A. All other materials necessary for soil erosion and sediment control requirements shall meet typical accepted industry standards and are subject to approval by the Owner.

3. EXECUTION

3.01 PRIOR TO CONSTRUCTION

A. Prior to the start of construction and installation of SESC measures, an on-site pre-construction meeting must be held with the Contractor, DECI, LCSMC Enforcement Officer and Owner.

B. No soil disturbance shall be started until the LCSMC Enforcement Officer has inspected and accepted the soil erosion and sediment control measures.

C. SESC features shall be constructed prior to the commencement of site grading and/or hydrologic disturbance of upland areas.

3.02 GENERAL

A. Soil disturbance shall be conducted in such a manner as to minimize erosion. Soil stabilization measures shall consider the time of year, site conditions and the use of temporary or permanent measures.

B. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.

C. Areas or embankments having slopes greater than or equal to 3:1 shall be stabilized with sod, turf reinforcement mat or erosion control blanket in combination with seeding.

D. All temporary and permanent SESC measures must be maintained and repaired as needed. The Contractor shall be ultimately responsible for maintenance and repair.

H. Soil stockpiles shall not be located in a flood-prone area or a designated wetland buffer.

J. The SESC measures indicated on the Plans are the minimum requirements. Additional measures may be required as directed by the DECI or Owner.

K. The methods and sequencing of vegetation removal shall be such as to minimize erosion.

L. Fills shall be placed and compacted in such a manner that soil sliding and erosion is minimized.

M. Excavation and earth fill shall be conducted in such a manner as not to divert water outside of the project limits, including onto adjoining property, without prior written permission from the Owner.

3.03 TEMPORARY SITE DRAINAGE

A. During construction operations, the Contractor shall ensure positive site drainage at the conclusion of each day. Site drainage may be achieved by ditching, pumping or other acceptable method. Contractor’s failure to provide the above will preclude any possible added compensation requested due to delays or unsuitable materials created as a result thereof.

B. Whenever, during construction operations, any loose materials are deposited in the flow line of gutters, drainage structures, ditches, culverts, etc., such that the natural flow line of water is obstructed, this loose material shall be removed at the close of each working day by the responsible party. At the conclusion of construction operations, all drainage structures and flow lines shall be free from dirt and debris. This work shall be considered incidental to the Contract.

C. All field tile encountered during construction operations shall be connected to the proposed storm sewer or extended to outlet into a proposed drainage way. If this cannot be accomplished, then it shall be repaired with new pipe of similar size and material to the original line and put in acceptable operating condition. A record of the location of all field tile or on-site drain pipe encountered shall be kept by Contractor and turned over to the Owner upon completion of the project. The cost of this work shall be considered as incidental to the Contract and no additional compensation will be allowed.

3.04 SILT FENCE

A. Install silt fence at the locations shown on the Plans and as directed by the DECI, governing agency or Owner.

B. Silt fence shall be installed as per AASHTO M288-00 and as shown on the Plans. Silt fence shall be static sliced or trenched in, backfilled and compacted.

C. Silt fence j-hooks shall be installed at locations where required. The ends of silt fence j-hooks shall have the ends at a higher elevation than the middle of the silt fence line to help prevent the “ending around” of stormwater.

D. Silt fence shall be inspected within 24 hours after rainfall events equal to or greater than 0.5″ in 24 hours. Silt fence shall be maintained in an upright and good condition at all times. If the fabric or stakes become ineffective at any time, they shall be replaced immediately. Sediment shall be removed from silt fence when accumulation reaches one-half the height of the silt fence.

E. All silt fences shall be removed and properly disposed of after upslope areas have been stabilized unless directed otherwise by the DECI. All accumulated silt shall be removed and all remaining trenches shall be filled with either the excess silt or new pulverized topsoil. Areas disturbed by the removal of silt fence shall be graded, seeded and stabilized per Sections 03120 – Finish Grading and Topsoil, 09300 – Turf Seeding and 09310 – Native Seeding.

3.05 FILTER SOCK

A. Install filter sock at the locations shown on the Plans and as directed by the DECI, governing agency or Owner.

B. Filter sock shall be secured using 2 crossed 2″ x 2″ wood stakes (one on each side forming an “X”) driven into the ground a minimum 8 inches deep and located every 10 feet of length.

3.06 TEMPORAY DITCH CHECKS

A. Install temporary ditch checks in conjunction with permanent stabilization and seeding and where indicated on the Plans. Each ditch check location shall consist of 3 units joined together for a total length of 21 feet unless physical restrictions are present, in which case the maximum number of units possible shall be installed.

B. The Contractor shall provide maintenance of the ditch checks including removal and disposal of any materials caught by the ditch checks. After final stabilization and removal of the ditch check, all accumulated silt shall be removed or respread, without interrupting drainage, and graded, seeded and stabilized.

C. The ditch checks shall remain in place until all contributing upslope areas and swales have been stabilized, at which time the ditch checks shall be removed by the Contractor.

3.07 PERMEABLE PLASTIC DITCH CHECKS

A. Install permeable plastic ditch checks in conjunction with permanent stabilization and seeding and where indicated on the Plans. Each ditch check location shall consist of 5 units joined together for a total length of 16.5 feet unless physical restrictions are present, in which case the maximum number of units possible shall be installed.

B. The Contractor shall provide maintenance of the ditch checks including removal and disposal of any materials caught by the ditch checks. After final stabilization

and removal of the ditch check, all accumulated silt shall be removed or respread, without interrupting drainage, and graded, seeded and stabilized.

C. The ditch checks shall remain in place until all contributing upslope areas and swales have been stabilized, at which time the ditch checks shall be removed by the Contractor.

3.08 DRAIN INLET PROTECTION

A. Install drain inlet protection at proposed locations according to the design plan details and manufacturer's recommendations and maintain all protection through adequate cleaning.

3.09 DRAIN INLET FILTER

A. Install drain inlet filter according to the manufacturer's recommendations and maintain all inlet protection through adequate cleaning.

3.10 TEMPORARY SEED

A. Perform temporary seeding according to the time and schedule listed elsewhere within this section and/or on the Plans.

B. Sow seed for temporary vegetative stabilization at a rate of 200 lb. per acre (unless noted otherwise), using a broadcast or hydroseeding method.

3.11 HYDROMULCH

A. Apply hydromulch according to the requirements in Section 09300 – Turf Seeding.

3.12 TURBIDITY BARRIER

A. Install turbidity barrier according to the manufacturer's recommendations and maintain during construction.

3.13 DEWATERING

A. Dewatering shall comply with Lake County specification X0426200 and manufacturer’s recommendations for approved products and equipment.

B. Dewatering operations shall be active continuously while construction activities requiring dewatering are occurring.

C. After dewatering is complete, the Contractor shall remove the dewatering system and restore damage as needed.

END OF SECTION 02400

SECTION 02500
VEGETATION REMOVAL

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Removal of targeted trees, shrubs and other vegetation required for site development and / or site restoration.

2. Mowing of herbaceous and small woody plants.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02100 – Temporary Site Access and Facilities

2. Section 02300 – Site Resource Protection

3. Section 09110 – Herbicide Treatment

1.02 REFERENCE STANDARDS

A. Plant size designation and measurement shall be based on the latest edition of the American Standard for Nursery Stock. Tree sizing is stated in inches Diameter at Breast Height (DBH) unless otherwise indicated.

1.03 PREBID REVIEW

A. Information regarding the location and extent of vegetation removal requirements, either graphically or in notes, is shown on the Plans. However, the Contractor, Subcontractor and / or clearing personnel shall conduct a thorough site inspection to determine the exact scope, location, timber density, species composition, site access limitations and preferred removal techniques for purposes of costing and planning the Work.

1.04 QUALITY ASSURANCE

A. The work described in this section requires specialized knowledge, experience, skills and equipment to perform successfully. The proposed work site is a forest preserve and may contain flora, fauna and / or soils which are highly sensitive to disturbance. Therefore, the Contractor directly performing the work described in this Section shall possess the following qualifications:

1. The ability to identify all species of trees, shrubs and herbaceous plants typically found in Lake County. The ability to identify undesirable or weedy target species is of particular value.

2. The ability to safely and effectively cut, remove and process the target vegetation, including large trees measuring over 24″ in diameter, using both mechanical and hand techniques without damage to other desirable plants or the site in general.

3. Possession of, or the ability to acquire, the specific types of equipment required to perform the work, including low-impact equipment.

4. The ability to safely manage vegetation burning, perform chipping operations and dispose of vegetation off site when required.

1.05 SUBMITTALS

A. The Owner reserves the right to approve the Contractor or Subcontractor who will be directly involved in performing the required work. This approval shall be dependent on the submittal to the Owner, at least 14 days prior to the start of work, of the following:

1. A list of 5 projects similar in scope and size which have been satisfactorily completed in the past 5 years that clearly demonstrate the ability to complete the work as specified. This submittal shall include the project name, project location, completion date, Owner's name and contact information, size in acres and a detailed description of the work performed, including forest or landscape composition, removal techniques, equipment and herbicides used and any follow up work. In addition, all projects listed must involve selective species removal and tree preservation. Clear cut projects shall not be acceptable as reference projects.

2. A list of all equipment proposed for use on the project, including type, make, model, year and Ground Pressure Rating (GPR) where applicable.

2. PRODUCTS – Not Used

3. EXECUTION

3.01 GENERAL

A. Specific project requirements for vegetation removal may be indicated on the Plans. This information may include access routes, staging, storage and burn areas, restricted access areas, specific trees to be removed, tree protection fencing, required removal methods, equipment requirements, target species for removal, target species for preservation, herbicide applications, disposal methods, mowing instructions and other pertinent information.

B. A partial or complete tree survey indicating individual trees 6 inches in diameter DBH or larger may or may not be shown on the Plans, but no species list or tree size range is provided by the Owner. Unless noted otherwise, it is not the intent of the Plans to locate and identify every tree or shrub on the site relative to the work described in this section. The Contractor shall determine the extent of work during the site inspection described above.

C. No mobilization or other work shall commence until a meeting with the Owner, Contractor and designated foreman is conducted on site. At this time the scope of work shall be reviewed and any specific field markings will be identified. The Contractor shall notify the Owner at least 24 hours before the start or restart of work.

D. All work must be conducted under the direct supervision of the original designated clearing foreman.

E. Additional information and instructions regarding the work may be conveyed by the Owner through markings in the field. This may include staking or flagging for removal limits, individual plants to be removed, individual plants to be girdled, root pruning lines, trees to be pruned, individual plants to be preserved ("Do Not Cut" flagging), fencing layout, restricted access areas, haul routes and other

specific requirements. Any damage or disturbance to construction staking shall be replaced by the Contractor.

F. The Contractor shall be responsible for positively identifying all woody species before they are cut, removed or treated with herbicide.

G. During the performance of the vegetation removal work, should any uncertainty arise regarding the removal of specific trees or other plants, the Contractor or clearing foreman shall immediately inform the Owner for a determination in the field.

H. Sites which contain areas sensitive to disturbance such as wetlands, rare plant species, sensitive root zones and / or sensitive soils may be off-limits to machine access. No clearing equipment shall enter these areas. Removals shall be performed by hand or by equipment that can be located outside of the protected area and reached via a boom.

I. The Contractor shall be solely responsible for the repair of any and all other damage to the Owner's property, including roads, trails, bridges, signs and other features.

J. Protection of public utilities in the performance of the work is the sole responsibility of the Contractor, and any damage shall be promptly reported to the appropriate local office. The Owner shall bear no responsibility in the costs of such repair.

K. After the site clearing and vegetation removal has been complete according to the conditions determined at the preconstruction site meeting, the Owner and Contractor shall meet for a final review of the work area. If the original contract terms have been satisfied and additional clearing or tree removal is requested by the Owner, the work shall be measured for additional payment.

3.02 SAFETY

A. It is the responsibility of the Contractor to perform the work according to the highest industry safety standards, the guidelines and requirements of the Occupational Safety and Health Administration (OSHA) and all other applicable local, state and federal requirements.

B. The work described herein is being performed on a public forest preserve and as such portions of the site may be either open to or generally accessible to the public. Extreme caution must be exercised when operating machinery or performing any tasks where there is the potential for personal injury. Special attention is called to operations which cause cut materials to be propelled into adjacent areas. When any cutting of material occurs within 300 feet of roads, trails or adjacent properties, the Contractor shall post signs at those areas to warn the public. When flying debris is likely to contact these areas, the Contractor shall post personnel to assure that access to the work zone is secured.

3.03 DAMAGE TO OR REMOVAL OF SPECIES TO BE PRESERVED

A. It is of utmost importance during selective removal operations that no individual plants of species to be preserved or otherwise identified as desirable to the Owner be damaged or destroyed. Should any such significant damage or unauthorized removal occur which causes a loss of property to the Owner, the Contractor shall be required to perform the following remediation:

1. Removal and disposal of significantly damaged plants at no additional cost to the Owner.

2. Replacement of lost plant material, in the form of new plant material at a replacement ratio of 2 inches of replacement for each 1 inch of plant material damaged or lost. The Owner shall determine or approve the species, source, size, quantity and planting locations of the replacement material before any replacement work is started. The Contractor shall obtain, plant, mulch, water and guarantee the planting for one year with no additional cost to the Owner.

3.04 SEASONAL RESTRICTIONS

A. Specific commencement and completion dates are stated in Attachment A of the Contract. Vegetation removal for development such as trails shall be scheduled to precede construction activities.

B. When sensitive soil conditions or root protection zones are identified, the Owner may restrict clearing equipment access until suitable frost conditions and / or snow cover is present. Restrictions may also be imposed when soil moisture levels are such that any equipment use may cause substantial ground disturbance. Other required work schedules may be indicated on the Plans.

C. Projects requiring tree clearing will follow the following U.S. Fish and Wildlife Service's (USFWS) restrictions pertaining to the Northern Long Eared Bat (NLEB) habitat:

1. Trees 3 inches or greater in diameter at breast height shall not be cleared between April 1 and September 30.

2. Those projects that are within 2 ½ miles of a recorded NLEB site, the tree clearing restriction shall be April 1 through October 31.

3. Exceptions exist for tree trimming and clearing of hazards, which can occur at any time with coordination and prior approval from Owner.

3.05 ROOT PROTECTION AND RESTRICTED ACCESS ZONES

A. The Owner may establish boundaries for areas that require a high level of protection from disturbance due to the presence of sensitive flora, fauna or cultural resources. Some of these areas may be restricted to foot traffic only and will require hand removal of vegetation. Other areas may be off-limits to all types of access. The Owner may fence these areas or otherwise indicate to the Contractor any such limitations.

3.06 VEGETATION REMOVAL AREAS

A. Vegetation Removal Areas may be identified in the Plans for each project and each individual portion of the work zone when required. When used, these areas shall be graphically indicated or described in the notes. Individual trees may be shown on the Plans either within or outside of the Vegetation Removal Area. They are shown to assist the Contractor in evaluating the composition of the vegetation in the removal area and not as individual items for measurement and payment unless noted as such.

B. The Owner may further define the Vegetation Removal Areas by marking areas or individual plants in the field. These markings may include flagging, staking, painted markings or other indications to describe the work.

C. Access and haul routes, staging, chipping and loading areas and burn areas may be identified on the Plans or in the field by the Owner.

D. Each Vegetation Removal Area shall include specific information and instructions that further define the required work. The information and instructions may include:

1. Approximate size of Vegetation Removal Area in acres
2. Removal of all woody vegetation
3. Removal of targeted species only
4. Removal of targeted species of specific sizes only
5. Removal of field marked trees
6. Removal of all non-native trees and shrubs
7. Removal of select native species
8. Girdle targeted or marked trees
9. Trees or species to be preserved ('Do Not Cut')
10. Stump grind all tree removals 6″ DBH and larger
11. Removal of all existing fallen branches and logs
12. Hand or machine raking of all debris
13. Chip and remove all material from site
14. Chip and spread all material on site
15. Burn all cut material on site

3.07 VEGETATION REMOVAL PAY ITEMS DEFINED

A. VEGETATION REMOVAL – COMPLETE

This pay item is an all-inclusive lump sum pay item which provides for the complete vegetation clearing and removal requirements of the project and site. When checked, the following items shall be required for this project:

☒ Field Mowing: The mowing of herbaceous and small woody plants utilizing a tractor mounted rear mowing deck or similar equipment. Areas to be mowed shall include the complete work or grading limits or as indicated on the Plans.

☐ Tree and Shrub Clearing < 6″ Diameter: Includes the cutting, gathering and removal of minor trees and shrubs which are not shown individually on the Plans within the work or grading limits or as shown on the Plans.

☒ Tree Removal > 6″ DBH (Shown on the Plans): The cutting, gathering, processing and removal of trees as indicated on the Plans.

☐ Tree Removal > 6″ DBH (Marked in the Field): The cutting, gathering, processing and removal of trees as marked in the field. The Bidder / Contractor must inspect the site to determine the extent of the work.

☒ Stump Grinding (All Cut Trees 6″+ DBH): The stump and crown grinding of all trees 6″ + DBH either indicated on the Plans or marked in the field. Previously cut trees shall be marked in the field or shown on the Plans and quantified on the Plans.

☒ Disposal: Logs shall be hauled off site. Material that can be chipped may be chipped on site and shall be hauled off site.

☐ Disposal: Burning of vegetation is allowed on this project with coordination and approval of the Owner.

☒ Debris Raking and Removal: All Vegetation Removal Areas shall be raked of all loose vegetative material for seeding purposes.

B. TREE REMOVAL WITH STUMP GRINDING (6-15″, 16-30″, 31″+)

This pay item is used for measurement and payment of individual trees for removal and includes all cutting, gathering, hauling, disposal and stump grinding. Payment for this item shall be per Each for each size range.

C. STUMP GRINDING (6-15″, 16-30″, 31″+)

This pay item is used for measurement and payment of individual stumps for stump grinding. Payment for this item shall be per Each for each size range.

D. TREE ROOT PRUNING

This pay item shall include the mechanical and hand pruning of tree roots as marked in the field by the Owner. Payment for this item shall be per Lineal Feet.

E. TREE BRANCH PRUNING (6 – 12″, 13 – 24″)

This pay item shall include the cutting and removal of individual branches as directed by the Owner. Payment for this item shall be per each branch cut and shall be counted before cutting.

F. FIELD MOWING

This pay item shall include the mowing of herbaceous and minor woody plant material in a single pass. Additional passes for the purpose of reducing debris volume shall be paid as an additional mowing. Payment for this item shall be per acre or parts of acres.

3.08 HAND CUTTING AND REMOVAL

A. Hand cutting removal is defined as those removals performed without any wheeled or tracked ground equipment and performed with chainsaws, hand saws and pruning tools. Hand removal shall be indicated in the Plans for areas sensitive to ground disturbance by heavy equipment.

3.09 MACHINE TREE MOWING

A. Machine tree mowing is defined as the removal of woody plant material with a trunk diameter of six inches (6″) or less DBH and similar sized shrubs using a forestry mower attachment of varying types, including rotating drum, tree shear, deck mowers and brush mulchers.

3.10 MACHINE TREE REMOVAL

A. Machine tree removal is defined as the removal of any trees with various machinery larger than forestry mowers. This work may be performed with a feller buncher or similar boom or arm mounted cutter / grapple which allows minimum ground movement to reach, cut and remove individual trees. The primary operating equipment shall be an excavator or similar machine with rubber tracks and a ground pressure rating of 9.0 PSI or less. Access routes and movement around desirable trees with large equipment shall be carefully planned to avoid unnecessary ground disturbance.

3.11 CUT TREE HANDLING

A. Cut tree handling is defined as the movement of cut materials from the point of origin to staging, loading, chipping or burn areas. Equipment such as skidders and forwarders shall be utilized in designated haul routes and not in root protection zones, areas contained by temporary tree protection fencing or other sensitive areas.

3.12 GIRDLING

A. Girdling is defined as the cutting and complete removal of a tree's bark including cork cambium, phloem and cambium around the entire circumference of the trunk such that the tree is caused to die. Some trees larger than 12″ DBH may be girdled if not adjacent to property boundaries, roadways, trails, or other assets and only if marked by the Owner. All trees designated for girdling shall be double cut. +Cuts shall be made approximately 8-10 inches apart, parallel to each other and horizontal to the ground surface. Girdling cuts shall not be made higher than 3 feet above the ground surface.

3.13 STUMP GRINDING

A. When required, machine stump grinding shall be performed on trees 6″ DBH and larger to a depth of at least ten inches (10″). Stump grinding shall not be performed in areas contained by temporary tree protection fencing or other sensitive areas designated by the Owner. The Contractor shall be aware of the presence of roads, trails or other public areas where stump grinding operations may pose a hazard. Appropriate warning signs or additional personnel shall be posted in areas subject to pedestrian traffic. Should the chipping operations pose a risk to any persons nearby, the operation shall be halted until safe conditions resume.

3.14 DEBRIS RAKING AND REMOVAL

A. Debris raking is defined as the removal of all small loose vegetative matter such as leaves, twigs, bark, and small branches for purposes of exposing the soil surface for seeding purposes.

B. Unless included in Vegetation Removal – Complete, Debris Raking and Removal may be separately specified on the Plans or requested by the Owner. The pay item for this work shall be paid per Acre.

3.15 TREE ROOT PRUNING

A. Tree root pruning shall be performed at the locations shown on the Plans or as marked in the field. Root pruning shall be performed with a mechanical trenching machine to a depth of 24″. After trenching, any torn roots or those over 12″ in diameter shall be hand pruned to a smooth cut.

3.16 FIELD MOWING

A. Field mowing is defined as the mechanical cutting of herbaceous and minor woody material in open fields or lightly wooded areas. Areas designated for field mowing shall be cut to 6″ or less in height with a tractor-mounted mowing deck. When mowed debris is excessive, the Owner may request additional mowings to reduce the size of the debris.

B. All mowing equipment (tractors, mowers, etc.) used in the work shall be thoroughly cleaned after the completion of mowing work at a particular site, and

prior to beginning the work on the next site in order to prevent the transfer of weed seeds and invasive plants from one site to another.

3.17 PROCESSING, REMOVAL AND DISPOSAL OF CUT MATERIAL

A. BRUSH CHIPPING AND GRINDING

1. Brush chipping locations shall be approved by the Owner prior to the start of work. The locations shall allow the hauling of brush to the chipper without creating excessive ground damage to the site and shall be accessible by haul trucks should removal from the site be required. Chipping operations shall be located such that there is no risk to the public from flying debris or other safety concerns.

2. Unless designated otherwise by the Owner, all chipped material shall be loaded and hauled off site. The loading and hauling operations shall be performed such that no excessive ground damage occurs to the site. When chipped material is approved by the Owner to remain on site, it shall be spread in layers of no more than 2″ deep and only at locations identified by the Owner.

3. When brush chipping is required, larger logs or other material not suitable for chipping shall be loaded and hauled from the site.

B. BURNING

1. Burning cut vegetation is only allowed if specifically stated in the Plans.

2. Brush piles and burning locations shall be constructed within the project boundaries in areas designated by the Owner. Brush piles will be constructed in areas where low ground fuel levels exist, soil is bare or there is sparse leaf litter and at least 200 feet from adjacent properties, trails, parking areas, roads, sensitive ecological features and any other area where safety is a concern. Brush piles will be constructed at least 50′ from any standing dead trees or snags and shall not be located under existing live trees.

3. Brush piles shall be of a size and density to effectively accomplish ignition and consumption of the burn material. Cut branches shall generally be less than 15′ in length. Piles should be no more than 10′ high, 30′ in diameter and stacked in a parallel manner with smaller material placed at the bottom of the pile and larger material placed at the top so that compression occurs as the pile is built.

4. The Contractor shall have on site at all times appropriate protective and fire control equipment such as water tanks, back pack pumpers and hand tools to manage the brush piles during ignition, burning, and clean up. During all burning operations, the Contractor shall have a first aid kit, portable eye wash station, chemical spill kit and a working cell phone on site for communication with the Owner and local fire departments.

5. Brush piles shall be ignited only when prevailing winds are between 5 and 25 mph and Relative Humidity is greater than 35% unless otherwise approved by the Owner. Ignition and burning may commence only upon the approval of the Owner.

6. The Contractor shall continually monitor the burn piles to assure that fire and smoke hazards, loss of property or ecological habitat does not occur

and that the safety of the public is protected at all times. Material which has been adequately burned should be raked inward as the burn pile decreases in size. The burn piles shall be monitored by the Contractor until all brush fuel is consumed and the remaining ashes are cool to the touch. Ash piles shall be raked out evenly. In the event that the fire or associated smoke creates a safety hazard, the Contractor shall immediately reduce or extinguish the burn pile to eliminate the hazard. Should loss of control of the fire occur, the Contractor shall immediately contact the appropriate fire department or 911 and the Owner.

7. The Owner shall secure an Illinois Environmental Protection Agency Open Burning Permit and a list of the appropriate contact agencies and phone numbers for the site. The Contractor shall notify the required agencies by telephone on a daily basis prior to ignition. The authority of the local fire departments supersedes that of the Owner and Contractor in regards to ignition and burning of all brush piles.

END OF SECTION 02500

SECTION 02600
DEMOLITION AND REMOVALS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Removal of pavement, structures and other items as indicated on the Plans.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02300 – Site Resource Protection
2. Section 02400 – Soil Erosion and Sediment Control

2. PRODUCTS – Not Used

3. EXECUTION

3.01 GENERAL

A. Before any demolition or removal begins, the Contractor shall protect trees, sensitive natural resources, private property and any other site elements which are designated to remain as indicated on the Plans or in the field by the Owner.

B. When working in a public Right-of-Way (ROW) the Contractor shall conduct operations according to the requirements of the ROW jurisdiction and all Maintenance of Traffic rules and documents.

C. The Contractor shall protect benchmarks, property corners, other survey monuments, utility markers, signs, mailboxes, adjacent pavements and structures from damage or displacement. If any such damage occurs the Contractor shall bear full responsibility for all replacement and restoration to the original condition.

3.02 SAW CUTS, FULL DEPTH

A. The Contractor shall saw cut pavements and structures to their full depth prior to removal or as directed on the Plans. Optional saw cuts performed to aid Contractor's removal operation will not be measured for payment.

3.03 REMOVAL OF PAVEMENTS, CURBS AND AGGREGATES, FULL AND PARTIAL DEPTHS

A. If Reclaimed Pavement is specified for this work, refer to Section 02610 which supersedes this section for the removal of pavements, curbs and aggregates.

B. The removal of asphalt, concrete, stone, or aggregate pavements and concrete curb and gutters shall include all breaking or separating materials, excavation, loading, hauling and disposal of the pavement to its' full depth. Hot-mix asphalt pavement may be removed to full depth by milling.

C. Unless otherwise noted on the Plans, all removed materials shall be disposed of legally off site.

D. If so noted on the Plans, aggregate pavements may be removed to a specific depth.

E. If so noted on the Plans, the Contractor shall create a butt joint to accept replacement of adjacent paving.

F. If so noted on the Plans, the Contractor shall salvage existing material (stone, brick, etc.) for reuse as indicated.

3.04 ASPHALT SURFACE REMOVAL

A. The removal of asphalt surface for subsequent resurfacing shall include any associated saw cutting at the work limits. The surface shall be removed to the specified depth with a self-propelled milling machine.

B. The remaining milled surface shall not be gouged, broken or otherwise damaged by the milling operation. Sufficient cutting passes shall be made so that all irregularities or high spots which may affect resurfacing are eliminated.

C. All adjacent structures such as curbs, gutters, other pavements to remain, drainage structures or other elements to remain shall be protected from damage by the milling operation.

D. Resurfacing shall be paid for as separate items in the Contract.

3.05 REMOVAL AND DISPOSAL OF EXISTING SITE ELEMENTS

A. When indicated on the Plans, the Contractor shall remove existing site elements such as walls, fences, utility poles, culverts, drainage structures, signs, gates, debris and other items designated for removal. Unless otherwise indicated, if such items are partially buried, then all above and below ground portions shall be removed. All existing site elements to be removed shall be disposed of legally off site.

B. If so noted on the Plans, the Contractor shall salvage existing material (stone, brick, etc.) for reuse as indicated.

3.06 STRUCTURE REMOVAL

A. The Contractor shall raze and remove all buildings, bridges, abutments and other designated structures and their associated appurtenances as indicated on the Plans. This work shall include all razing, breaking, loading, hauling and legal off-site disposal.

B. When indicated on the Plans, any depressions or voids created by the demolition shall be filled to the existing adjacent grades with material approved by the Owner.

3.07 OFF-SITE DISPOSAL

A. When a designated demolition or removal specifically does not include hauling and disposal or when debris is discovered after the start of work that the Owner desires to be removed, the Contractor shall be paid for such work as requested by the Owner.

3.08 RESTORATION

A. In all areas disturbed as a result of demolition activities, the Contractor shall backfill said areas to a depth of 4 inches below finished (existing) grade unless otherwise noted on Plans, with clean on-site fill material, place topsoil to a minimum depth of 4 inches unless otherwise noted on Plans, fine grade, seed with seed mix shown on Plans and install erosion control blanket unless otherwise noted on the Plans. All restoration work shall be in compliance with sections 03120 – Finish Grading and Topsoil, 09300 – Turf Seeding and 09310 Native Seeding.

END OF SECTION 02600

SECTION 03100
EARTHWORK AND GRADING

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. All mass earthwork, excavation, placement and rough grading of soils for pavements, landscape areas and other site improvements.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 02300 – Site Resource Protection
2. Section 02400 – Soil Erosion and Sediment Control
3. Section 02500 – Vegetation Removal
4. Section 02600 – Demolition and Removals
5. Section 03110 – Ground Stabilization
6. Section 05100 – Subgrade Preparation

2. PRODUCTS

2.01 ON-SITE FURNISHED EXCAVATION

A. On-site excavated soils and borrow materials to be used for fills shall meet the requirements of Article 204.02 of the IDOT Standard Specifications and shall be subject to approval by the Owner prior to harvesting, hauling and placement.

2.02 IMPORTED FURNISHED EXCAVATION

A. Off-site furnished material shall be suitable for fills meeting the requirements of Article 204.02 of the IDOT Standard Specifications and shall be subject to approval by the Owner prior to delivery to the Work site.

3. EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Contractor shall inspect the site, review any provided geotechnical data and become familiar with the site conditions prior to bidding and start of work. Any geotechnical investigations provided by the Owner apply only to those locations where the data was collected and may not be indicative of conditions elsewhere on the site.

B. Unless specifically noted, all elevations and contours shown on the Plans are finished grades. Grades at points between elevations or contours are to be determined by uniform slopes between given grades or elevations, or between such figures and existing grades. Perform all rough and finish grading required to attain the elevations indicated on the Plans. Grading tolerances shall be plus or minus one-tenth of a foot (0.1′) for all rough and finish work.

C. Excavation and embankment work shall conform to the applicable requirements of Sections 202, 203, 204, 205, 207, and 502 of the IDOT Standard

Specifications except that excavated materials that are suitable for structural fill material shall be used in the construction of the embankments to raise trails, pavements and structures to the proposed subgrade. Suitable material from excavation that is used as embankment or other structural fills shall be free from rocks, roots, sticks, and other foreign bodies that could affect compaction.

D. Unless otherwise indicated, material for fills shall be suitable on-site excavated soil and borrow material and shall be subject to approval by the Owner. Fill material and the surface to be filled shall be free of any frozen material. Material previously compacted that has been flooded and no longer meets the density specified shall be re-compacted or replaced.

E. No site grading shall begin until all required soil erosion and sediment control measures are in place and a pre-construction meeting has been held with the Owner and representatives from the Lake County Stormwater Management Commission to identify any other permitting requirements.

F. Before commencement of earthwork and grading, perform all vegetation clearing and removals.

G. Where the Contractor's equipment is operated on any portion of pavement or other structure used by traffic on or adjacent to the section under construction, the Contractor shall clean the pavement of all dirt and debris at the end of each day’s operations and at other times as directed by the Owner.

H. The Contractor shall use all means necessary to protect the Work before, during, and after construction and to protect all objects designated to remain. In the event of damage, Contractor shall immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.

I. During construction operations the Contractor shall ensure positive site drainage at the conclusion of each day. Provide berms or channels to prevent flooding of subgrades. Promptly remove all water collecting in depressions. Site drainage may be achieved by ditching, pumping or any other acceptable method. The Contractor’s failure to provide the above will preclude any possible added compensation requested due to delays or unsuitable materials created as a result thereof.

J. Earthwork shall not take place when soil moisture is excessive. Do not place, spread, fill or roll during unfavorable weather conditions. Do not resume operations until the soil moisture content is such that the specifications can be achieved. The Contractor may scarify the surface to accelerate drying to required moisture content but no additional compensation shall be allowed without the approval of the Owner.

3.02 GEOTECHNICAL INVESTIGATIONS AND SOILS REPORTS

A. ☒ A geotechnical investigation and soils report has been completed for this project and is included in these Contract Documents. The Owner assumes no responsibility for the accuracy of the report and the information contained in the report applies only to those locations where the sampling was performed and may not be indicative of conditions elsewhere on the site.

B. ☐ No geotechnical investigation or soils report has been performed for this project.

3.03 BALANCE OF CUTS AND FILLS

A. One of the following conditions is anticipated for this project:

☒ It is anticipated that the site contains adequate soil resources and potential borrow areas (Borrow Areas) to achieve the proposed grades with a balance of cuts and fills. The Contractor shall utilize the proposed excavations and any Borrow Area locations shown or explained on the Plans to balance cuts and fills. If additional locations are needed beyond the identified Borrow Areas, selection shall be coordinated with, and approved by, the Owner.

☐ It is anticipated that the site does not contain suitable borrow areas and any additional fill material that may be required will need to be imported from another suitable off-site location. In the case of soil overages, any excess soils shall be excavated, deposited and graded on the site.

☐ This project contains excessive soil cuts which cannot be entirely relocated at the site. A quantity of these soils shall be removed from the site.

B. It is the Owner's intent that the final site grading will result in a balance between soil cuts and soil fills, regardless of whether soil quantities on the site are adequate, deficient or in excess. The Contractor shall be solely responsible for balancing site materials according to the Plans and existing and proposed finish grades. On-site topsoil stripping and stockpiling, excavation, hauling, placement and re-spreading of materials beyond the specified Work areas shall be incidental to the Work when required to balance cuts and fills.

C. The Contractor shall be solely responsible for determining all earthwork quantities based on the existing and proposed elevations provided on the Plans. The Contractor shall be responsible for performing any additional survey work that the Contractor deems necessary to complete an accurate estimate of earthwork quantities.

D. If material overages are indicated, the excess soils shall be excavated, harvested, hauled or otherwise moved to new locations and deposited and spread as directed by the Owner. Topsoil at new cut or fill areas shall be stripped, stockpiled and then re-spread after establishment of subgrades. When material deficits occur, Borrow Areas may be indicated on the Plans or identified in the field by the Owner.

E. When required to utilize Borrow Areas, the Contractor shall strip, stockpile and re-spread any existing topsoil as part of the borrow operations. All clearing outside Construction Limits shall be approved by Owner prior to commencing work. Owner shall review and approve final grading and restoration of Borrow Areas prior to topsoil re-spread. Owner reserves the right to make field adjustments to the Borrow Areas and shall approve final shaping prior to topsoil respread.

F. If on-site excavation and borrow operations do not provide enough suitable material for fill areas, the Contractor shall be responsible for providing off-site fill material as part of the Site Grading pay item. Contingency quantities for On-Site Furnished Excavation and / or Imported Furnished Excavation shall be for replacement of unsuitable soils only and at the direction of the Owner.

G. When there is excess on-site topsoil, the Contractor shall spread and grade the topsoil in thicknesses greater than the minimum where possible. The Contractor

shall also respread and grade excess on-site topsoil in other areas as directed by the Owner.

3.04 SITE GRADING REQUIREMENTS

A. This work shall consist of furnishing all materials, equipment and labor to create the proposed grades, subgrades, elevations, contours and land shapes as indicated on the Plans This work shall include all required topsoil stripping and stockpiling, mass earthwork, rough grading, excavation, filling, hauling, importing of soils from off-site locations, soil placement, shaping and spreading of stockpiled topsoil. Site grading shall provide for any required subgrade elevations for proposed aggregate bases, pavement, surfacing, structures, topsoil or other improvements.

B. All topsoil or soils to be utilized for planting, seeding or re-vegetation shall be carefully stripped, harvested and segregated from the soils below. Topsoil shall be stripped and stockpiled before any filling is performed. Soils which are not suitable for planting shall not be mixed or harvested with topsoil. After stripping, the topsoil shall be deposited in the identified location for stockpile materials for re-spreading at a later time. For trail development, topsoil shall be deposited in rows along the length of the trail. Topsoil stockpiles shall not be overly compacted. Protect all topsoil stockpiles from contamination by other materials or harmful substances.

C. During the process of creating the required cuts and fills, should the Contractor encounter unsuitable material in areas that require structural fill, the Contractor shall immediately notify the Owner prior to proceeding with the work. Upon inspection of the work area, the Owner shall determine a prescribed remedy. If it is determined that excessive soil moisture is present, the Contractor shall aerate, disc or otherwise dry the material to make it suitable for use. If the Owner determines that removal is warranted, the unsuitable materials shall be removed and replaced as specified in Section 03110 – Ground Stabilization. The material used for replacement shall be approved by the Owner.

D. Areas proposed for trails and pavement shall be compacted to a minimum 95% of maximum density based on a Standard Proctor (ASTM D-698).

E. Areas proposed for structural fills for building pads shall be compacted to a minimum of percent 95% based on a Modified Proctor (ASTM D-1557).

F. Areas proposed for landscaped areas shall not be compacted in excess of 85% density based on Standard Proctor.

G. Where proposed improvements or grades require cuts or excavation, the excavated material shall be utilized in achieving specified grades at other areas of the site. If the excavated material meets the requirements, it may be used as structural fill. No material shall be hauled from the site or placed in an unauthorized location without the Owner’s approval, and no compensation shall be allowed for such hauling and disposal unless specifically listed in the Schedule of Prices.

H. Site grading shall include the creation of all ditches, swales and other drainage landforms shown in the Plans. Ditches and swales shall be shaped with smooth transitions to adjacent grades. Ditches shall be sloped to drain in the direction shown on the Plans. The Contractor shall be solely responsible for assuring positive drainage upon the completion of site grading.

I. Areas proposed for landscaping, planting, seeding or re-vegetation shall receive a minimum of 4 inches of topsoil from on-site stockpiles unless otherwise specified. Before placement of topsoil, the Contractor shall assure that the existing soil surface is not overly compacted or glazed and free from debris. If such conditions exist, the Contractor shall clean, scarify and/or till the surface to a minimum depth of 8 inches before the placement of topsoil. The topsoil shall be spread evenly and graded in preparation for Finish Grading. Any branches, roots, rocks or other debris shall be removed and disposed. Place and spread the topsoil to the minimum thickness as specified and in a uniform layer.

J. Upon completion of the proposed improvements, all areas which have become impacted by excessive soil compaction such as haul routes and staging areas shall be disked, tilled or otherwise relieved of compaction such that those areas can sustain long-term vegetative growth. Final payment for Site Grading shall not be paid until these areas are made acceptable for final landscaping.

3.05 SITE GRADING, SENSITIVE WOODED AREA REQUIREMENTS

A. This work shall consist of furnishing all materials, equipment and labor to create the proposed grades and subgrades required for trail construction and other improvements in sensitive wooded areas. Sensitive wooded areas differ from open areas in that they contain valuable trees and vegetation that may potentially be harmed by soil disturbance. It also differs in that no additional Subgrade Preparation is required. It is the intent of the Owner to minimize any potential harm to tree root systems by limiting the amount of grading and soil disturbance.

B. Site grading in sensitive wooded areas shall include herbaceous vegetation mowing when needed, removal of surface litter and, placement of cut soils, formation of ditching by minor filling rather than cutting, shaping shoulder areas and testing of soil materials to attain the subgrade elevations required for trail construction. The Contractor shall limit the width of the graded area to only that which is necessary to construct the actual trail width and avoid performing the work during excessively wet conditions. A typical cross section is shown in the Plans; however, the Contractor shall be required to adjust the final profile depending on adjacent trees and site conditions. These variances in design may include eliminating, redirecting or shortening the ditches, adjusting the final trail location and adjusting the finish grade of the trail.

C. Before the start of surface grading, the Owner shall inspect the soil conditions and vegetation and determine the extent and depth of surface removal required to provide an adequate subgrade condition with minimal root damage. This depth shall generally be between 1 to 4 inches. This depth may vary across different parts of the site. Any material which is removed from the trail bed subgrade shall be deposited adjacent to the trail edges for re-spreading after trail surface construction. The final subgrade surface shall be smooth, uniform and reflective of the original surface profile.

D. Upon completion of the surface soil removal, the Owner and Contractor shall review the surface conditions together prior to any other work to reveal any unsuitable soils or areas. No rolling or compaction shall be performed on the subgrade unless directed by the Owner.

E. Ditching shall be constructed at the locations specified on the Plans and at locations directed by the Owner by adjustment of the finished elevations in conjunction with filling adjacent to the edge of pavement. Ditches shall be sloped to drain in the direction shown on the Plans. Field modifications from the typical

detail shown on the Plans may be required in an effort to preserve desirable trees. This may include relocation of ditching, deleting ditches adjacent to trees, creating shorter ditches perpendicular to the trail and adjusting the built dimensions. The Contractor shall review drainage issues with the Owner onsite before commencement of work in sensitive wooded areas.

3.06 DEEP EXCAVATION AND SEPARATION OF SOILS FOR LANDSCAPE AREAS

A. When the proposed grading requires excavation to elevations 48″ or more below the existing natural surface, additional separation of soil layers shall be performed to assure that the final soil profile is suitable for the growth of trees, shrubs and herbaceous plants. In addition to stripping and stockpiling the Topsoil Layer, the Contractor shall strip, separate and stockpile the next 36″ depth of the Subsoil Layer directly underlying the topsoil layer. Soils excavated from below 48″ of the existing natural surface shall be separated from both the Topsoil and Subsoil Layers.

B. In areas proposed for planting, seeding or sodding, the previously separated soils as described above shall be respread and layered according to their original natural position. Soils excavated from depths of 48″ and deeper shall be deposited first in the deepest position. Next, the Subsoil Layer originating directly below the Topsoil Layer shall be deposited and respread in an even layer. The final finished elevations shall be achieved by respreading of the Topsoil Layer.

3.07 ON-SITE AND IMPORTED FURNISHED EXCAVATION

A. On-Site Furnished Excavation and Imported Furnished Excavation are strictly contingent items when listed in the Schedule of Prices and shall only be used with the Owner’s approval when anticipated borrow areas prove to be insufficient in quality as suitable structural fill material and no other suitable borrow areas exist on the site.

B. All provided Furnished Excavation shall be in accordance with Section 205 of the IDOT Standard Specifications. Samples of Imported Furnished Excavation material shall be submitted to the Owner for approval prior to delivery and installation.

C. On-Site Furnished Excavation shall include all labor and equipment to strip and segregate topsoil, excavate, load, haul, dump, place, compact, re-spread topsoil and otherwise transfer suitable material from a borrow area to the designated fill area.

D. Imported Furnished Excavation shall include all labor and equipment to locate, test, acquire, excavate, load, haul, dump, place, compact, re-spread topsoil and otherwise transfer suitable material from an off-site source to the designated fill area.

E. Furnished Excavation used in trail and road embankment construction as well as other pavement areas shall be compacted to a minimum of 95% based on a Standard Proctor (ASTM D-698).

F. Furnished Excavation used in structural fills for building pads shall be compacted to a minimum of 95% based on a Modified Proctor (ASTM D-1557).

3.08 STRUCTURE EXCAVATION

A. Structure Excavation is defined as excavation directly related to the construction of specific structural elements such as footings, vaults, buildings, abutments,

underpasses and other related improvements which require excavation that is typically deeper and requiring more precise dimensions, depths and side slopes than typically required for general earth excavation.

B. Quantities for Structure Excavation shall be defined either by excavation dimensions shown on the plans or by the dimensional requirements of the structure itself, bedding and backfill requirements and safety considerations for sloped or benched sides greater than 5 feet in height.

C. Structure Excavation shall be measured and paid separately from any other unrelated earthwork and grading.

END OF SECTION 03100

SECTION 03110
GROUND STABILIZATION

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Removal of unsuitable soils and placement of geotextile fabrics and suitable replacement materials.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 05100 – Subgrade Preparation

2. PRODUCTS

2.01 ON-SITE FURNISHED EXCAVATION

A. Excavated soil and borrow material to be used for undercuts shall meet the requirements of Article 204.02 of the IDOT Standard Specifications and shall be subject to approval by the Owner.

2.02 IMPORTED FURNISHED EXCAVATION

A. Offsite furnished material shall be suitable for undercuts meeting the requirements of Article 204.02 of the IDOT Standard Specifications and shall be subject to approval by the Owner.

2.03 GEOTEXTILE FABRIC

A. Geotextile fabric shall be non-woven; needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects.

B. The geotextile fabric shall be:

1. Thrace-LINQ 250EX
2. or approved equivalent meeting the following minimum criteria:

Grab Tensile Strength	250 lbs.
Elongation	50%
Puncture (CBR)	700 lbs.
Permittivity	1.2 sec $^{-1}$

2.04. POROUS GRANULAR EMBANKMENT (PGE), CA-1

A. Aggregate materials for use as PGE shall be CA-1, in conformance with Article 1004.01 of the IDOT Standard Specifications. Sources and/or samples of the proposed material shall be submitted to the Owner prior to delivery and installation.

3. EXECUTION

3.01 GENERAL

A. If at any time the Contractor discovers unsuitable or unstable material in areas that require structural fill for trails, pavements or structures, work shall be stopped and the Owner shall be contacted immediately. The Contractor shall excavate test pits at select locations to allow examination of the subsoils by the Owner. A determination shall be made by the Owner as to the most appropriate remedy and the Contractor shall be directed to perform the additional work. This work may include removal and replacement of soils, placement of geotextile fabrics or other remedies and shall be paid for as per the Schedule of Prices.

3.02 TEST ROLLING EQUIPMENT AND PROCEDURES

A. Test rolling of subgrades shall be performed in the presence of the Owner. When test rolling reveals unsuitable or unstable soils, the Owner shall determine the most appropriate remedy and direct the Contractor accordingly as described above.

B. Test rolling equipment shall conform to following description:

1. Tandem axle, dual wheel dump truck.
2. Tire pressure shall be no less than 90 percent of manufacturer's recommended maximum inflation.
3. Minimum gross weight of loaded truck shall be 60,000 pounds.
4. Provide weigh slip to the Owner.

C. Perform test rolling procedure as follows:

1. Operate equipment at a rate not to exceed 3 mph to 5 mph or a comfortable walking pace.
2. Adjust speed to allow the Owner to measure any deflections and areas of rutting.
3. Operate test rolling equipment in a pattern so that affected areas are loaded with at least one pass.
4. After test rolling, check subgrade for conformance to Plans, and correct any surface irregularities. Re-shape subgrade within tolerances specified.

D. Test Rolling Evaluation:

1. Rutting up to 1 inch is acceptable.
2. Rutting in excess of 1 inch but not more than 6 inches, shall be considered a failure and requires reworking soil and compaction to required density.
3. Deflection, (pumping) up to 1 inch is acceptable.
4. Deflection in excess of 1 inch but not more than 2 inches shall be acceptable if there is not substantial cracking or lateral movement of soil.
5. Deflection in excess of 2 inches but not more than 6 inches shall be considered a failure, and requires reworking soil and compaction to required density.

6. Rutting and deflection in excess of 6 inches will require review and recommendation for corrective action by the Owner.

7. After remedial work is performed, a final test roll shall be performed upon completion of work.

8. If remedial work is performed as directed, second test roll may be waived at discretion of the Owner.

E. When performing Subgrade Preparation, if it is determined that the material composition is acceptable and that excessive moisture has rendered the material unstable, the Contractor shall perform air drying techniques as per Article 301.04 of the IDOT Standard Specifications before consideration of removal of the material.

3.03 EXCAVATION AND ON-SITE DISPOSAL OF UNSUITABLE MATERIAL

A. Work contained under this pay item shall include the excavation, removal, loading hauling and on-site spreading of material deemed unsuitable by the Owner.

B. Prior to the commencement of this work, the Owner shall determine the exact dimensions, depths and quantities to be removed. Failure of the Contractor to have the work area properly inspected, approved and quantified by the Owner will result in the denial of payment for such work.

C. All excess excavated soils and spoil materials shall be relocated to an on-site area and spread as directed by the Owner. This work shall include any stripping, stockpiling and respreading of topsoil at the deposition area. Should the Owner require that material be removed from the site, it shall be paid for under a separate pay item if so included in the Schedule of Prices.

3.04 PLACEMENT OF FURNISHED EXCAVATION

A. Work contained under this item shall include placement, compaction and testing of suitable onsite or imported furnished excavation in areas of undercut as directed by the Owner. This work shall be done in accordance with Section 205 of the IDOT Standard Specifications.

B. Compaction shall be to a minimum 95 percent of maximum density based on a Standard Proctor (ASTM D-698). Where compaction of the subgrade is required, any areas that are inaccessible to a roller shall be compacted either by other mechanical means or using a hand tamper meeting the approval of the Owner.

C. After final filling and compacting, undercut areas shall be proof rolled in the presence of the Owner.

3.05 GEOTEXTILE GROUND STABILIZATION

A. This work shall consist of furnishing all materials, equipment and labor for the installation of geotechnical fabric over soils which will have trails, pavements or structures. Geotechnical Fabric is to be installed in locations as directed and approved by the Owner.

B. Geotechnical fabric is to be installed as a full width continuous sheet whenever possible and roll ends shall be overlapped a minimum of 4 feet.

3.06 PLACEMENT OF POROUS GRANULAR EMBANKMENT (PGE), CA-1

A. This work shall consist of furnishing all materials, equipment, and labor for the installation of Porous Granular Embankment (PGE). PGE shall be placed at the locations, dimensions and depths as directed by the Owner.

B. This item shall be used as replacement for unstable and unsuitable material that has been removed. PGE shall be furnished, placed and consolidated or compacted to the satisfaction of the Owner and in accordance with Section 207 of the IDOT Standard Specifications.

END OF SECTION 03110

SECTION 03120
FINISH GRADING AND TOPSOIL

1. GENERAL

1.01 DESCRIPTION

A. Work under this section may include:

1. Furnished topsoil placement and finish grading for revegetation of select areas of the work site.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 05200 – Trails
3. Section 09300 – Turf Seeding
4. Section 09310 – Native Seeding

2. PRODUCTS

2.01 FURNISHED TOPSOIL

A. After existing on-site topsoil has been respread, the Owner will determine if additional furnished topsoil is required. That decision will be based on quality and quantity of existing topsoil.

B. Topsoil shall consist of natural loam, sandy loam, silty loam, silty clay loam, or clay loam humus-bearing soils which are fertile and friable, adapted to the sustenance of plant life and originating from the A soil horizon of prairie and / or agricultural lands. Topsoil shall be free of stones, roots, trash, debris, contaminants, residual herbicides and other materials deleterious to plant growth. A sample and a soil analysis test by an independent lab shall be submitted along with the source location of the material. Topsoil testing shall indicate a pH between 6.0 and 8.0 and an organic content of not less than 4%. For Pulverized Topsoil, the following particle gradation is required:

Sieve Designation	Percent Passing
1″ screen	100
¼″ screen	97 – 100
No. 10 US Sieve Series	95 – 100
No. 140 US Sieve Series	60 – 90

2.02 COMPOST

A. Compost for use as soil amendments, planting mixes and for topdressing shall be 100% organic decomposed plant materials derived from grass clippings, leaves, small brush, silage, hay or other appropriate feedstock. The compost shall originate from a facility approved by the Illinois Environmental Protection Agency. The component proportions and processing methods shall be strictly managed to produce a product that meets or exceeds the EPA Performance Standards for General Use Compost and for End-Product Compost Derived from Landscape Waste and the U.S. Composting Council Seal of Testing Assurance Program. The compost shall be entirely free of inorganic materials, fuels, poisons

or other contaminants. The end product shall be mature, stable, weed free and produced by aerobic decomposition through temperature management and appropriate remixing schedules. It shall be screened to result in a maximum ½″ particle size. The compost shall have a pH of between 6.0 and 8.0.

B. Provide full laboratory test results and a product sample for approval.

3. EXECUTION

3.01 GENERAL

A. Provide all filling, spreading, cleaning and finish grading to achieve the lines, grades and minimum thickness indicated in the Contract Documents. Placement of onsite topsoil and furnished topsoil (if required) shall conform to Section 211 of the IDOT Standard Specifications. All finish grading shall be done in a manner that provides positive drainage.

B. A significant amount of handwork is required to ensure a clean and smooth horizontal trail edge and a smooth transition between the edge of the trail and the adjacent grassed areas. Areas immediately adjacent to the trail shall be of the same or a lesser elevation than the edge of trail in order to allow water to flow off the trail surface as quickly and efficiently as possible.

C. Unless specifically noted, all grades shown are finished grades. Elevations at points between elevations or contours are to be determined by uniform slopes between given grades or elevations, or between such figures and existing grades. Perform all finish grading required to attain the elevations indicated on the Plans. Grading tolerance shall be plus or minus one tenth (0.1) of a foot for all finish grading.

3.02 TOPSOIL EXCAVATION AND PLACEMENT (VARIOUS DEPTHS)

A. When indicated in the Contract Documents, topsoil shall be sourced from on-site locations. This work shall include the excavation, hauling and placement of topsoil from on-site location to areas requiring restoration or additional topsoil. Topsoil may be sourced from locations being excavated for the construction of proposed roads, trails, concrete pavements and structures or other borrow locations determined by the Owner. Topsoil depths for excavation vary by location and shall be determined from the geotechnical (boring) data. Excavated topsoil shall be transported to fill areas and placed at the depths required to achieve the proposed finish elevations. This work shall include all related grading and trimming of adjacent areas to assure positive drainage across the fill areas. Finish Grading and other final restoration work shall not be included in this Pay Item.

3.03 EXCESSIVE COMPACTION

A. Topsoil spreading and finish grading shall not commence on excessively compacted soils. Soils which have been compacted by construction activities, especially haul routes, shall be relieved of the excessive compaction by mechanical means such as use of a chisel plow, disc and rake which can physically break up the soil to the full depth of compaction. This work shall not be paid for separately but shall be considered incidental to Site Grading.

3.04 FINISH GRADING

A. Finish grading shall include all soil fracturing, blending and shaping to create a smooth and uniform surface for planting. Depressions from settlement shall be filled as needed. Transitions in grade shall be gradual and rounded. All surfaces shall be finished to provide adequate drainage. Create grades which drain away from structures at a minimum of 1/4-inch per foot for 10 feet.

B. The respreading of topsoil which has been stripped and stockpiled from graded areas is not included in this section. All respreading of stockpiled topsoil shall be paid for under the pay item Site Grading. Only the final finish grading of on-site topsoil is included in this section.

C. All areas of the work site indicated for planting, seeding or revegetation, and additionally all previously vegetated areas that have been disturbed, construction access, staging, stockpile and storage areas, borrow sites, disposal areas and any other bare soil areas requiring restoration shall be finish graded.

D. No soil shall be placed or worked while muddy or frozen.

E. When complete, the surface of the topsoil shall be free from rocks and debris greater than one inch in diameter and soil clods greater than 2 inch diameter. Areas adjacent to paving shall be trimmed of all aggregate base beyond the specified width. <u>If surface debris cannot be adequately cleaned manually, the Contractor shall utilize a dedicated mechanical rock and debris collection attachment for motorized equipment.</u>

F. New finish graded areas shall be protected from traffic and erosion. All settlement or washing away that may occur from any cause prior to or after seeding and soil stabilization shall be repaired and finish graded again to the required elevations, shapes and slopes at no additional cost to the Owner.

3.05 FURNISHED TOPSOIL

A. This work shall include all materials, equipment, and labor to provide, place, spread and fine grade furnished topsoil to the minimum thickness as specified in the Contract Documents.

B. Before placement of topsoil, the Contractor shall assure that the existing soil surface is not overly compacted or glazed and free from debris. If such conditions exist, the Contractor shall clean, scarify and/or till the surface to a minimum depth of 8 inches before the placement of topsoil. Place and spread the topsoil to the minimum thickness as specified and in a uniform layer. Do not excessively compact the topsoil after placement.

C. If required, furnished topsoil shall be fine graded as described above.

3.06 COMPOST SOIL AMENDMENT (DEPTH)

A. Compost shall be spread evenly at the required depth and tilled into the existing soil to a minimum depth of 8 inches using a powered mechanical tiller or tiller attachment. The surface shall then be raked and graded to a smooth surface profile.

<u>END OF SECTION 03120</u>

SECTION 03200
CULVERT CROSSINGS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section may include:

1. Installation of culvert pipe, bedding, backfill, inlets, end sections and riprap at the outfall of the culvert.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 03110 – Ground Stabilization
4. Section 03120 – Finish Grading and Topsoil
5. Section 05100 – Subgrade Preparation
6. Section 05200 – Trails
7. Section 05300 – Roads and Parking

2. PRODUCTS

2.01 CORRUGATED HIGH DENSITY POLYETHYLENE PIPE

A. Corrugated High Density Polyethylene (HDPE) pipe shall be constructed in accordance with AASHTO Specification M252 and M294, as applicable, or ASTM F2306. HDPE pipe shall be black, corrugated on the exterior with smooth walled interior. Pipe diameters and lengths shall be as specified on the Construction Drawings, and appropriately sized flared end sections shall be installed at each end of the pipe. HDPE pipe shall be Advanced Drainage Systems (ADS) N-12, or approved equal.

B. Joints for Corrugated HDPE shall be elastomeric joints in conformance with ASTM F477 and Manufacturer's Specifications.

2.02 REINFORCED CONCRETE PIPE (RCP)

A. Reinforced concrete pipe shall conform to AASHTO M 170 or ASTM C76. Pipe class shall be Class II unless otherwise indicated. Pipe diameters and lengths shall be as specified on the Plans.

B. Joints shall include a trowel applied bituminous mastic compound in accordance with Section 1055 of the IDOT Standard Specifications.

2.03 PRECAST RCP FLARED END SECTIONS (FES)

A. Precast RCP FES shall conform to the applicable requirements of AASHTO M 170 or ASTM C76. FES sizes shall be as specified on the contract drawings.

2.04 CORRUGATED STEEL PIPE (CSP)

A. CSP shall be constructed in accordance with AASHTO Specifications M 218 and M 36. Pipe diameters and lengths shall be as specified on the Plans, and appropriately sized flared end sections shall be installed at each end of the pipe.

B. Pipe diameters will be one size larger than HDPE pipe when a connection between two dissimilar pipes is to be made. Joints for the connection of HDPE to CSP shall be a double wide reinforced, rubberized mastic, external sealing band coupler per the manufacturer's specifications.

1. The dissimilar pipe coupler shall be:

a. MarMac Dissimilar Pipe Couplers ("DP Couplers")

b. or approved equivalent meeting the criteria listed above.

C. Pipe joint coupling bands shall be provided meeting the pipe manufacturer's recommendations. Coupling bands shall be installed to provide straight alignment of the connecting pipe ends. The bands shall be positioned to overlap adjacent pipes equally. The coupling bands shall be corrugated to match the corrugations of the pipe section ends being connected.

2.05 METAL FLARED END SECTIONS (MES)

A. This specification covers metal end sections used on the inlet and outlet ends of CSP and HDPE pipe. The galvanized material used in the fabrication of the end sections shall conform to the applicable material requirements of AASHTO M 218 or ASTM A 929. All fabrication of the product shall occur within the United States of America. The end sections shall be manufactured to show careful finished workmanship. There shall be no loosely formed seams or ragged shear edges. The markings on the sheets as received from the steel supplier shall be legible. The metallic coating on the end section shall not be bruised, broken or otherwise damaged. If there is damage to the coating it shall be repaired in accordance with ASTM A 780.

B. Metal end sections will match the diameter of the CSP extension when being used with HDPE pipe. Where metal end sections are connected directly to HDPE pipe, the metal end section will typically be one diameter larger.

2.06 RIPRAP

A. The riprap shall be natural field stone cobbles and boulders reasonably graded from a minimum of 5 inches to a maximum of 12 inches in diameter unless specified differently on the Plans. The cobbles shall be of mixed geologic origin primarily granite, as is typically found in the Fox River basin of northern Illinois and throughout Wisconsin. Crushed limestone riprap is not acceptable and will not be approved. Samples of the specified material shall be submitted for approval to the Owner prior to delivery and placement. Riprap shall include the appropriate geotextile fabric when specified on the Plans.

2.07 GEOTEXTILE FABRIC

A. Geotextile fabric underlayment for riprap shall be non-woven; needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects.

B. The geotextile fabric shall be:

1. Thrace-LINQ GTF-225EX

2. or approved equivalent meeting the following minimum criteria:

Grab Tensile Strength	215 lbs.
Elongation	50%

Puncture (CBR)	600 lbs.
Permittivity	1.3 sec^{-1}

2.08 BACKFILL AND BEDDING, CA-6, TYPE B

A. Backfill material shall be CA-6, Type B, in conformance with Article 1004.01 of the IDOT Standard Specifications except as noted below. The source of the material shall be approved by the Owner prior to delivery. Samples of the proposed material shall be submitted to the Owner for approval prior to delivery and installation.

B. Backfill beneath and within 2 feet of aggregate trail or paved surfaces shall consist of trench backfill meeting the requirements Section 208 of the Standard Specifications.

3. EXECUTION

3.01 GENERAL

A. Culvert crossing material shall be as designated on the Plans.

B. Contractor shall install and maintain erosion control measures including the installation of ditch checks and silt fence at culvert crossing locations as shown on the Plans prior to the commencement of any construction activities at that culvert crossing location. Ditch checks and silt fence shall be in accordance with the Construction Drawings.

C. Contractor shall submit Shop drawings and provide details for all items required to complete the work at each culvert crossing for review and approval by the Owner prior to the commencement of any construction activities.

3.02 SUBGRADE PREPARATION

A. Existing topsoil within culvert crossing area shall be stripped and stockpiled, subgrade shall be excavated to the required lines and grades as shown on the Plans and to match the existing ditch bottom slope. The subgrade shall be compacted to a minimum of 95% density based on a Standard Proctor (ASTM D-698). If the required compaction density cannot be achieved due to the presence of unsuitable material, the material shall be excavated and replaced with either compacted suitable on-site fill, Porous Granular Embankment (PGE) or Trail Embankment and Geotechnical Fabric as approved by the Owner (See Section 03110 Unsuitable Materials).

3.03 CULVERT INSTALLATION

A. Culvert installation shall conform to Article 542.04 of the IDOT Standard Specifications, applicable manufacturer’s recommended installation procedures and the Plans.

B. Backfill material shall be placed and compacted in uniform lifts of a maximum loose thickness of 6 inches.

C. Bedding and haunching shall be in accordance with Manufacturers’ requirements.

3.04 RIPRAP

A. Riprap shall be installed at the locations and in the dimensions shown on the Plans. The riprap shall be placed to a depth shown on the Plans and placed on an approved Geotextile Filter Fabric.

B. Riprap shall be placed in accordance with Section 281 of the IDOT Standard Specifications.

3.05 CULVERT DITCHING

A. Ditching shall be provided upstream and downstream of each culvert to provide adequate drainage along flow path of culvert. Ditching shall match existing drainage way in slope and dimension. All flow obstruction shall be removed to provide a clear flow path.

3.06 END TREATMENTS

A. Installation of end treatments shall conform to Articles 502.10 and 540.07 of the IDOT Standard Specifications, applicable manufacturer's recommended installation procedures and shall be the size, type and at the locations as shown on the Plans.

END OF SECTION 03200

SECTION 03300
DRAINAGE STRUCTURES

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Installation of storm sewer structures (sewers, pipes, inlets, manholes, catch basins, etc.) and associated frames and grates.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 02400 – Soil Erosion and Sediment Control
2. Section 03100 – Earthwork and Grading
3. Section 05100 – Subgrade Preparation

2. PRODUCTS

2.01 PRECAST CONCRETE MANHOLES, OUTLET CONTROL STRUCTURES, CATCH BASINS AND INLETS

A. Precast manholes and structures shall conform to ASTM C478, Section 602 and Article 1042.10 of the IDOT Standard Specifications. Design dimensions shall be as shown on the Plans.

2.02 CAST IRON FRAMES AND GRATES

A. Castings shall conform to the requirements of gray iron castings as specified in ASTM A 48 or ductile iron castings as specified in ASTM A 536 of the type and size shown on the Plans.

2.03 CONCRETE SEWER PIPE

A. Reinforced Concrete Sewer Pipe

1. Reinforced Concrete Sewer Pipe shall conform to Section 550 and Article 1042.06 of the IDOT Standard Specifications and ASTM C76, and shall be of the nominal diameter and class indicated on the Plans.

B. Joints for Concrete Sewer Pipe

1. Joints for concrete sewer pipe shall be rubber ring joints conforming to ASTM C443 or cold applied asphaltic compound joints.
2. Rubber gaskets shall consist of a special rubber designed to resist hardening and disintegration from contact with sewage and water over long periods of time. The ring shall fit snugly over the spigot end of the pipe. Provide rubber cement and bituminous or other coating as required to insure a proper joint.
3. Material for cold applied asphaltic compound joints shall be Ram-Nek as manufactured by K. T. Snyder Company, Houston, Texas; Ropax Packing and Kalktite Sewer Joint Compound as manufactured by Prestite Engineering Company; or equal.

4. Other joints for concrete sewer pipe; such as mortar or die-cast bituminous joints, may be used only if specifically approved by the OWNER.

2.04 POLYVINYL CHLORIDE PIPE STORM SEWER/FIELD TILE/DRAIN LINE

A. Polyvinyl Chloride (PVC) pipe and fittings shall conform to ASTM D2241 and have a Standard Dimension Ratio (SDR) of 26. Pipe diameters and lengths shall be as specified on the Plans.

B. Joints for PVC pipe and fittings shall be furnished with elastomeric gasket joints conforming to ASTM F477.

C. Cleanouts/Observation structures shall be constructed with fittings of the same materials and diameter as the mainline sewer.

D. Connection to existing sewers shall be made with manufactured fittings where possible. Stainless steel non-shear couplings shall be utilized at locations where connection is made to a non-standard pipe size/material after approval from the OWNER.

2.05 POLYVINYL CHLORIDE PIPE UNDERDRAIN

E. Polyvinyl Chloride (PVC) underdrain pipe and fittings shall conform to ASTM D3034 and have a Standard Dimension Ratio (SDR) of 35. Pipe diameters and lengths shall be as specified on the Plans.

F. Joints for PVC pipe and fittings shall be furnished with elastomeric gasket joints conforming to ASTM F477.

G. PVC underdrain pipe shall be perforated with two (2) 5/8″ diameter holes spaced at 6 inches on center longitudinally along the pipe. Holes shall be spaced at an angle of approximately 120 degrees when viewed in section view.

2.06 PERFORATED CORRUGATED HIGH DENSITY POLYETHYLENE PIPE UNDERDRAIN

A. Corrugated High Density Polyethylene (HDPE) pipe shall be constructed in accordance with AASHTO Specification M252 and M294, as applicable, or ASTM F2306. Underdrain shall conform to Article 601.02(b) (4) Article 1040.04 of the IDOT Standard Specifications. Pipe diameters and lengths shall be as specified on the Plans.

2.07 PREFABRICATED TRENCH DRAINS

A. Prefabricated trench drains shall be manufactured with SMC/GRP (sheet molding compound/glass reinforced polyester) material or polymer reinforced concrete. Each section of trench drain shall be 39.4″ in length and manufactured with a sloped invert.

B. All metal components shall be stainless steel.

C. Grates shall be stainless steel with perforated openings rated for Load Class C (light trucks) or greater, comply with ADA requirements, and lock into place.

D. Transition to different pipe materials shall be made with fittings manufactured by the same company the manufactures the selected trench drain.

E. Trench drains shall be Mea-Josam Pro-Plus 100C series or ACO KlassikDrain K100 series. Grates shall be Mea-Josam Pro-Plus Series Part No. 152781 or ACO Type 465Q

F. or Approved Equal

2.08 BACKFILL AND BEDDING, CA-6, TYPE B

A. Backfill material shall be CA-6, Type B, in conformance with Article 1004.01 of the IDOT Standard Specifications except as noted below and on the details. The source of the material shall be approved by the Owner prior to delivery. Samples of the proposed material shall be submitted to the Owner for approval prior to delivery and installation.

B. Backfill beneath and within 2 feet of aggregate trail or paved surfaces shall consist of trench backfill meeting the requirements Section 208 of the Standard Specifications.

3. EXECUTION

3.01 STORM DRAINAGE STRUCTURES (MANHOLES, OUTLET CONTROL STRUCTURES)

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations of the installation of the storm drainage structures as specified and shown on the Plans.

B. The work shall meet the applicable sections of Division V of the Standard Specifications for Water and Sewer Construction in Illinois, latest edition.

C. Contractor to install specified sediment control protection device or measures upon completion of installation of storm drainage structure.

3.02 STORM SEWER / FIELD TILE / DRAIN LINE

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations of the installation of the Storm Sewer of the diameter, material, and length as specified and shown on the Plans, including fittings for changes in directions or materials, and cleanouts.

B. The work shall meet the applicable sections of Division V of the Standard Specifications for Water and Sewer Construction in Illinois, latest edition and Article 550.06-08 of the IDOT Standard Specifications.

C. All lengths of pipe shall be dimensioned accurately to measurements established at the site, and shall be worked into place without springing or forcing.

D. The Contractor shall cut all pipe and drill all holes that may be necessary. Cut sections of pipe shall be reamed or filed to remove all burrs. The pipe interior and joints shall be thoroughly cleaned before being installed and kept clean during construction.

E. All changes in direction shall be made with fittings or approved joint deflection. Bending of pipe is prohibited.

F. Any transition from one pipe size to another shall be made with a reducing fitting. Reducing bushings are prohibited except where specifically indicated on the Plans or approved by the Owner.

G. Contractor to install specified sediment control protection device or measures upon completion of installation of storm drainage structure.

H. Pipe shall be installed true to the lines and grades from reference stakes set by the Contractor by the use of an adjustable pipe laser.

I. Pipe shall be laid progressively up grade, with bell upstream, in a manner to form close, concentric joints with smooth bottom inverts.

3.03 UNDERDRAIN

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations of the installation of the underdrain of the diameter, material, and length as specified and shown on the Plans.

B. The work shall meet the applicable sections of Division V of the Standard Specifications for Water and Sewer Construction in Illinois, latest edition and Article 601.01-05 of the IDOT Standard Specifications.

C. All lengths of pipe shall be dimensioned accurately to measurements established at the site, and shall be worked into place without springing or forcing.

D. The Contractor shall cut all pipe and drill all holes that may be necessary. Cut sections of pipe shall be reamed or filed to remove all burrs. The pipe interior and joints shall be thoroughly cleaned before being installed and kept clean during construction.

E. All changes in direction shall be made with fittings or approved joint deflection. Bending of pipe is prohibited.

F. Any transition from one pipe size to another shall be made with a reducing fitting. Reducing bushings are prohibited except where specifically indicated on the Plans or approved by the Owner.

3.04 SEPARATION OF NON-POTABLE AND POTABLE WATER LINES

A. Horizontal Separation

1. Whenever possible, existing and proposed potable watermains shall be separated at least 10 feet horizontally from any existing or proposed sewer or drain line.

2. Should local conditions prevail which would prevent a lateral separation of 10 feet, a watermain may be laid closer than 10 feet to, or in the same trench as, a storm or sanitary sewer provided the main is laid in a separate trench or on an undisturbed earth shelf located to one side of the sewer and at such an elevation that the bottom of the watermain is at least 18 inches above the top of the sewer.

B. Vertical Separation

1. Whenever potable watermains and non-potable lines cross or run parallel within 10 feet, the watermain should be laid at such an elevation that the bottom of the watermain is 18 inches above the top of the drain or sewer. This vertical separation should be maintained for that portion of the watermain located within 10 feet, horizontally, of any sewer or drain crossed, said 10 feet to be measured as the normal distance from the watermain to the drain or sewer.

2. Where it is necessary for the watermain to pass under a sewer or drain line, the top of the watermain shall be 18 inches below the bottom of the sewer or drain line, and the watermain installed inside a casing pipe. This casing pipe shall extend each side of the crossing until the horizontal distance from the end of the casing to the sewer or drain line is at least 10-feet.

3. In making such crossings, it is preferable to center a length of watermain pipe over the sewer to be crossed so that the joints will be equal distance from the sewer and as remote therefrom as possible. Means to support the non-potable lines to prevent their settling and breaking the watermain shall also be provided.

C. Exceptions

1. If it is impossible to obtain proper horizontal and/or vertical separation as stipulated in A.1. or B.1., both the watermain and sewer shall be constructed of watermain grade **[ductile iron]** pressure pipe for a distance of at least 10 feet on each side of the crossing. Both pipes shall be pressure tested to assure watertightness before backfilling.

D. Water Service Lines

1. The horizontal and vertical separation between water service lines and all sanitary sewers, storm sewers and any drain should be the same as for watermains, as detailed in Paragraphs A and B, except when minimum horizontal and vertical separation cannot be maintained. Copper is to be used for water service lines.

3.05 PREFABRICATED TRENCH DRAINS

A. Trench drains shall be installed at locations shown and to the orientation and grades specified on the Plans and/or at additional locations as specified by the Owner.

B. Trench drains shall be wet-set in a concrete envelope with at least 6-inches on concrete on all sides.

C. Trench drain shall be installed in accordance with the selected manufacturer’s recommendations and details.

3.06 FIELD TILE REPLACEMENT

A. Pipe shall be installed in accordance with 3.02 – STORM SEWER from this section.

B. Where connection is made to an existing filed tile that flows off-site or conveys flow from off-site, an observation structure shall be installed.

C. Replacement shall follow the same general alignment of the existing tile such that the existing tile is removed along the length of replacement.

END OF SECTION 03300

SECTION 04100
UTILITY SLEEVES

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Furnishing and installing underground pipe raceways and utility sleeves for utility services.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05200 – Trails
2. Section 05300 – Roads and Parking
3. Section 05400 – Concrete Pavement

2. PRODUCTS

2.01 PIPE

A. Pipe sleeves for utilities shall be Schedule 40 PVC Conduit of the diameter shown on the Plans.

2.02. TRACER WIRE

A. Tracer wire shall be #12 AWG plastic coated solid wire suitable for direct burial.

2.03 TRENCH BACKFILL AND BEDDING

A. Backfill material shall match that which is required by the surface type. Backfill material at locations of paved surfaces such as trails, roads, parking areas and concrete surfaces shall be CA-6, Type B, in conformance with Article 1004.01 of the IDOT Standard Specifications unless noted otherwise on the plans. Backfill material in landscape areas shall be the existing soils at the pipe location.

3. EXECUTION

3.01 GENERAL

A. Utility sleeves shall be installed at the locations and at the depths shown on the Plans. Tracer wire shall be firmly attached to the pipe sleeves prior to burial.

3.02 TRENCH BACKFILL AND BEDDING

A. Trench backfill and bedding for utility sleeves under pavement shall be compacted to match the pavement base aggregate, typically to a minimum of 95% density based on a Standard Proctor (ASTM D-698). At locations in landscape areas, the topsoil at the pipe location shall be separated from other soils below and then respread as the surface layer during backfill.

3.03 PVC CONDUIT FITTINGS

A. All fittings shall be Schedule 40 PVC made specifically electrical conduit. All fittings for turns shall be large radius wide sweep type. End caps shall be provided and attached to all pipe ends.

END SECTION 04100

SECTION 04110
DIRECTIONAL DRILLING

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Directional Drilling for water, electric and misc. utility lines.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 04200 – Electric Service and Distribution
2. Section 04310 – Water Distribution

1.02 SUBMITTALS

A. Directional Drilling Contingency Plan.

2. PRODUCTS

2.01 DRILLING FLUID

A. Drilling fluid shall be composed of clean water and appropriate clay additives. Water shall be from an authorized source with a pH of 8.5-10. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No potentially hazardous material may be used in drilling fluid.

3. EXECUTION

3.01 SAFETY

A. Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Owner.

3.02 PIPE

A. Pipe materials shall be of the type listed in each section above.

3.03 PILOT HOLE

A. Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100 feet. In the event that pilot does deviate from bore path more than 5% of depth in 100 feet, Contractor will notify Owner and the Owner may require Contractor to pullback and re-drill from the location along bore path before the deviation.

3.04. INADVERTENT RETURN

A. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120

seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor will cease operations and notify Owner. Contractor shall provide sufficient silt fence, vacuum trucks or other means required to contain all mud and/or remove it from the site. No additional compensation will be allowed for containment or cleanup of mud fractures.

3.05. REAMING

A. Upon successful completion of pilot hole, Contractor will ream bore hole to a minimum of 25% greater than outside diameter pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

3.06. PULL BACK

A. After successfully reaming bore hole to the required diameter, Contractor will pull the pipe through the bore hole. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe. In front of the pipe will be a swivel and reamer to compact bore hole walls. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, Contractor will not apply more than the maximum safe pipe pull pressure at any time. The Contractor shall install a test section of pipe, which will fail prior to damaging the pipe or joint restraint, attached to the front of the pull-back pipe. At no time shall the pull-back force exceed the maximum forces specified by the pipe or joint restraint manufacturer for the size and/or dimension ratio of pipe being installed.

END SECTION 04110

SECTION 04200
ELECTRICAL SERVICE AND DISTRIBUTION

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Furnishing and installing conduit, ducts, and duct accessories for direct-buried conduit.
2. Furnishing and installing handholes and boxes.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 04100 – Utility Sleeves
2. Section 04300 – Water Wells
3. Section 04400 – Sanitary Systems

1.02 DEFINITIONS

A. RNC: Rigid nonmetallic conduit.

1.03 SUBMITTALS

A. Product Data, for the following:

1. Duct-bank materials, including separators and miscellaneous components.
2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Accessories for manholes, handholes, boxes, and other utility structures.
4. Warning tape.
5. Warning planks.

B. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:

1. Duct entry provisions, including locations and duct sizes.
2. Reinforcement details.
3. Frame and cover design and manhole frame support rings.

C. Shop Drawings for Handholes and Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:

1. Duct entry provisions, including locations and duct sizes.
2. Cover design.

D. Product Certificates: For concrete and steel used in precast concrete handholes, as required by ASTM C 858.

1.04 QUALITY ASSURANCE

A. Comply with NFPA 70.

1.05 COORDINATION

A. Coordinate layout and installation of ducts, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.

B. Coordinate elevations of ducts and duct-bank entrances into handholes, and boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Owner.

2. PRODUCTS

2.01 CONDUIT

A. Rigid metallic conduit shall be standard hot-dipped galvanized mild rigid steel. Conduit shall have galvanized threads. Each length shall be provided with a coupling and ends without couplings shall be furnished protected with a suitable covering. All bends in conduit one and one-quarter inch (1 ¼") in size and larger shall be made with factory manufactured elbows. Rigid metallic conduit shall be equal to Republic Galvite Rigid Steel Conduit.

B. Intermediate metal conduit shall be hot-dipped galvanized steel tubing with galvanized threads equal to IMC manufactured by Allied Tube and Conduit Corporation.

C. Electrical metallic tubing shall be standard galvanized E.M.T. equal to Republic Electrinite E.M.T.

D. Flexible metal conduit shall be Triangle Conduit and Cable Company or equal, spirally wound galvanized steel.

E. Liquidtight flexible metal conduit shall be equal to American Brass "Sealtite" Type UA, light gray color.

F. Rigid PVC Conduit

1. Codes and standards shall conform with U.L.-651 and NEMA TC-2 and shall be listed and labeled by the Underwriters Laboratories Inc.
2. PVC conduit and fittings shall be equal to Carion "Plus 40" systems. They shall be de-signed for use underground, shall be non-conductive and shall assure a safe system. Conduits and fittings shall be non-corrosive, impervious to most chemicals, provide lower expansion and contraction features, and shall be suitable for direct earth burial or encasement in concrete.
3. PVC conduit and fittings shall be rated for 90 degree centigrade conductors or cable, and for use in direct sunlight.

2.02 CONDUIT FITTINGS

A. Rigid Metallic Conduit Fittings.

1. Conduit terminations at cabinets and boxes shall be rigidly secured with galvanized lock nuts and bushings as required by code.

a. Terminations for rigid heavy wall steel and IMC conduit shall be liquid-tight, made of steel with insulated throats and double locknuts or rigid no thread compression type.

b. Terminations for E.M.T. shallbe rain tight compression type made of steel. Male fittings are to have insulated throats.

c. Terminators for flexible steel conduit, including connectors and combination couplings, shall be insulated.

d. Indentor, set screw cast or drive on type couplings or connectors are NOT acceptable.

e. Approved manufacturers: Raco, Steel City, T & B, Midwest or Appleton.

2. Running threads will not be permitted. Where required, use manufactured thread-less couplings. Setscrew and split type connectors are not acceptable.

3. Provide expansion deflection fittings in all metallic conduit runs where crossing expansion joints in a structural wall or slab.

4. Conduits passing through exterior foundation walls of the building shall be equipped with wall entrance seals, O.Z. type FSK, FSC, WSK, WSC or FST.

B. Rigid PVC Fittings.

1. Codes applicable to PVC conduit shall also apply to PVC fittings.

a. Expansion couplings equal to Carlon E945 or E955 as required.

b. Bell ends equal to Plus 80 or 40 plain bell for use with non-metallic solvent welds.

c. Standard couplings socket type for solvent cement attachment.

d. PVC rigid adapters E942 or E943 threaded to metallic systems and socket attachment by solvent cement.

C. Special Fittings.

1. Split couplings shall be O.Z. or Equal, Manufacturing Company Type SP.

2. Expansion Joints shall be O.Z. or equal, Manufacturing Company Type AX expansion joints with Type AJ bonding jumpers.

3. Pull rope shall be 3/16″ polyester strand JET LINE rope.

2.03 NONMETALLIC DUCTS AND DUCT ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Plans or a comparable product by one of the following:

1. ARNCO Corp.

2. Beck Manufacturing.

3. Cantex, Inc.
4. CertainTeed Corp.; Pipe & Plastics Group.
5. Condux International, Inc.
6. ElecSys, Inc.
7. Electri-Flex Company.
8. IPEX Inc.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT; a division of Cable Design Technologies.
11. Sporadic/AFC Cable Systems, Inc.

B. Duct Accessories:

1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
2. Warning Tape: Underground-line warning tape specified in Division 26 Section "Identification for Electrical Systems."
3. Concrete Warning Planks: Nominal 12 by 24 by 3 inches (300 by 600 by 76 mm) in size, manufactured from 6000-psi (41-MPa) concrete.
    e. Color: Red dye added to concrete during batching.
    f. Mark each plank with "ELECTRIC" in 2-inch- (50-mm-) high, deep letters.

2.04 HANDHOLES AND BOXES

A. Description: Comply with SCTE 77.

1. Color: Gray.
2. Configuration: Units shall be designed for flush burial and have **open** bottom, unless otherwise indicated.
3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
5. Cover Legend: Molded lettering, "ELECTRIC."
6. Direct-Buried Wiring Entrance Provisions: Knockouts equipped with insulated bushings or end-bell fittings, selected to suit box material, sized for wiring indicated, and arranged for secure, fixed installation in enclosure wall.
7. Retain first subparagraph below if ducts will enter enclosure through the side. Otherwise, entry will be made through an open bottom or through side openings cut in the field as specified in Part 3. Coordinate with Plans.
8. Duct Entrance Provisions: Duct-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.

9. Handholes 12 inches wide by 24 inches long (300 mm wide by 600 mm long) and larger shall have factory-installed inserts for cable racks and pulling-in irons.

B. Retain one or more of four paragraphs and associated subparagraphs below to select enclosure type(s) for areas not subject to deliberate traffic by vehicles. Coordinate selection with Part 3 "Underground Enclosure Application" Article. For enclosures with cover options, verify that selected cover is available with the load rating specified in Part 3 "Underground Enclosure Application" Article.

C. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.

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

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

3. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Plans or a comparable product by one of the following:

a. Armorcast Products Company.

b. Carson Industries LLC.

c. CDR Systems Corporation.

d. NewBasis.

3. EXECUTION

3.01 UNDERGROUND DUCT APPLICATION

A. Ducts for Electrical Feeders over 600 V and Less: RNC**,** NEMA Type [**EPC-40**]-PVC, in direct-buried duct bank, unless otherwise indicated.

3.02 EARTHWORK

A. Excavation and Backfill: Comply with Division 22 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment. n of disturbed features and areas.

B. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Turfs and Grasses" and "Plants."

D. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 01 Section "Cutting and Patching."

3.03 DUCT INSTALLATION

A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two handholes to drain in both directions.

B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1220 mm), both horizontally and vertically, at other locations, unless otherwise indicated.

C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.

D. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in ducts, including spares.

E. Direct-Buried Duct Banks:

1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.

2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 4 spacers per 20 feet (6 m) of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches (150 mm) between tiers.

3. Excavate trench bottom to provide firm and uniform support for duct bank. Prepare trench bottoms as specified in Division 22 Section "Earth Moving" for pipes less than 6 inches (150 mm) in nominal diameter.

4. Install backfill as specified in Division 22 Section "Earth Moving."

5. Install ducts with a minimum of 3 inches (75 mm) between ducts for like services and 6 inches (150 mm) between power and signal ducts.

6. Requirements in first subparagraph below exceed NFPA 70. Retain for conservative design.

7. Depth: Install top of duct bank at least 30 inches (900 mm) below finished grade, unless otherwise indicated.

3.04 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by the manufacturer.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.7-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas and trafficways, set so cover surface will be flush with finished grade

END OF SECTION 04200

SECTION 04310

WATER DISTRIBUTION

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Installation of water lines, valves and access boxes.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, include the following:

1. Section 04110 – Directional Drilling
2. Section 04300 – Water Wells
3. Section 04320 – Drinking Fountains
4. Section 04321 – Drinking Fountain Vaults

1.02 SUBMITTALS

A. Shop Drawings and Product Data

1. Submit manufacturer's certification of compliance with referenced standards.

2. PRODUCTS

2.01 WATER LINES

A. HDPE Potable water line tubing shall meet the requirements of ASTM D2737, AWWA C901 and NSF/ANSI Standards 14 and 61. Pipe dimensions shall meet Copper Tubing Size (CTS) standards. HDPE lines shall be equipped with a tracer wire and tracer wire box in accordance with the construction drawings.

B. Copper Potable water line tubing shall meet the requirements of ASTM B88 Type K. Pipe dimensions shall meet Copper Tubing Size (CTS) standards. HDPE lines shall be equipped with a tracer wire and tracer wire box in accordance with the construction drawings.

2.02 B-BOX

A. Curb stops shall be Mueller MARK II ORISEAL Curb Valve H-15154 or approved equal, having inlets and outlets matching the water lines and suitable for connections to either copper or HDPE lines as specified on the construction drawings.

B. Curb service box shall be Minneapolis Pattern Mueller H-10300 Series or approved equal.

C. The curb service box shall be installed over the curb stop per the manufacturers specifications and held in a truly vertical position until sufficient backfill has been placed to ensure permanent vertical alignment of the box. The top of the box shall be adjusted and set flush with the established ground surface grade.

3. EXECUTION

3.01 WATER LINES

A. The construction of all water lines shall be Governed by the following:

1. The "Standard Specifications for Water and Sewer Construction in Illinois", latest revision.
2. The "Illinois Administrative Code, Title 77, Part 890" the "Illinois Plumbing Code", latest revision
3. The "Illinois Administrative Code, Title 35, Subtitle F" "public water supplies", latest revision

B. Water lines shall be installed as specified on the Plans, having a minimum 5.5-ft depth of cover to the top of pipe.

3.02 B-BOX

A. All new curb stops and access boxes shall be installed in the location indicated on the Plans.

B. The curb service box shall be installed over the curb stop per the manufacturers specifications and held in a truly vertical position until sufficient backfill has been placed to ensure permanent vertical alignment of the box.

C. The top of the box shall be adjusted and set flush with the established ground surface grade.

3.03 DISINFECTION

A. Water lines shall be disinfected/chlorinated according with state and local requirements.

B. Documentation of the disinfection/chlorination shall be provided to the Owner.

END OF SECTION 04310

SECTION 04320
DRINKING FOUNTAIN

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Installation of ADA front approach drinking fountains.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 04310 – Water Distribution
2. Section 04321 – Drinking Fountain Vaults

1.02. SUBMITTALS

A. Shop Drawings and Product Data

1. Submit shop drawings of drinking fountains for approval.

2. PRODUCTS

2.01 MULTI-USE WATER FIXTURE

A. Multi-use water fixture shall be:

1. Most Dependable Fountain Model 10145 SMSS with attached hand wash station, recessed hose bib and lock door, with oven-baked powdercoated in chrome color.
2. Drinking fountain to include the options of stainless steel, SS surface mount carrier, recessed hose bib and lock door, seasonal covers for each drinking basin (3), as manufactured by Most Dependable Fountains.
3. Stainless steel pedestal - One piece weld construction with standard 304 schedule 10 stainless steel.
4. 18 gauge electro-polished stainless steel receptor bowl.
5. Bubbler Head - Stainless steel anti-squirt head (weighing a pound and a half) mounted with a lock nut and washer to prevent tampering. Lock nut pin holds bubbler in locked position to prevent twisting or turning. Design should provide a steady stream trajectory.
6. Control valve requires less than 5 lbs. to operate. Non-cartridge O-ring valve delivers steady stream of water through an adjustable valve. This valve design is to operate and function at 30 to 80 PSI. Ideal operating pressure is 60 PSI.
7. Water supply (lead free), maintenance free, reinforced nylobraid tubing that is NSF-61 certified. This tubing is not plastic. It is supplied with a ½″ MIP threaded inlet with stainless steel strainer. Union fittings at every connection. Supply line stops above grade.
8. Refer to the Contract Drawings and Section 03300 for water fountain drain line specifications and the details on the Plans.

9. Working parts to be accessible through the bowl of fountain. Supply and waste connections are through the above-grade access door. All access plates, brackets, vandal resistant bolts and screws are stainless steel.

B. As provided by:

1. MOST DEPENDABLE FOUNTAINS, INC. (800) 552-6331, (901) 867-0039, Fax (901) 867-4008 5705 Commander Dr., Arlington, TN 38002-0587, www.mostdependable.com.

2. or approved equal.

3. EXECUTION

3.01 DRINKING FOUNTAIN

A. Drinking fountain shall be installed at locations shown and to the orientation and grades specified on the Plans and/or at additional locations as specified by the Owner.

B. Drinking fountains shall be surface mounted to concrete walk using the SS surface mount carrier per manufacturers specifications. Surface mount installation to be anchored on top of existing surface concrete walk with anchor bolts through mounting plate that is welded to the fountain. Surface Mount Fountains provide an access door with vandal resistant stainless-steel screws. Surface mount carrier to be used for surface mount installation.

END OF SECTION 04320

SECTION 04321
DRINKING FOUNTAIN VAULT

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Installation of water lines, fittings, and valves
2. Drain lines
3. Drinking fountain vaults, construction and accessories

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 04310 – Water Distribution
2. Section 04320 – Drinking Fountain

1.02. SUBMITTALS

A. Shop Drawings and Product Data

1. Submit shop drawings of vault, manhole steps, frames and lids for approval.
2. Submit manufacturer's certification of compliance with referenced standards.

2. PRODUCTS

2.01 WATER LINES AND VALVES

A. All piping from B-Box to vault, within vault, and to drinking fountain shall be copper water tube, Type K, soft temper, for underground service conforming to ASTM B-88 and B-251. The pipe shall be marked with manufacturer's name or trademark and a mark indicative of the type of pipe. The outside diameter of the pipe and minimum weight per meter (foot) of the pipe shall not be less than that listed in ASTM B-251, Table 11. Fittings shall not be “push-on” type.

B. Brass ball valves within vault shall be provided as specified on the Plans.

2.02 DRAIN LINES

A. Drain line from drinking fountain through wall of drinking fountain vault shall be 4″ PVC, SDR 26 conforming to ASTM D-3034, with gasket joints conforming to ASTM D-3212.

2.03 GENERAL

A. Concrete for vault shall have minimum 4,000 PSI compressive strength at 28 days.

B. Welded wire fabric shall conform to ASTM Al85. As a minimum, use 4 x 4 - W4 x W4 welded wire fabric unless structural requirements indicate otherwise.

2.04 VAULT BASES

A. Bases shall be one-piece precast base sections consisting of integrally cast slab and bottom ring section.

B. Bottom ring diameter shall be as indicated on the Plans.

2.05 VAULT RISERS

A. Risers shall be of the following types, unless otherwise indicated on the Plans:

1. Precast Reinforced Concrete Riser Sections - ASTM C478.

B. Riser diameter shall be as indicated on the Plans.

C. Gaskets for seating precast sections shall be preformed gasket joint strips conforming to Fed. Spec. SS-S-00210, Type I, Rope Form, or Kent Seal Mastic.

2.06 VAULT CONES AND TOPS

A. Unless otherwise indicated on the Plans, cone top sections shall be precast concrete, eccentric type with 24-inch diameter top opening conforming to ASTM C478.

B. Where indicated on the Plans, provide 8-inch (minimum) thickness flat slab tops with eccentric 24-inch diameter opening.

2.07 VAULT FRAMES AND LIDS

A. Provide nominal 24-inch diameter cast iron frames and lids, of the types specified on the Plans. The frame shall have at least one concealed pick hole. Watertight frames and lids, if indicated on the Plans, shall have machined bearing surfaces, resilient gaskets, cap screws, and recessed lid lifting devices.

B. Structures shall have frame and covers as noted on the Plans.

2.08 STEPS

A. Steps shall be in accordance with local, state and federal regulations. Steps shall be of the type required for the method of construction selected and shall be cast in place. Steps shall be 12-inches minimum width and shall be plastic coated steel. The minimum allowable design live load for steps shall be a single load of 300 lbs. concentrated at the point which will cause maximum stress on the member. The steps shall be provided with a depth ring or plate a minimum of 3-inches from the embedded end of the leg to provide for uniform setting depth of all steps. The embedded end of each leg shall be formed in such a way to provide positive anchoring of the step. Steps shall have non-slip treads which project a minimum of 4-inches from the manhole wall. Treads shall be designed so that the foot cannot slip off the end of the step.

2.09 EXTERIOR COATINGS

A. Outside surface of manholes and valve vaults (bases, risers, and cones) shall be water proofed with two coats coal tar epoxy.

2.10 EXTERNAL SEALING SYSTEM

A. All manhole riser joints are to be sealed with an external sealing system consisting of extruded rolls of EPDM rubber with mastic on both edges of one side.

B. Thickness to be 60 mil and mastic shall be a non-hardening butyl rubber sealant.

C. Materials to meet specifications ASTM C923, ASTM C443 and ASTM F477.

D. Product to be E Z Stick or approved equal.

2.11 ADJUSTING RINGS

A. All castings shall be raised using wire reinforced precast concrete adjusting rings.

2.12 BACKFILL AND BEDDING, CA-6, TYPE B

A. Backfill material shall be CA-6, Type B, in conformance with Article 1004.01 of the IDOT Standard Specifications except as noted below. The source of the material shall be approved by the Owner prior to delivery. Samples of the proposed material shall be submitted to the Owner for approval prior to delivery and installation.

B. Backfill beneath and within 2 feet of aggregate trail or paved surfaces shall consist of trench backfill meeting the requirements of Section 208 of the Standard Specifications.

3. EXECUTION

3.01 GENERAL

A. The construction of all water and drain lines shall be Governed by the following:

1. The “Standard Specifications for Water and Sewer Construction in Illinois”, latest revision.

2. The “Illinois Administrative Code, Title 77, Part 890”

3. The “Illinois Plumbing Code”, latest revision

4. The “Illinois Administrative Code, Title 35, Subtitle F” “public water supplies”, latest revision

3.02 WATER LINES

A. Water lines shall be installed as specified on the Plans, having a minimum 5.5-ft depth of cover to the top of pipe, except for riser pipes within vault.

3.03 DRAIN LINES

A. Drain lines shall include piping from drinking fountain connection through vault, and extend through vault wall a minimum of 5-feet.

3.04 DRINKING FOUNTAIN VAULTS

A. Precast concrete rings and reinforced concrete pipe sections shall be laid so that the axis of the manhole is vertical. Gaskets for riser joints shall be installed in accordance with the manufacturer's recommendations.

B. Steps shall be installed in all structures unless otherwise indicated. Steps shall be plumb and easily accessible from top openings, and shall be provided at 12-inches on centers.

C. Unless otherwise indicated on the Plans, set castings at finished grade.

END OF SECTION 04321

SECTION 05100
SUBGRADE PREPARATION

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Final preparation of the subgrade for trails, roads and parking, misc. pavements, and structures.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 03110 – Ground Stabilization
3. Section 05200 – Trails
4. Section 05300 – Roads and Parking
5. Section 05400 – Concrete Pavement

2. PRODUCTS

2.01 GEOTEXTILE FOR GROUND STABILIZATION

A. Geotextile fabric shall be non-woven, needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects.

B. The geotextile fabric shall be:

1. Thrace-LINQ 225EX
2. or approved equivalent meeting the following minimum criteria:

Grab Tensile Strength	215 lbs
Elongation	50%
Puncture (CBR)	600 lbs
Permittivity	1.3 sec^{-1}

3. EXECUTION

3.01 GENERAL

A. Subgrade preparation shall be performed after the completion of Site Grading at all locations which will receive trails, pavement or structural improvements in preparation for the placement of aggregate base material.

B. When proof rolling reveals additional unstable areas, undercut excavation shall be undertaken only as approved and directed by the Owner.

C. All excess excavated and spoil materials shall be spread or relocated on-site or removed from the site as directed by the Owner.

3.02 SUBGRADE PREPARATION – OPEN AREAS

A. This work shall consist of furnishing all materials, equipment and labor for the final preparation of the subgrade for open areas. Subgrade preparation for open

areas shall include final grading to within 0.1-foot of specified subgrade elevations, shaping, disking, aerating, sheepsfoot rolling, vibratory rolling, compacting, proof rolling and testing as required.

B. Areas proposed for trails and pavement shall be compacted to a minimum 95 percent of maximum density based on a Standard Proctor (ASTM D-698). Any areas that are inaccessible to a roller shall be compacted either by other mechanical means or using a hand tamper meeting the approval of the Owner. The Contractor shall proof roll the finished subgrade with the Owner present.

C. Areas proposed for structural fills for building pads shall be compacted to a minimum of 95 percent based on a Modified Proctor (ASTM D-1557).

D. When proof rolling reveals additional unstable soil areas, the Owner shall be notified immediately. If soil moisture is excessive, the material shall be aerated and compacted again and retested. If, in the opinion of the Owner a more significant remedy is required, the Contractor shall be directed to perform additional work such as removal of unsuitable materials, placement of geotextile fabrics and/or soil replacement with an approved suitable material. These more significant tasks shall be paid for under separate pay items.

E. When soil moisture is excessive or inadequate, the surfaces shall be disked, wetted or dried as required, and re-compacted. Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all affected areas and re-compact as specified.

3.03 TEST ROLLING EQUIPMENT AND PROCEDURES

A. Test rolling of subgrades shall be performed in the presence of the Owner. When test rolling reveals unsuitable or unstable soils, the Owner shall determine the most appropriate remedy and direct the Contractor accordingly as described above.

B. Test rolling equipment shall conform to the following description:

1. Tandem axle, dual wheel dump truck.
2. Tire pressure shall be no less than 95 percent of manufacturer’s recommended maximum inflation.
3. Minimum gross weight of loaded truck shall be 60,000 pounds.
4. Provide weigh slip to Owner.

C. Perform test rolling procedure as follows:

1. Operate equipment at a rate not to exceed 3 mph to 5 mph or a comfortable walking pace.
2. Adjust speed to allow the Owner to measure any deflections and areas of rutting.
3. Operate test rolling equipment in a pattern so that affected areas are loaded with at least 1 pass.
4. After test rolling, check subgrade for conformance to Plans, and correct any surface irregularities. Re-shape subgrade within tolerances specified.

D. Test Rolling Evaluation:

1. Rutting up to one 1 inch is acceptable.

2. Rutting in excess of 1 inch but not more than 6 inches, shall be considered a failure and requires reworking soil and compaction to required density.
3. Deflection, (pumping) up to 1 inch is acceptable.
4. Deflection in excess of 1 inch but not more than 2 inches shall be acceptable if there is not substantial cracking or lateral movement of soil.
5. Deflection in excess of 2 inches but not more than 6 inches shall be considered a failure, and requires reworking soil and compaction to required density.
6. Rutting and deflection in excess of 6 inches will require review and recommendation for corrective action by the Owner.
7. After remedial work is performed, a final test roll shall be performed upon completion of work.
8. If remedial work is performed as directed, second test roll may be waived at discretion of the Owner.

E. When performing Subgrade Preparation, if it is determined that the material composition is acceptable and that excessive moisture has rendered the material unstable, the Contractor shall perform air drying techniques as per Article 301.04 of the IDOT Standard Specifications before consideration of removal of the material.

3.04 SUBGRADE PREPARATION – SENSITIVE WOODED AREAS

A. Machine subgrade preparation for the trail sections in sensitive wooded areas is not required. Work required prior to installation of geotextile fabric and placement of aggregate base for sensitive wooded areas is described in the subsection “Site Grading - Sensitive Wooded Areas” contained in Section 03100 – Earthwork and Grading.

B. After final surface preparation, the Contractor shall install the specified geotextile fabric at trail sections identified as sensitive wooded areas on the Plans. The geotextile shall extend 1 foot past the finished edge of the trail. Full rolls shall be cut to the appropriate width as needed. Roll ends shall be overlapped a minimum of 4 feet. All wrinkles shall be removed from the fabric before covering with stone. No Aggregate Base Course shall be placed until the subgrade and geotextile fabric has been approved by the Owner.

3.05 SUBGRADE PREPARATION – TRAILS OVER EXISTING GRAVEL

A. This work shall consist of furnishing all materials, equipment and labor for the final preparation of the trail subgrade over existing gravel surfaces. Subgrade preparation shall include grading of existing gravel surfaces, leveling, profiling, filling low areas and pot holes with CA-6, cutting ridges and high points, compacting, proof rolling and testing as required.

B. Compaction shall be to a minimum 95 percent of maximum density based on a Standard Proctor (ASTM D-698).

END OF SECTION 05100

SECTION 05200
TRAILS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Trails and other pedestrian pavements with surfaces consisting of fine aggregates or hot-mix asphalt.

2. Aggregate base course for concrete pavement.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading

2. Section 05100 – Subgrade Preparation

3. Section 03110 – Ground Stabilization

4. Section 03120 – Finish Grading and Topsoil

5. Section 03200 – Culvert Crossings

1.02 SUBMITTALS

A. Prior to placing bituminous mixtures, the Contractor shall submit to the Owner for approval the HMA mix design and name of the supplying plant with IDOT certifications.

B. Contractor shall submit source information and samples of aggregate surface materials to the Owner for approval prior to delivery and placement.

C. Contractor shall submit source information and samples of aggregate base materials to the Owner for approval prior to delivery and placement.

D. For grass trails, the Contractor shall submit seed mix composition and sources for approval by the Owner.

1.03 TESTING

A. The Owner shall employ a professional testing service to perform density and / or other tests for the base and surface courses. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

2. PRODUCTS

2.01 AGGREGATE SURFACE COURSE – FA-21

A. Aggregate surfaces for trail construction shall be crushed aggregate material complying with IDOT Standard Specification Article 1003.01 gradation FA-21. Aggregate shall consist of 100% crushed native material and buff in color as typically found in the Fox River valley of northern Illinois and southern Wisconsin. Limestone screenings are not acceptable. Furnished material shall be obtained from one of the following locations:

1. Thelen Sand and Gravel

Route 173 (North Pit)
Antioch, Illinois
Prime Bike Path Mix
847-395-3313

2. Payne & Dolan, Inc.
28327 W. Route 173
Antioch, IL 60002
Prime Bike Path Mix
847-838-3700

3. or approved equal.

2.02 AGGREGATE BASE COURSE – CA-6, TYPE B

A. Aggregate materials for use as aggregate base course shall be CA-6, Type B, in conformance with IDOT Standard Specification Article 1004.01.

2.03 HOT-MIX ASPHALT MATERIALS

A. All hot-mix asphalt materials shall comply with the applicable provisions of the IDOT Standard Specifications.

B. Trail HMA Mix Design shall be Mix “D”, N50 (IL 9.5 mm) as per the IDOT Standard Specifications.

2.04 AGGREGATE SUBBASE COURSE – CA-7/11, 10″

A. Aggregate materials for use as aggregate subbase course in sensitive woodland areas shall be CA-7/11, in conformance with IDOT Standard Specification Article 1004.01.

3. EXECUTION

3.01 AGGREGATE BASE COURSE – CA-6, Type B

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations for the installation of the aggregate base course for construction of the proposed trail and as specified in the Contract Documents. No aggregate base course shall be placed until the subgrade has been proof rolled or otherwise tested for stability and approved by the Owner or Engineer.

B. The work shall meet the applicable portions of Section 301 and 351 of the IDOT Standard Specifications except as herein noted.

C. The Contractor shall establish all grades to achieve the minimum thickness indicated in the Contract Documents prior to ordering delivery of granular base material. Owner shall not be responsible for any costs associated with the delivery of surplus granular material.

D. Aggregate base course shall be placed with a paver box or other method approved by Owner to ensure uniform width, depth, crown, and final surface smoothness. Placement of the aggregate base shall closely follow the horizontal alignment shown on the Plans and/or as staked in the field. The paver box operator shall possess sufficient skills and experience to perform the work.

E. Aggregate base course shall be compacted half the trail width at a time to preserve the specified crown. Compaction shall be to a minimum of ninety-five

percent (95%) Standard Proctor in accordance with the IDOT Standard Specifications. Any portion of the proposed trail without the required crown after compaction will not be accepted by the Owner and the Contractor will be required to take whatever steps necessary to provide the required crown. All irregularities in the trail base course shall be smoothed out. Depressions shall be filled, high points cut down and the entire aggregate base course edge shall be trimmed and finished uniformly.

F. The Contractor shall perform a proof roll of the aggregate base course with the Owner present for approval. Any failures of the base course, as determined by Owner, that occur during the proof rolling shall be immediately repaired and subjected to retesting until all areas have passed the testing or proof rolling.

3.02 AGGREGATE BASE COURSE – SENSITIVE WOODED AREAS

A. Aggregate base courses for trails constructed in sensitive wooded areas may require variable depths across the width of the trail to achieve the desired finish elevations due to the minimal modification of the underlying sub-base. The Contractor shall maintain the minimum base depths as shown in the Plans and increase the base depth as needed to achieve the desired finish elevations and cross section. Additional base course depths required to achieve the specified surface profile shall not be measured for payment but shall be paid for separately as a variable depth aggregate base course.

3.03 AGGREGATE SURFACE COURSE – FA 21

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations for the installation of the aggregate surface course for construction of the proposed trail.

B. The work shall meet the applicable portions of Section 402 of the IDOT Standard Specifications except as herein noted. No surface course shall be placed until the base course has been approved by the Owner.

C. Aggregate surface course shall be placed with a paver box or other method approved by Owner to ensure uniform width, depth, crown, and final surface smoothness.

D. The paver box operator shall possess sufficient skills and experience to perform the work.

E. Trail surface course shall be compacted half the trail width at a time, to preserve the crown, except where Plans indicate a trail cross slope. Compaction shall be to a minimum of 95% Standard Proctor in accordance with the IDOT Standard Specifications. Any portion of the proposed trail without the required crown after compaction will not be accepted by the Owner and the Contractor will be required to take whatever steps necessary to provide the required crown. All irregularities in the trail surface shall be smoothed out. Depressions shall be filled and the entire trail surface shall be trimmed and finished uniformly.

3.04 HOT-MIX ASPHALT SURFACE

A. The work shall meet the applicable portions of the IDOT Standard Specifications except as herein noted.

B. HMA surface course shall be placed with a paver box or other method approved by Owner to ensure uniform width, depth, crown, and final surface smoothness. Finished work which results in measurable deviations in the specified lines,

dimensions or surface conditions and / or which may create unsafe conditions, inadequate drainage, segregation of materials or substantial aesthetic deficiencies shall be removed and replaced to the satisfaction of the Owner.

3.05 AGGREGATE SUBBASE COURSE – CA 7/11

A. Aggregate subbase course shall be constructed for trails constructed only in specific areas as shown on the Plans. The depth of the aggregate subbase course may vary across the width of the trail to achieve the desired finish elevations due to the minimal modification of the underlying sub-base (3″ to 4″) but shall average approximately 10″. The Contractor shall maintain the minimum subbase depths as shown in the Plans and increase the base depth as needed to achieve the desired finish elevations and cross section. Additional base course depths required to achieve the specified surface profile shall not be measured separately for payment but shall be considered incidental to the pay item.

3.06 AGGREGATE TRAIL REPAIR

A. Any aggregate trail, in part or in whole, which is damaged by the Contractor in the course of performing the contract, shall be restored to pre-existing condition using only the approved materials indicated in this specification. Any rutting or displacement or distortion of the original trail profile shall require that the damaged areas be removed and reconstructed per the Owner's standard details, sections and specifications.

END OF SECTION 05200

SECTION 05300
ROADS AND PARKING

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Hot-mix asphalt roads and parking areas

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 03110 – Ground Stabilization
3. Section 03120 – Finish Grading and Topsoil
4. Section 05100 – Subgrade Preparation

C. All work under this section shall meet the requirements of the latest edition of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

1.02 SUBMITTALS

A. Prior to placing bituminous mixtures, submit to the Owner for approval the name of the plant proposed for use and the names of approving agencies.

B. Submit certifications from plant producing bituminous mixtures that binder course and surface course meet specified standards.

1.03 TESTING

A. The Owner shall employ a professional testing service to perform density and / or other tests for the base and surface courses. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

2. PRODUCTS

2.01 AGGREGATES

A. Coarse aggregates for Hot Mix Asphalt (HMA) base, binder and surface courses shall comply with the applicable provisions of IDOT Standard Specifications Article 1004.

B. Aggregate materials for use in an aggregate base course shall be CA-6, Type B, in conformance with IDOT Standard Specifications Article 1004.01. The source of the material shall be approved by the Owner prior to delivery. Samples of the proposed material shall be submitted to the Owner prior to delivery and installation.

2.02 BITUMINOUS PRIME COAT

A. The bituminous prime coat shall comply with Grade SS-1, Article 406.02 of the IDOT Standard Specifications.

2.03 HOT MIX ASPHALT MATERIALS

A. Bituminous materials shall comply with the applicable provisions of the IDOT Standard Specifications.

B. Binder course mixture shall be graded and mixed to comply with Mix IL 19.0 of the IDOT Standard Specifications.

C. Surface course mixture shall be graded and mixed to comply with Mixture D of the IDOT Standard Specifications.

3. EXECUTION

3.01 AGGREGATE BASE – CA-6, Type B

A. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations of the installation of the aggregate base course for construction of the proposed road and parking areas as specified and shown on the Plans. No Aggregate Base Course shall be placed until the Subgrade has been approved by the Owner or Engineer.

B. The work shall meet the applicable portions of Section 301 and 351 of the IDOT Standard Specifications except as herein noted. Compaction shall be to a minimum of ninety-five (95) percent Standard Proctor.

C. The Contractor shall establish all grades to achieve the minimum thickness indicated on the Plans prior to ordering delivery of granular base material. Owner shall not be responsible for any costs associated with the delivery of surplus granular material.

D. The Contractor may be required to perform a proof roll of the aggregate base course. Any failures of the base course, as determined by Owner or Engineer, that occur during the proof rolling shall be immediately repaired and subjected to proof rolling until all areas have passed. Owner or Engineer to approve the base course.

3.02 HOT-MIX ASPHALT PAVING

A. Binder Course

1. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations for the installation of the HMA binder course for construction of the proposed roads and parking areas.

2. HMA binder course construction shall be of the thickness indicated on the Plans and shall comply with applicable provisions of Section 406 of the IDOT Standard Specifications except as herein noted. No HMA binder course shall be placed until the base course has been approved by the Owner.

3. Do not place HMA binder course when temperatures in the shade are below 40 degrees Fahrenheit.

B. Bituminous Prime Coat

1. Apply primer over binder course at the rate of 0.10 gallon per square yard in compliance with Article 406.05 (b) of the IDOT Standard Specifications.

C. Surface Course

1. This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations for the installation of the HMA surface course for construction of the proposed roads and parking areas.

2. HMA surface course construction shall be of the thickness indicated on the Plans and shall comply with applicable provisions of Section 406 of the IDOT Standard Specifications except as herein noted. No HMA surface course shall be placed until the binder course has been approved by the Owner.

3. Do not place HMA surface course when temperatures in the shade are below 45 degrees Fahrenheit.

D. Protection for HMA Surfacing

1. Contractor shall protect all completed sections of HMA paving until the Owner has approved the pavement for traffic.

3.03 HOT-MIX ASPHALT PATCHING

A. This work shall consist of removing the HMA surface to the depth specified with a self-propelled milling machine as per the conditions of IDOT Article 440.04 of the Standard Specifications. Unless specified otherwise, the resulting surface millings shall be disposed of off-site.

END OF SECTION 05300

SECTION 05310
PAVEMENT MARKINGS

1. GENERAL

1.01 DESCRIPTION

A. Work under this Section includes:

1. Furnishing and applying pavement markings.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05300 – Roads and Parking

2. PRODUCTS

2.01 GENERAL

A. Pavement Markings shall be in accordance with Section 780 of the IDOT Standard Specifications. Materials shall be in accordance with Section 1095 of the IDOT Standard Specifications

1. Article 1095.01 Thermoplastic Pavement Marking
2. Article 1095.02 Paint Pavement Marking
3. Article 1095.04 Epoxy Pavement Marking
4. Article 1095.05 Preformed Thermoplastic Pavement Marking

3. EXECUTION

3.01 GENERAL

A. Pavement markings shall be installed at locations shown on the Plans at the dimensions indicated.

3.02 PAVEMENT MARKINGS

A. Pavement Markings shall be installed in accordance with the Contract Documents and in accordance with all applicable Federal, State, County and Local Ordinances and Standards.

END OF SECTION 05310

SECTION 05400

CONCRETE PAVEMENT

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Poured-in-place pavement composed of Portland cement concrete with or without reinforcement, constructed on a prepared subgrade and aggregate base, with or without forms.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03120 – Finish Grading and Topsoil
2. Section 05100 – Subgrade Preparation
3. Section 07300 – Concrete Structures, Cast-in-Place

1.02 SUBMITTALS

A. Prior to placing Portland cement concrete mixtures, submit to the Owner for approval the name of the plant proposed for use and the names of approving agencies.

B. Submit certifications from plant producing Portland cement concrete mixtures that mixtures meet specified standards.

1.03 TESTING

A. The Owner shall employ a professional testing service to perform testing of the Portland cement concrete. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

B. Testing shall be in accordance with applicable sections of the IDOT Standard Specifications.

2. PRODUCTS

2.01 PORTLAND CEMENT CONCRETE PAVEMENT

A. Materials and equipment shall comply with Articles 420.02 and 420.03 of the IDOT Standard Specifications.

3. EXECUTION

3.01 PORTLAND CEMENT CONCRETE PAVEMENT

A. This work shall consist of furnishing all materials, equipment, labor and transportation and performance of all required operations of the installation, finishing, protection and curing of the Portland cement concrete pavement. No pavement shall be placed until the Subgrade has been approved by the Owner.

B. The work shall meet the applicable portions of Section 420 of the IDOT Standard Specifications.

C. The Contractor shall establish all grades to achieve the minimum thickness indicated on the Plans prior to ordering delivery of the Portland cement concrete. Owner shall not be responsible for any costs associated with the delivery of surplus Portland cement concrete material.

D. Joints shall be in conformance with the plans and Article 420.05 of the Standard Specifications.

E. Finish shall be medium-coarse broom finish, perpendicular to traffic flow. Conform with ACI 301.

F. Contractor shall protect all completed sections of Portland cement concrete pavement until the Owner has approved the pavement for traffic.

END OF SECTION 05400

SECTION 05401

CONCRETE PAVEMENT, SPECIALTY FINSIH

1. GENERAL

1.01 DESCRIPTION

A. Work under this Section includes:

1. Poured-in-place pavement composed of Portland cement and specialty finish.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05100 – Subgrade Preparation

2. Section 03120 – Finish Grading and Topsoil

1.02 SUBMITTALS

A. The Owner reserves the right to approve the Contractor or Subcontractor who will be directly involved in performing the required work. This approval shall be dependent on the submittal to the Owner, at least fourteen (14) days prior to the start of work, of the following:

1. A list of five (5) projects similar in scope and size which have been satisfactorily completed in the past five (5) years that clearly demonstrate the ability to complete the work as specified. This submittal shall include the project name, project location, completion date, owner's name and contact information, size in square feet and a detailed description of the work performed, including photographs during construction and after.

B. Prior to placing Portland cement concrete mixtures, submit to the Owner for approval the name of the plant proposed for use and the names of approving agencies.

C. Submit certifications from plant producing Portland cement concrete mixtures that meet specified standards.

D. Samples: One (1) physical sample of the aggregate to be used in the mix.

E. Mockups: The Contractor shall install a 5'x5' concrete mockup with specialty finish for Owner approval that will serve as the basis of acceptance for installed work.

1.03 TESTING

A. The Owner shall employ a professional testing service to perform testing of the Portland cement concrete. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

B. Testing shall be in accordance with applicable sections of the IDOT Standard Specifications.

1.04 QUALITY ASSURANCE

A. The work described in this section requires specialized knowledge, experience, skills and equipment to perform successfully. Therefore, The Contractor directly performing the work described in this section shall possess the following qualifications:

1. A minimum of 10 years of experience installing specialty finish concrete.

2. PRODUCTS

2.01 PORTLAND CEMENT CONCRETE PAVEMENT

A. Materials and equipment shall comply with Articles 420.02 and 420.03 of the IDOT Standard Specifications.

B. Specialty Finish Concrete

1. Specified Strength (psi): 4000 @ 28 days

2. Slump Range: 3.00 to 5.00 inches

3. Air %: 4.00 to 6.00 % (In specified range if 3 to 5", 5" max)

4. Mix Design:

Fox River Stone	1900 lb
Natural Sand	1230 lb
6967-07 Lafarge Holcim	470 lb
52403-02 Lafarge	100 lb
X	27.5 gal
w/c m ratio	.4

5. Admixtures: W.R. Grace – 42138, W.R. Grace MR-M110, W.R. Grace WR-82 (Darex II Area, GCP Recover – Hydration Stabilizer; GPC-WRDA Water-reducing and retarding admixture). Admixture dosage rates shall be by manufacturer's recommendation. Or approved equal.

2.02 CONCRETE SURFACE RETARDER

A. Retarder shall be:

1. Surf Etch Surface Retarder supplied by Butterfield Color or approved equal.

2.03 CONCRETE SEALER

A. Sealer shall be formulated specifically for use on exposed aggregate concrete and applied to a surface free from contaminants (oil, grease, dirt, stains, cement paste residue).

B. Sealer shall be:

1. V-Seal 101 Multi-Surface supplied by V-Seal Concrete Sealers and Specialty Coatings

3. EXECUTION

3.01 PORTLAND CEMENT CONCRETE PAVEMENT

A. This work shall consist of furnishing all materials, equipment, labor and transportation and performance of all required operations of the installation, finishing, protection and curing of the Portland cement concrete pavement. No pavement shall be placed until the Subgrade has been approved by the Owner or Engineer.

B. The work shall meet the applicable portions of Section 420 of the IDOT Standard Specifications.

C. The Contractor shall establish all grades to achieve the minimum thickness indicated on the Contract Drawings prior to ordering delivery of the Portland cement concrete. Owner shall not be responsible for any costs associated with the delivery of surplus Portland cement concrete material.

D. Joints shall be in conformance with the plans and Article 420.05 of the standard specifications. All joints in specialty finish areas shall be sawn joints. Tooled joints shall not be allowed in specialty finish areas.

E. Contractor shall protect all completed sections of Portland cement concrete pavement until the Owner has approved the pavement for traffic.

END OF SECTION 05401

SECTION 05420
CONCRETE CURBS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Portland cement concrete curbs, combination curbs and gutters, tapered and depressed curbs.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 03100 – Earthwork and Grading
2. Section 05100 – Subgrade Preparation
3. Section 05300 – Roads and Parking
4. Section 07300 – Concrete Structures, Cast-in-Place

1.02 SUBMITTALS

A. Prior to placing Portland cement concrete mixtures, submit to the Owner for approval the name of the supplying and design mix certifications.

B. Submit certifications from plant producing Portland cement concrete mixtures that mixtures meet specified standards.

1.03 TESTING

A. The Owner may employ a professional testing service to perform testing of the Portland cement concrete. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

B. Testing shall be in accordance with applicable sections of the IDOT Standard Specifications.

2. PRODUCTS

2.01 GENERAL

A. Work shall be in accordance with Section 606 for Concrete Gutter, Curb, Median and Paved Ditch of the IDOT Standard Specifications.

2.02 AGGREGATE BASE

A. Aggregate materials for use as aggregate base course shall be CA-6, Type B, in conformance with IDOT Standard Specification Article 1004.01. The source of the material shall be approved by the Owner prior to delivery.

2.03 PORTLAND CEMENT

A. Portland cement concrete shall meet the requirements of IDOT Class “SI” and Section 1020 of the IDOT Standard Specifications.

3. EXECUTION

3.01 PORTLAND CEMENT CONCRETE CURBS AND GUTTERS

A. Work shall be in accordance with Section 606 for Concrete Gutter, Curb, Median and Paved Ditch of the IDOT Standard Specifications.

B. All work shall be in protected from damage until completion of the project and replaced should damage occur.

END OF SECTION 05420

SECTION 05430
DETECTABLE WARNINGS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Furnishing and installing detectable warning panels.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05400 – Concrete Pavement

2. PRODUCTS

2.01 DETECTABLE WARNINGS

A. Detectable Warnings shall be brick red, preformed truncated dome inserts meeting the requirements of the ADAAG, the detail shown on the Plans and Section 424.09 of the IDOT Standard Specifications.

3. EXECUTION

3.01 GENERAL

A. Detectable Warnings shall be installed at locations shown on the Plans.

3.02 DETECTABLE WARNINGS

A. Detectable Warnings shall be installed in accordance with the Section 424.09 of the IDOT Standard Specifications and the manufacturer's specifications.

END OF SECTION 05430

SECTION 06100
STONE WALLS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Construction of stone walls and slope treatments.
2. Installation of geotextile fabric, aggregate base, aggregate backfill and drain pipe where required.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 02400 – Soil Erosion and Sediment Control
2. Section 03100 – Earthwork and Grading
3. Section 03120 – Finish Grading and Topsoil
4. Section 09300 – Turf Seeding
5. Section 09310 – Native Seeding

1.02 SUBMITTALS

A. For sources of stone from any supplier other than that specified herein, the Contractor shall submit samples of the material for approval by the Owner prior to delivery and placement. For geotextile fabrics, the Contractor shall submit a product tag or other proof of product compliance to the Owner before installation. Use of any product other than specified requires the submittal of samples and complete manufacturer's specifications to the Owner for approval.

B. Provide sample materials for 6″ to 9″ granite cobble stone toe.

C. Submit photographic representation of limestone slabs, granite boulder slope treatments, and granite boulder-individual placement for Owner review and approval.

2. PRODUCTS

2.01 TURBIDITY BARRIERS

A. Refer to Section 02400 – Soil Erosion and Sediment Control.

2.02 GEOTEXTILE FABRIC

A. Geotextile fabric shall be non-woven; needle punched polypropylene staple fiber that is UV stabilized and resistant to chemicals, mildew and insects.

B. The geotextile fabric shall be:

1. Thrace-LINQ GTF-225EX

Grab Tensile Strength	215 lbs
Elongation	50%
Puncture	600 lbs
Permittivity	1.3 sec

2.03 3″ STONE

A. 3″ crushed, angular, washed limestone.

2.04 6″ TO 9″ GRANITE COBBLE STONE TOE

A. The granite cobble stone toe shall be natural field stone cobbles and boulders reasonably graded from a minimum of 6 inches to a maximum of 9 inches in diameter unless specified differently on the Plans. The cobbles shall be of mixed geologic origin primarily granite, as is typically found in the Fox River basin of northern Illinois and throughout Wisconsin. Crushed limestone riprap is not acceptable and will not be approved. Samples of the specified material shall be submitted for approval to the Owner prior to delivery and placement.

2.05 AGGREGATE BASE COURSE – CA-6, TYPE B

A. Aggregate materials for use as aggregate base course shall be CA-6, Type B, in conformance with IDOT Standard Specification Article 1004.01.

2.06 AGGREGATE BACKFILL, CA-7

A. Aggregate materials for use as aggregate base course shall be CA-7, in conformance with IDOT Standard Specification Article 1004.01.

2.07 LIMETSONE SLAB

A. Limestone outcropping: 11″-12″ thickness, 2′-3′ depth, 3′-5′ length.

1. Weber Stone Company
12791 Stone City Road X28
Anamosa, Iowa 52205
(319) 462-3581
https://weberstone.com/

2. or approved equal.

B. Samples of the specified material shall be photographically submitted for approval to the Owner prior to delivery and placement.

2.08 BOULDER SLOPE TREATMENT

A. Boulders shall be naturally occurring field stones which have been rounded by glaciation. The boulders shall be of mixed geologic origin, primarily granite, as typically found in the Fox River basin of northern Illinois and southern Wisconsin. Boulder colors shall generally range from buff to various shades of brown and gray. The boulders shall be provided in evenly graded size ranges and proportions as specified on the Plans. Samples of the specified material shall be photographically submitted for approval to the Owner prior to delivery and placement.

B. Boulders shall be: 30% 8″ to 12″; 70% 12″ to 24″.

C. Boulders shall be from:

1. Super Aggregates
5435 Bull Valley Rd. Suite 330
McHenry, IL 60050
(815) 385-8000

2. or approved equal.

2.09 SEED AND EROSION CONTROL BLANKET

A. Refer to Section 09310 – Native Seeding for seeding and erosion control products.

3. EXECUTION

3.01 SITE PREPARATION

A. All protection measures, including silt fence, filter socks, turbidity barriers, temporary construction fencing, etc. shall be installed prior to commencement of work.

B. If dewatering services are used, adjoining properties and discharge locations shall be protected from erosion. Discharges shall be routed through an effective sediment control measure (e.g. sediment trap, sediment basin, or other appropriate measures).

C. All existing topsoil in the work area which is subject to grading and construction of the stone walls shall be stripped and stockpiled. The subgrade at the work area shall be cut, filled and otherwise shaped to create the required lines, grades and wall batter angle as shown on the Plans. The subgrade at the base of the wall shall be excavated to form a trench to assure the proper burial depth of the first course of material. The trench shall be of adequate depth to accommodate any required aggregate base. The subgrade at the wall base trench shall be undisturbed clay soil or compacted to a minimum of 95% density based on a Standard Proctor (ASTM D-698). If the required compaction density cannot be achieved due to the presence of unsuitable material or conditions the Contractor shall immediately inform the Owner to determine the appropriate method to achieve the required subgrade conditions.

3.02 GEOTEXTILE FABRIC AND AGGREGATE BASE

A. Place and secure the geotextile fabric where indicated on the Plans. Aggregate backfill shall be placed and compacted in the subgrade trench to the depths and dimensions shown on the Plans. Compact the material in uniform lifts of a maximum loose thickness of 6 inches. Elevations at the top of the finished aggregate base shall be such that proper burial depths of the first stone course are achieved.

3.03 STONE PLACEMENT

A. The Contractor and Owner shall meet at the work site prior to the start of construction to verify the type, location, orientation, and finished appearance desired by the Owner. The Contractor shall place the stones to accurately reflect the dimensions, grades and batter angle as shown on the Plans.

B. Stones shall be fitted and placed individually to achieve minimal gaps between stones and with no geotextile fabric or backfill materials visible. To achieve minimal gaps, portions of the wall may require the placement of multiple layers of stones. The finished top of wall shall be uniform in elevation or slope, depending on the desired intent. Boulder sizes shall be evenly distributed throughout the wall face.

3.04 RESTORATION

A. Dress the edges and area above the stone wall and slope treatments for seeding.

B. Remove the turbidity barrier upon acceptance of work by regulatory agency.

END OF SECTION 06100

SECTION 07300
CONCRETE STRUCTURES, CAST-IN-PLACE

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. All poured in place Portland Cement Concrete for walls, stairs, abutments, footings, structures, vaults, and other improvements.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05400 – Concrete Pavement
2. Section 05410 – Concrete Pavement, Specialty Finish
3. Section 05420 – Concrete Curbs

1.02 QUALITY ASSURANCE

A. Cast-in place concrete work shall be performed in accordance with ACI 318, unless specified otherwise. Concrete materials and operations will be tested and inspected as the work progresses. Failure to detect any defective work or materials shall not in any way prevent later rejection when such defect is discovered nor shall it obligate the Owner for final acceptance.

B. The Owner may employ a professional testing service to perform testing of the Portland cement concrete. The Contractor shall follow the instructions of the testing technician when a specific course of action is deemed necessary.

C. Testing shall be in accordance with applicable sections of the IDOT Standard Specifications.

D. Testing Services

1. The following testing services shall be performed by the designated Testing Agency:

a. Review and/or check-test the Contractor's proposed materials for compliance with the specifications.

b. Review and check-test the Contractor's proposed mixture design when required by the Owner.

c. Secure production samples of materials at plants or stockpiles during the course of the work and test for compliance with the specifications. Tests of cement and aggregates shall be performed to ensure conformance with Specification requirements. Manufacturer's certification that cement materials meet Specification requirements and results of manufacturer's own material tests will be acceptable in lieu of tests by inspection and testing firm. Aggregates testing shall be performed by independent inspection and testing firm, for compliance with ASTM C33, including limits for deleterious substances, grading and physical property requirements.

d. Conduct strength tests of the concrete during construction in accordance with the following procedures:

1. Secure composite samples in accordance with ASTM C172. Each sample shall be obtained on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

2. Mold and cure four specimens from each sample in accordance with ASTM C31. Any deviations from the requirements of this Standard shall be recorded in the test report.

3. Test specimens in accordance with ASTM C39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at 7 days for information. One specimen shall be held should additional testing be required and ordered. The acceptance test results shall be the average of the two specimens tested at 28 days. If one specimen in a test manifests evidence of improper sampling, molding or testing, it shall be discarded and the strength of the remaining cylinder shall be considered the test result. Should both specimens show any of the above defects, the entire test shall be discarded.

4. Make at least one strength test for each 50 cubic yards or fraction thereof, of each mixture design of concrete placed in any one day.

5. When the total quantity of concrete with a given mixture design is less than 50 cubic yards, the strength tests may be waived by the Owner if, in its judgment, adequate evidence of satisfactory strength is provided, such as strength test results for the same kind of concrete supplied on the same day and under comparable conditions to other work or other projects.

e. Determine slump of the concrete sample for each strength test and whenever consistency of concrete appears to vary, using ASTM C143.

f. Determine air content of normal weight concrete sample for each strength test in accordance with either ASTM C231, ASTM C173 or ASTM C138.

g. Determine temperature of concrete sample for each strength test.

E. Duties and Authorities of Designated Test Firm

1. Representatives of the firm shall inspect, sample and test the materials and the production of concrete as required by the Owner. When it appears that any material furnished or work performed by the Contractor fails to fulfill specification requirements, the testing agency shall report any such deficiency to the Owner and the Contractor.

2. The testing firm shall report all test and inspection results to the Owner and Contractor immediately after they are performed. All test reports shall

include the exact location in the work at which the batch representing a test was deposited. Reports of strength test shall include detailed information on storage and curing of specimens prior to testing.

3. The testing firm and its representatives are not authorized to revoke, alter, relax, enlarge or release any requirements of the contract documents, nor to approve or accept any portion of the work.

F. Responsibilities and Duties of Contractor

1. The Contractor shall provide the necessary testing services for the following:

a. Qualification of proposed materials and the establishment of mixture designs.

b. Other testing services needed or required by the Contractor.

c. The use of testing services shall in no way relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the contract documents.

d. The Contractor shall submit to the Owner the concrete materials and the concrete mix designs from the redi-mix supplier proposed for use for each class of concrete with a written request for acceptance. This submittal shall include the results of all testing performed to qualify the materials and to establish the mix designs. No concrete shall be placed in the work until the Contractor has received such acceptance in writing.

e. To facilitate testing and inspection, the Contractor shall:

1. Furnish any necessary labor to assist the designated testing agency in obtaining and handling samples at the project or other sources for materials.

2. Advise the Owner and the testing agency sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.

3. Provide and maintain for the sole use of the testing agency adequate facilities for safe storage and proper curing of concrete test specimens on the project site for the first 24 hours as required by ASTM C31.

4. Submit copies of mill test reports for shipments of cement and reinforcing steel to the Owner when required.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete for Buildings.

B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

C. ACI 305 - Recommended Practice for Hot Weather Concreting.

D. ACI 306 - Recommended Practice for Cold Weather Concreting.

E. ACI 318 - Building Code Requirements for Reinforced Concrete.

F. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field

G. ASTM C33 - Concrete Aggregates.

H. ASTM C94 - Ready-Mixed Concrete.

I. ASTM C150 - Portland Cement.

J. ASTM C171 - Sheet Materials for Curing Concrete.

K. ASTM C138 - Standard Test Method for Density (Unit Weight), Yield, And Air Content (Gravimetric) Of Concrete

L. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by The Volumetric Method

M. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

N. ASTM C260 - Air Entraining Admixtures for Concrete.

O. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

P. ASTM C494 - Chemical Admixtures for Concrete.

2. PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: Portland Cement, ASTM C150, Type I.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: Clean and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

2.02 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Chemical: ASTM C494, Type A - Water reducing. Type B - retarding. Type C - accelerating. Type D - water reducing and retarding. Type E - water reducing and accelerating.

2.03 CURING MATERIALS

A. Curing Compound: Resin based, type; ASTM C309, Type 2 - white pigmented, Class B.

B. Polyethylene Film: 4 mil. thick, white opaque color, ASTM C171.

2.04 ACCESSORIES

A. Bonding Agent: Two component modified epoxy resin.

B. Vapor Barrier: 4 mil. unless otherwise shown on the Plans. Clear polyethelene film, type recommended for below grade application.

C. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 2 days and 7,000 psi in 28 days.

2.05 CONCRETE MIXES

A. Mix concrete in accordance with ASTM C94.

B. Provide concrete of the following strength:

1. Compressive strength (28 day): 4,000 psi.

2. Entrained Air Content: As indicated in ACI 301, Table 3.4.1.

3. Cement Content: Minimum 564 pounds per cubic yard.

4. Water Cement Ratio: Maximum 0.45.

5. Slump: 1-inch minimum, 3-inch maximum for footings and substructure walls; 4-inch maximum for slabs, pavement, beams, reinforced walls and columns. Loss of slump in pumping shall not exceed 1-1/2-inch.

C. Select proportions for normal weight concrete in accordance with ACI 301, 3.8, Method 1.

D. Use water reducing admixtures only when accepted by Owner.

E. Use accelerating admixtures only in cold weather and only when accepted by Engineer. If accepted, use of admixture will not relax cold weather placement requirements. Calcium chloride shall not be used.

F. Use retarding admixtures only in hot weather and only when accepted by Engineer.

G. Use air entrained concrete for all concrete exposed to the exterior.

3. EXECUTION

3.01 PLACING CONCRETE

A. If dewatering services are used, adjoining properties and discharge locations shall be protected from erosion. Discharges shall be routed through an effective sediment control measure (e.g. sediment trap, sediment basin, or other appropriate measures).

B. Place concrete in accordance with ACI 304.

C. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

D. Ensure anchors, seats, plates and other items to be cast into concrete are placed, held securely and will not cause hardship in placing concrete. Rectify same and proceed with Work.

E. Maintain records of poured concrete items. Record date, location for pour, quantity, air temperature, and test samples taken.

F. Ensure reinforcement, inserts, embedded parts, and formed expansion and contraction joints are not disturbed during concrete placement.

G. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's recommendations.

H. Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.

I. Pour floor slabs in checkerboard or saw cut pattern indicated on Contract Drawings. Saw cut control joints within 24 hours after finishing. Use 3/16-inch thick blade, cutting l/4-inch into depth of slab thickness.

J. In locations where new concrete is dowelled to existing Work, drill holes in existing concrete, insert steel dowels, and pack solidly with non-shrink grout.

K. Honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

L. Conform to ACI 305 when concreting during hot weather.

M. Conform to ACI 306 when concreting during cold weather.

N. Maintain concrete cover around reinforcing in accordance with ACI 3l87 or as otherwise indicated on the Plans.

O. Install vapor barrier under interior slabs on grade. Lap joints minimum 1 foot and seal. Do not disturb or damage vapor barrier while placing concrete reinforcing. If damage does occur, repair areas before placing concrete. Use vapor barrier materials, lapped over damaged areas minimum 6-inches in all directions and sealed.

P. Separate slabs-on-grade from vertical surfaces where shown with 1/2-inch thick joint filler. Extend joint filler from bottom of slab to within 1/2-inch of finished slab surface. Refer to IDOT Standard Specifications for joint filler requirements.

3.02 FINISHING OF FORMED SURFACES

A. Exposed Surfaces: Unless indicated otherwise, concrete that will be exposed in the completed structure shall receive Smooth Form Finish conforming with ACI 301.

3.03 CURING AND PROTECTION

A. Beginning immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical injury. Maintain concrete with minimal water loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

B. One additional test cylinder shall be taken during cold weather concreting, and cured on the Work Site under same conditions as concrete it represents.

C. One slump test and one air test shall be taken for each set of test cylinders taken.

D. Follow sampling and testing procedures referred in ASTM C94.

END OF SECTION 07300

SECTION 07400
PIERS AND DOCKS

1. GENERAL

1.01 DESCRIPTION

A. Work under this Section includes:

1. Design, fabricate, install and furnish all plant, labor, equipment, supplies and materials and perform all operations required for installation of a complete, fully functional and operational floating fishing pier, including but not necessarily limited to fishing piers, ramp, anchorages, and railings, all as indicated on the drawings and specified herein.

B. The contract drawings are general in nature and show basic floating fishing pier layout with required dimensions, and certain required materials and details of construction.

C. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02400 – Soil Erosion and Sediment Control
2. Section 07300 – Concrete Structures, Cast-in-Place

1.02 REQUIREMENTS

A. A minimum of ten (10) years of proven experience in floating pier system fabrication and installation is required.

B. The fishing pier shown on the drawings is patterned after the type manufactured by Flotation Docking Systems (FDS), of Cedarville, Michigan. However, the intent is not to preclude other pier systems of different manufacture as long as they meet the required design loads, are within the range of required dimensions, are constructed with the specified materials, and are of a quality equal to or better than that specified in this Section.

C. Use of an alternative product must be approved prior to bidding. Failure to pre-approve an alternative product assumes (mandates) that bidder has reflected an intended use of the above-named manufacturer.

D. The contract drawings are not intended to be used for fabrication. The Contractor shall prepare and submit at least three (3) sets of drawings to the Owner, plus the number the Contractor wants back for approval prior to fabricating and installing the required fishing pier.

E. Other materials and equipment shall be as indicated on the Drawings, however, all other materials not specifically described but required for a complete and proper installation of the work under this Section, shall be new, first quality, and if selected by the Contractor, subject to the approval of the Owner.

F. **All drawings and calculations submitted must be sealed by a Professional Engineer experienced in the design of floating piers and anchorages. If the Engineer is not a full-time employee of the pier manufacturer, proof must be**

provided of satisfactory experience in floating pier system design including anchorages for conditions similar to those which will be experienced on this project. The burden of proof of the merit of the proposed floating pier system including anchorages is upon the manufacturer.

1.03 QUALITY ASSURANCE

A. **Qualification of the Bidder:** A minimum of ten (10) years of proven experience in the design, manufacturing, and installation (specifically) of Floating Fishing Piers. Being a dock manufacturer without the specific experience of executing Fishing Pier projects does not qualify a prospective bidder for this work. Anchorage requirements herein, disallow conventional spuds or piling. Experienced use of monocoque structures are therefore the required concept of anchorage. Use of stiffarms is not acceptable.

B. **Pre-qualification:** In order to obtain pre-qualification status for this project, the following list of submittals must be presented within one week of bid date in order to provide the owner's representative with sufficient time to review said alternative request.

1. Applicable specifications and typical fabrication drawings showing cross sections, details, attachments, connections, anchorage details and all other necessary information for adequate product analysis.
2. A list of existing installations placed during the required ten (10) year performance period where floating dock systems similar to that to be qualified have been installed at locations with similar climatic and ice conditions. Such listing shall include the date installed and the name, address and telephone number of the installation's owner, or the owner's local contact.
3. Catalog information on all commercial equipment being installed as part of the system, whether specified or offered as a substitution.
4. General literature covering floating dock manufacturer and his product.
5. Design calculations for piers, connectors, bracing, flotation, bridges, anchorages and related pier system components based upon specified loading conditions. Decking shall not be considered as part of the load carrying structure. **All drawings and calculations submitted must be sealed by a Professional Engineer experienced in the design of floating piers and anchorages. If the Engineer is not a full-time employee of the pier manufacturer, proof must be provided of satisfactory experience in floating pier system design including anchorages for conditions similar to those which will be experienced on this project. The burden of proof of the merit of the proposed floating pier system including anchorages is upon the manufacturer.**

C. Prospective bidders are cautioned that qualification of any floating fishing pier is not to be considered as a determination of complete product acceptability and that a pre-qualified system may be determined by the Engineer as being in need of modification on the basis of subsequently introduced information on shop drawings or in the final submitted structural calculations as reviewed by the Engineer. In any case, the system furnished must comply with the design criteria specified herein.

1.04 DIMENSIONS

A. Fishing pier and dock layout shall be to the configuration shown on the drawings. Widths of piers are to the edge of the piers and do not include rub-rails and fenders.

B. Piers may be up to 3 inches less than the specified widths to allow some tolerance in the manufacturing process. However, the pier width shall be uniform and the 3-inch tolerance does not imply that variations in width over the length of the pier(s) will be tolerated.

C. Bridge widths shall match pier widths, but in no case where individual finger pier bridges are used shall the clear width between hand rails be less than 30 inches. If roller connections are used on main pier bridges, the bridge width may be reduced to the pier width less 2 feet.

D. For 8-foot wide main pier, a minimum of 5-foot clear deck travel width shall be maintained for barrier free requirements, except as shown on fishing pier.

1.05 DESIGN CRITERIA

A. The framework shall be a hybrid composite of southern yellow pine, structural steel fabricated components (galvanized where applicable), and galvanized sheet steel. The assembly format shall be of monocoque design utilizing 2-inch thick exterior framing lumber, 2-inch thick interior bulkheading on maximum 4-foot transverse span and 5-foot longitudinal span, and 20 gauge sheet steel upper and lower skin on body work. Structural steel fabricated corner and finger connectors shall have a minimum 6-inch legs and a sectional depth equal to that of the dock frame. Bulkheads shall be of the same material as the timber sidewall. Framing shall act as a bulkhead member to withstand compression and shall be the full width of the unit @ 48-inch spacing along the length of each unit. This support framing/bulkhead shall be incorporated with a continuous flotation encasement to provide rigidly constructed monocoque units.

B. Unless otherwise noted, floating piers, anchorages and connections shall be designed in accordance with ASCE Report No. 50 “Small Craft Harbors” dated 1969 or current edition, and the revised edition “Planning and Design Guidelines for Small Craft Harbors” dated 1994.

C. All structural members shall be designed and appropriately sized to carry and accept all design loads without failure or excessive deformation. Members shall be so sized to compensate for reductions in cross section resulting from the drilling of bolt holes and cutting of openings needed for utilities. Only single width fishing pier modules shall be allowed for piers up to 5-feet in width. Where the required width of tee pier requires fabrication from narrower pier modules, the individual pier modules shall not be less than four-feet in width. Overlapping adjacent modules by staggering transverse joints to insure maximum strength is encouraged. However, overlapping is not required as long as sufficient longitudinal joint strength is otherwise provided.

D. Connections shall allow only vertical rotation and shall be rigidly constructed to prevent horizontal translation or rotation,

1. The methodology analysis proposed is based on utilization as a composite member about the y-y axis.
2. The minimum recommended moment of inertia $L_{y\text{-}y}$ of the 4-foot composite finger pier shall be similar or equal to 60,000 in^4 or its transformed equivalent based on

modulus of elasticity ratios. The corresponding pipe connection bracing required should have a minimum moment of inertia for a steel member of 3.02 in^4.

1.06 DEFLECTION CRITERIA

A. Fishing piers, ramps, connections and anchorages shall be designed for the following loads and conditions.

B. Vertical:

1. Vertical Dead Load: Dead loads shall be the entire weight of the floating fishing pier and attachments including anchorages.
2. Vertical Live Load: A uniform live load of not less than 30 pounds per square foot on the deck and structural frame of the floating piers shall be used. Minimum live load for flotation shall be 30 pounds per square foot.
3. Combined Vertical Dead Load and Live Load: Combined dead load plus live load for fishing piers and ramps shall be the actual dead load including utilities plus 30 psf live load. However, for purposes of calculation, the combined dead load plus required 30 psf live load shall never be calculated as being less than 50 psf. Ramps shall be so designed that maximum live load deflection of the ramp is limited to 1/180 of the span. Extra flotation of the same general type and design used for the floating fishing pier shall be installed at end sections as required to compensate for end reactions of ramps due to combined loading. In no case shall the supporting fishing pier module at the ramp connection be less than the designated freeboard under combined loading nor more than 2-inch above the freeboard shown on the approved shop drawings under the full deadload including utilities.
4. Dead Load Freeboard: Fishing pier manufacturer shall provide fishing piers with dead load freeboards of approximately 18-inch. However, actual dead load freeboard shall not vary appreciably from the freeboard designated on the manufacturer's approved shop drawings with fishing pier presenting a reasonably level, flat, even surface to the eye under dead load conditions. As indicated, fishing pier shall be reasonably level, but in no case shall a cross slope exceeding 1½-inch in 8-foot of width be tolerated under dead load conditions. At the design load of dead load plus 30 psf live load a freeboard of not less than 10-inches shall be maintained. Freeboard loss shall not be more than 2½-inch at the end of 5 years.

C. Horizontal:

1. Wind Load: The uniform wind load for determining lateral loading on an independent pier or pier system from any direction, will be 15 psf on all projected surfaces. Wind loads shall be calculated in directions both perpendicular to and parallel to the main pier and the maximum wind loading shall be used for design of piers and anchorages.
2. Fishing piers and flotation shall sustain the loads imposed by nonmoving ice without damage, fracture or puncture.
3. The dock system including ramp and anchorages shall be capable of sustaining waves up to 1½-feet without damage.

1.07 REFERENCE

A. Reference is made in these specifications to the codes and/or standards promulgated by the following agencies and organizations:

ASCE American Society of Civil Engineers, 345 East 47th Street, New York, N. Y. 10017
ASTM American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103
AWPA American Wood Preservers Association
AWPB American Wood Preservers Bureau, P.O. Box 6085, Arlington, Virginia 22206
AWS American Welding Society, Inc., 2501 N.W. 7th Street, Miami, Florida 33125
LWD Low Water Datum
SPIB Southern Pine Inspection Bureau

B. Compliance:

1. Comply with those codes and/or standards specified in this Section and referenced above.
2. All work and materials shall be in conformity with all federal and state codes, laws, and regulations.
3. Where requirements of the contract documents exceed those of above mentioned codes, regulations, and standards, the requirements of the Contract Documents shall govern.

C. In case of conflict between the referenced codes and/or standards, the most stringent requirements shall govern.

1.08 SUBMITTALS

A. Lowest qualified Bidder shall be required to submit three (3) complete sets of detailed shop drawings of the complete pier system to the Engineer for approval prior to fabrication of the required floating pier system.

1. The shop drawings shall show all dimensions, clearances, and anchorage locations.
2. In addition, if design calculations for this project (as described above) were not previously submitted during prequalification and similar type calculations were substituted, at the discretion of the Engineer, two copies of said calculations may be required along with the shop drawings.

B. The successful bidder shall be required to submit a construction sequence schedule as well as a construction time schedule.

C. The successful bidder shall submit a copy of the quality control program that is used to manufacture their particular floating pier system. The quality control program submitted by the manufacture will be used by the project engineer to establish his/her inspection schedule and testing requirements to insure compliance with the plans and specifications, particularly in the following areas.

1. Weld quality.
2. Certifications for materials such as steel, galvanizing, wood, wood treatment, bolts and fasteners, flotation, and flotation encasement.
3. Dimensional inspection.
4. Galvanizing.

5. Quality of flotation material and encasement during manufacturing.

D. Drawings and calculations submitted must be sealed by a Professional Engineer experienced in the design of floating piers and anchorages. If the Engineer is not a full-time employee of the pier manufacturer, proof must be provided of satisfactory experience in floating pier system design including anchorages for conditions similar to those which will be experienced on this project. The burden of proof of the merit of the proposed floating pier system including anchorages is upon the manufacturer.

1.09 PRODUCT HANDLING

A. Use all means necessary to protect the materials of this Section before, during and after installation and to protect the work and materials of all other trades.

B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

2. PRODUCTS

2.01 LUMBER

A. Decking lumber shall be No. 1 select structural Southern Yellow Pine or better and shall conform to the rules of the SPIB as applicable. Deck boards shall be kiln dried. Framing lumber shall be No. 1 Southern Yellow Pine or better, and shall conform to the rules of the SPIB. Timber and lumber shall be pressure treated with CA-B or ACQ preservative in accordance with AWPB Standard LP-22 and each piece shall bear the AWPA Quality Mark.

2.02 STRUCTURAL AND MISCELLANEOUS STEEL

A. Structural and miscellaneous steel shall conform to the requirements of the Standard Specification for Structural Steel, ASTM Designation A36 or stronger. All steel shall be zinc coated (hot-dipped) in accordance with the requirements of ASTM Designation A123 except where structural steel remains out of sight as per State of Michigan exemption. Note: galvanizing of steel components reduces their structural integrity.

B. Structural aluminum shapes and/or extrusions shall be made from 6061-T6 aluminum, conforming to the requirements of ASTM Designation B221.

C. Fasteners: Bolts, lag bolts, screws, nails, flat washers and lock washers shall be of the type and size best suited for the intended use. Low-carbon bolts shall conform to the requirements for Grade “A” bolts, ASTM Designation A307. High strength bolts shall conform to the requirements of ASTM Designation A325 or A490.

1. All nailing and screw fasteners shall be hot dipped galvanized. All other bolts and washers (1/2-inch diameter and above) may be galvanized by electroplating process.
2. The coating thickness shall be of a minimum that corrosion of nonwear surfaces does not appear during the warranty period. Stainless steel fasteners may be substituted for protected Steel.

D. Cleats shall be heavy duty 10-inch bullhorn design made of cast aluminum alloy 319 (27,000 psi tensile, 18,000 psi yield) with countersunk hex bolt head lock features.

Cleats shall be of the size indicated and shall be installed at the locations shown on the drawings.

1. Cleats shall be securely bolted directly to the pier's structural framing or fastened securely to the structural framing through appropriate intermediate members as approved by the Floating Pier / Courtesy Dock Design Engineer.
2. Bolts, nuts, and washers (both standard and lock) shall be of adequate size and strength for tying up boats normally using the slip adjacent to the cleats and shall be hot dipped or mechanically galvanized.

E. Arc welding electrodes shall conform to American Welding Society "Iron and Steel Arc Welding Electrodes".

F. Galvanized steel sheet metal shall be at least 20 gauge, conforming to the requirements of either the Standard Specifications for zinc-coated (Galvanized Carbon Steel Sheets of a Commercial Quality, ASTM Designation A526) or zinc-coated (Galvanized) Steel sheets of structural quality, coils and cut lengths, ASTM Designation A446.

1. The steel base metal, its formability and zinc coating shall be in accordance with ASTM Designation A525.
2. The zinc coating shall be a minimum of 2.0 ounces per square foot.

G. Aluminum alloy plate shall be equivalent in strength to 20 gauge steel and be 0.124-inch thick, alloy 5052, H36 Marine Aluminum conforming to the requirements of the Standard Specification for Aluminum-Alloy Sheet and Plate ASTM Designation: B209.

2.03 FLOTATION MATERIAL

A. The flotation material shall be closed cell polystyrene with an average density of 1.0 pounds per cubic foot and a buoyancy factor of 59.0 pounds per cubic foot to allow for moisture absorption.

B. Flotation shall be provided by closed-cell polystyrene cellular materials, either pre-formed or expanded in place.

1. The flotation material shall be fully encased in at least 20 gauge galvanized steel sheet metal, marine aluminum at least 0.124-inches thick, and wood having a nominal thickness of 2-inches.

3. EXECUTION

3.01 INSTALLATION

A. The pier manufacturer shall provide a full time superintendent at the job site to supervise and coordinate the unloading, assembly and installation of the floating fishing pier including anchorages and ramp as well as to coordinate fishing pier related activities with those activities that are the responsibility of other trades and/or contractors.

B. A maximum amount of fabrication and assembly shall be done at the pier manufacturer's plant rather than on the job site.

3.02 PIERS

A. Fishing Pier shall be pre-fabricated within practical limits in the plant by the pier manufacturer and delivered ready for flotation. All workmanship shall be first class in all respects as determined by the Engineer and any units not representing a finished and acceptable appearance will be rejected.

B. All connector plates, including those in-line, at the corners and at knee braces which receive loads from impact and anchorage forces shall be of a height, width and thickness sufficient to dissipate the required loads to the framework without distortion or damage.

1. Connections may be either of the single or double shear type with hinge pin (bolt) holes parallel and along the hinge pin axis.
2. Hinge pin holes shall be as tight as possible to eliminate excessive “slop” and unnecessary movement in the joints.
3. Calculations may be required to demonstrate the frame’s ability to accept such loads imposed through the connectors as well as the ability of the connections (single or double shear) to resist the loads without distortion or damage.

C. All steel galvanized members must be hot dip galvanized after fabrication, including welding, and after the drilling of bolt holes for the attachment of anchorages and deck mounted components.

1. Exception is given only to the above referenced exemption and those field welds that must be performed, as determined by the Floating Pier / Courtesy Dock Design Engineer, at a custom connection and done so in the interest of quality control.
2. Where applicable, enough coats of an acceptable cold galvanizing compound must be applied to the field weld to give a thickness equal to the adjoining original hot dip galvanizing.

D. Where heavy plates are used in lieu of standard SAE washers (only on frame interior) hot dip galvanizing will not be required. Structural knee braces boxed in by wood and not visible are painted in lieu of galvanizing. Only the portion of intermediate spud that is visible above water is to be galvanized.

E. All finished steel members shall be free from twists, bends, distortions, and open joints. All steel construction shall be free of sharp edges and burrs. Ends of exposed steel members shall be rounded or beveled. All coping and mitering shall be done with care. Projecting materials and burrs, which would prevent bearing of the various members on each other, shall be removed.

F. All welding shall conform to the requirements of the American Welding Society. Welds shall be a solid and homogenous part of the metals joined and shall be free from pits or scale, and shall be of full area and length required to develop the required strength for the intended use. All shop welders, welding operators, welding equipment and welding procedures used in production of steel structures shall have been qualified in accordance with the qualification procedures of AWS D1.1. Welders shall be certified to perform the welds that are shown on the fabrication drawings. Proof of qualifications shall be required.

G. All bolts, nuts and washers shall be of a size and strength adequate for the loads imposed and shall be set square with connecting structural members with the nuts drawn up tight. Lock washers or other devices or techniques shall be used to prevent nuts from loosening after being properly tightened.

1. No bolt threads shall be allowed within the structural components in hinge type connections.
2. Hinge pins or bolts shall be of a positive locking type, which will not allow loosening or loss of the pin or bolt from movement of the joint.
3. High strength bolts shall be used where required in accordance with the American Institute of Steel Construction's specifications for "Structural Joints using ASTM A325 or A490 Bolts".

H. Lumber shall be counterbored wherever projecting bolt heads or nuts may damage boats or provide a hazard to fishing pier users. Counterboring shall be sufficiently deep to permit installation of the bolts and nuts with washers well below the surface of the wood.

3.03 DECKING

A. Deck boards shall be fastened by screwing.

1. Decking shall be screwed down for easy removal in those locations where electrical boxes, valves, drains, etc. must be accessed.
2. Deck screws shall be stainless steel and small and have heads flush with the deck surface or slightly depressed to provide a flat, even walking surface. Deck screws shall be installed so as not to fracture the wood and cause splintering at the hole.
3. Number of screws used per connection shall be adequate to firmly attach the deck boards and provide a flat, even walking surface. Fasteners of whatever type shall be located in symmetrical patterns throughout with fasteners in straight lines.

B. Deck boards shall be installed with no space between adjacent deck boards. Decking shall be installed perpendicular to the longitudinal axis of the fishing pier.

C. Deck boards shall be supported at a maximum of 3-foot on center with the boards laid heart side down.

D. Openings between adjacent floating fishing pier modules shall not exceed ½-inch, however, the opening between adjacent pier module end deck boards shall not exceed ⅛-inch. All connections between floating fishing pier modules shall not protrude above the level of the pier surface.

3.04 RAMPS

A. A ramp shall be required between the fishing pier and trestle or fixed abutment, as shown on the plans. Ramps shall have timber decks constructed of 2-inch x 6-inch lumber, adequately supported, installed parallel to the longitudinal axis of the bridge and meeting the material requirements specified in this section.

B. The ramps may be hinged at both end and have a sliding or roller (wheeled) connection at the other to allow for movement due to fluctuating water levels.

Wheels shall be of adequate strength to carry the design live loads applied to the bridge in addition to the weight of the bridge and handrails.

C. Hinged connections at both ends may be used if the anchorage system used allows for the horizontal movement of the pier(s). In all cases, the bridge connections shall be so designed as not to present any excessive openings or significant differences in elevation between the bridge and point of connection at the shore and pier under a range of lake levels from +5-inch above to -1-foot below LWD.

D. A hinged threshold plate shall be used with a sliding or roller type connection where the ramp joins the pier to avoid a step. The bottom of the ramp shall be designed so that the step, without the threshold plate, shall not exceed 6-inches. The required hinge threshold plate shall be attached at the bottom of the bridge, shall be the full width of the bridge and shall be 36-inches long if the step is 6 inches high. For lesser height steps, the length of the threshold plate shall be proportioned accordingly. The threshold plate shall be fabricated from ¼-inch thick rib-reinforced aluminum deck plate of adequate strength and design to prevent abnormal deflection and shall have a slip resistant surface.

E. Handrails shall be required on both sides of all ramps and may be part of the structural support or separate units. Top rail is to be 42-inches above the deck surface with intermediate railings.

1. All rails shall be smooth with no sharp corners, burrs, etc., so as to make a smooth member for hand contact.
2. Handrail and handrail brackets shall be designed to withstand a minimum concentrated load of 200 pounds applied from any direction at any point on the handrail.
3. Sharp corners on railings or trusses used as handrails shall be avoided by the use of short 45° miters, short curved sections, or other approved methods.
4. Protrusions on the railing or on the bridges themselves shall not have sharp corners.

3.05 SKIRTING AND RUBRAILS

A. Skirting (to the waterline) is preferred. Required structural framework and flotation devices shall be skirted from decking to no less than 2-inch above the waterline at dead loading. In the case where skirting is the prime side wall member (timber box type floating piers) extend sidewall to the bottom of the unit with nominal 2-inch thick wood meeting the lumber requirements specified.

1. The skirting must be adequately secured full depth to the frame members at maximum 4-foot spacing along unit with bolts or other acceptable fasteners as dictated by sound engineering practices to prevent skirting and frame damage by ice, wave and impact design forces.
2. Fendering shall be non-marring white extruded vinyl or flexible polyvinyl chloride, resistant to sunlight, water, gasoline, oil or other agents common to marinas.

3.06 LADDERS

A. A safety ladders shall be installed on the fishing pier as shown on the plan.

B. Ladders at the ends of finger piers shall be so attached as to accommodate spuds if spuds are required at these locations.

C. Ladders shall be constructed of galvanized steel, aluminum or an approved equal in accordance with accepted engineering practice.

D. Materials shall conform to applicable requirements of this specification.

1. Clear spacing between vertical rails shall not be less than 18 or more than 24-inches with on center spacing of rungs at 10 to 12-inches.
2. The bottom of ladders shall project down into the water so that the top of the bottom rung is 36-inches below the still water surface.
3. The top of the rails shall project 36-inches above the pier deck surface with rungs omitted between the rails above the deck.

3.07 ANCHORAGE SYSTEM

A. The floating fishing pier shall be secured via a transmission of all anchorage loads through the pier's structure – through the pier's gangway ramp, and into the shore-based concrete landing abutment. The manufacturer shall provide abutment sizing and connection detail requirements to the Floating Pier / Courtesy Dock Design Engineer specified within shore work bidding documents.

3.08 MAINTENANCE AND OPERATIONS MANUAL

A. Upon completion of the project, the Contractor shall furnish the Owner three (3) copies of a "Maintenance and Operations Manual", which shall include instructions and related information for maintaining and operating the floating fishing pier system and anchorages.

B. The Contractor shall include in the manual a detailed procedure for systematically maintaining and winterizing the fishing pier system and its anchorages in an effort to minimizing ice damage to the system during the winter.

3.09 WARRANTY

A. If a pier system of different manufacture than FDS is utilized, a warranty meeting or exceeding the criteria listed below must be provided.

B. FDS warrants to the original purchaser of a facility designed and installed by FDS, that the product shall be free from defects in materials, workmanship, and/or design under normal use for a period of five (5) years.

C. All dockage components, connectors, and appurtenances have been designed and are constructed to the performance standards identified within the preceding general specifications. Conditions exceeding these standards (patterned after Michigan Department of Natural Resources design criteria for small craft harbors) may precipitate damage not covered under this warranty.

D. Anchorage systems and any related damage to the anchorage system, if specified by others, may not be covered as a part of this warranty.

1. At any time within the warranty period FDS will replace and/or repair any part, assembly or portion thereof, which our examination shall disclose to our satisfaction to be defective, without expense to the Owner.
2. This warranty specifically excludes misuse, alteration, or damage resulting from transportation after initial installation as well as from flood, windstorm, **moving**

ice (thermal expansion, current, or wind-driven), fire, or an act of God exceeding the design criteria set forth in these specifications. Piers located immediately adjacent to vertical walls will require either de-icing or winter removal.

3. Commercially purchased items shall be warranted for one (1) year or the warranty period provided by the manufacturer, if longer than one year.

END OF SECTION 07400

SECTION 07511
EVAPORATOR RESTROOM FACILITY, VAULT ONLY

1. GENERAL

1.01 DESCRIPTION

A. Work under this Section includes:

1. Furnishing, delivering and installation of an evaporator restroom vault.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 01000 – General Project Requirements
2. Section 02100 – Temporary Access and Facilities
3. Section 02300 – Site Resource Protection
4. Section 02400 – Soil Erosion and Sediment Control
5. Section 02600 – Demolition and Removals

1.02 QUALITY ASSURANCE

A. Contractor Qualifications: The work described in this section requires specialized knowledge, experience, skills and equipment to successfully complete. The Contractor shall possess the full capability to execute the work as specified, including trained, experienced and skilled personnel and possession or access to the required equipment.

B. Shop Drawings:

1. Shop Drawings, submittal requirements, procedures and schedules for facility shall meet the requirements contained in Subsection 1.09 of Section 01000, General Project Requirements.

C. Substitutions and Product Options:

1. These shall meet the requirements in Subsection 1.08.E of Section 01000, General Project Requirements.
2. All approved equals shall be notified with written statements of their approval. Manufacturers shall not bid this project without this written notification.

2. PRODUCTS

2.01 EVAPORATOR RESTROOM FACILITY

A. GENERAL

1. The structure shall consist of a concrete vault that will sit below an overhead structure installed by others. The vault shall be a certified water tight vault with a factory installed spray in two-part 100% solid polyurethane chemical resistant liner. The vault shall be built by a precast company that is certified by the National Precast Concrete Association.

B. PRECAST CONCRETE FLOOR SYSTEM AND FOUNDATION/VAULT

1. Restroom floor shall be a one-piece structural monolithic precast concrete slab manufactured in a closed environmentally controlled plant. Concrete to develop 5,000 psi in 28 days. The floor slab shall be designed and engineered with pick-up points for possible future relocation. The slab shall be 6″ thick concrete with a 6″ steel angle at the lift points, the floor finish shall have a non-skid broom finish. After the slab is cured it will be sealed with a two-part epoxy coating. The structural rebar shall be welded to the perimeter angle, the minimum rebar size shall be #4 at 12″ on center each way. Anchor bolts shall be 5/8″ with 2″ x 2″ x 3/16″ plate washers. The anchor bolts will be embedded in a minimum 4″ of concrete, the walls will be installed directly on concrete. Installation of walls on ferrous (steel) surfaces will not be permitted. Floor drains shall be set with epoxy into the slab by the Contractor.

2. Foundation shall be manufactured in a closed environmentally controlled plant. Construction shall be 6″ thick concrete floor with 4″ concrete walls. Concrete to develop 5,000 psi in 28 days. The floor slab shall have pick-up points for possible future relocation.

3. Manufacturer must have a minimum of three years of experience in building similar floor systems. The floor system shall be built by a precast company that is currently certified by the National Precast Concrete Association.

3. EXECUTION

3.01 GENERAL REQUIREMENTS

A. All work shall conform with all local, state and national building and zoning codes applicable to the nature and substance of the work described herein.

The following minimum standards (most current) shall apply:

1. Illinois Building Code
2. National Electric Code
3. Illinois Plumbing Code
4. State of Illinois Accessibility Code
5. International Mechanical Code
6. International Fire Code
7. Illinois Energy Conservation Code

3.02 SITE PREPARATION AND ACCESS

A. Facility shall be installed at the location and elevation shown on the Plans. It shall be accurately located and staked using the approved control points.

B. Contractor shall provide a clear and safe access to the building site for the delivery truck. If access cannot be provided via delivery truck, the Contractor shall take delivery at an alternate site and will be responsible for final transportation to the job site at no additional charge to the Owner.

C. A crane may be used for off-loading and setting the structure on site and shall be the responsibility of the Contractor. A spreader bar assembly will be required. The dimensions for the lifting points shall be outlined on the shop drawings. The

shop drawings must be reviewed by the crane company for clarification as to the requirements of the spreader bar assembly.

3.03 EXCAVATION

A. Blade-off organic matter and stockpile for later use.

B. Dispose of trash or rubble.

C. Excavate for all footings, piers, tanks and all work included in this contract. Footings shall extend to the required bearing of 3,000 lbs / sf regardless of dimensions. Protect the completed excavation against freezing.

D. Excavation required shall be per Plans and specifications.

3.04 BACKFILL

A. Backfill walls, footings, foundations 4″ below finish grades outside buildings. Dispose of all excess material off-site. Provide additional fill to meet grades as shown.

B. Sand, clay, gravel, crushed stone or other non-organic or imperishable materials may be used as backfill. Deposit material in 6″ layers and compact to 95%. Mixing of dissimilar materials is unacceptable.

3.05 UTILITY HOOKUPS

A. Contractor shall install additional vent pipe and roof curb.

B. Contractor shall install the roof vent fan and final electrical connection to the fan.

3.06 ANCHORING OF THE RESTROOM

A. Anchor the restroom to the foundation per Plans and specifications. This includes weld plates between the floor slab and vault.

END OF SECTION 07511

SECTION 08800
METAL FABRICATIONS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Provision and installation of stair handrail, ramp handrail, guardrail, guardrail - abutment, counter, bench, and platform bench.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 05400 – Concrete Pavement
2. Section 07300 – Concrete Structures, Cast-in-place
3. Section 07400 – Piers and Docks

1.02 QUALITY ASSURANCE

A The work described in this section requires specialized knowledge, experience, skills and equipment to successfully complete. The Contractor shall possess the full capability to execute the work as specified, including trained, experienced and skilled personnel and possession or access to the required equipment.

B. The metal fabricator shall provide proof of qualifications, including a work history documenting a minimum of 5 projects completed in the last 5 years which are comparable in scope, techniques and size. This information shall include a complete project description, lead foreman experience history, location, client name and contact phone numbers. The Contractor shall provide this information in the bidder's forms of this Contract.

C. Submittals

1. Product Data: Provide manufacturer's material descriptions, construction details, dimension of individual components and profiles, and finishes for posts, infill panels, rails, base plates, fittings, and hardware.
    a. Provide documentation of compliance with the Build America, Buy America (BABA or the Act).
2. Shop Drawings: Contractor shall provide engineered Shop Drawings for Owner approval prior to fabrication. Show dimensions, metal thickness, finishes, joints, attachments, and relationship of work to adjacent construction.
3. Samples for Verification: For each type of exposed finish required, prepared on components indicated below and of the same thickness and metal indicated for the Work. If finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
    a. 6-inch-long sections of each different linear member, including handrails, top rails, posts, and balusters.
    b. Fittings and brackets.

c. Assembled samples, made from full-size components, including top rail, post, handrail, and infill. Show method of finished members at intersections.

4. Mockup: Before installing the guardrail, build a mockup on one section to verify selections made under sample Submittals and demonstrate aesthetic effects and qualities of materials and execution.

1.03 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying with Work.

1.04 SYSTEM DESCRIPTION

A. Minimum Design Loads

1. Handrails, Guardrails, Abutment Guardrails, Custom Counters, Custom Bench and Custom Platform Bench:

a. 50 pounds per linear foot applied in any direction at top, transferred via attachments and supports.

b. Concentrated 200-pound load applied in any direction at any point along top, transferred via attachments and supports.

c. Maximum deflection under loading: L/120.

2. Infill panels:

a. Concentrated load of 50 pounds per foot applied horizontally to an area of 1 square foot.

3. Concentrated and uniform loads do not need to be applied simultaneously.

4. Allow for thermal movements from ambient and surface temperature acting on exterior guardrails and handrails

a. Temperature Change: 120 Degrees-Fahrenheit ambient; 180 Degrees-Fahrenheit material surfaces.

5. Perform design under direct supervision of Professional Structural Engineer licensed in State in which work is performed.

6. Fabricate in accordance with ASTM E985.

1.05 ACCESSIBILITY REQUIREMENTS

A. All components of this section shall be code-compliant and adhere to the most stringent federal, state or local accessibility requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store steel above ground on platforms, skids, or other supports; separate with wooden separators.

B. Protect steel from corrosion.

C. Prevent damage to prime coats and galvanized coatings.

1.07 WARRANTY

A. Manufacturer shall warrant products and accessories against defects in materials and workmanship when utilized for their intended use.

B. Warranty Period: Five years from date of Substantial Completion.

2. PRODUCTS

2.01 MATERIALS – STEEL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

1. Shapes: ASTM A36/A36M.

2. Plate: ASTM A283/A283M.

3. Sheet: ASTM A1008/A1008M.

4. Pipe: ASTM A501/A501M.

5. Tube: ASTM A500/A500M.

6. Bars: ASTM A108.

B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

1. Provide either formed- or cast-metal brackets with predrilled holes for exposed bolt anchorage.

2. Galvanized Steel Components: Plated-steel fasteners complying with ASTM B 633, Class FE/Zn 25 for electrodeposited zinc coating.

C. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring guardrails or handrails to other types of construction indicated and capable of withstanding design loads.

2.02 MATERIALS - MISCELLANEOUS

A. Wood Rails for Guardrail: Clear, straight-grained hardwood rails secured to metal guardrail.

1. Species: White Oak

2. Finish: Sealed ends

3. Profile: As indicated

2.03 ACCESSORIES

A. Exposed Screws: Same material as metal being fastened; Philips flat head, countersunk, unless noted otherwise.

B. Bolts: ASTM A307, hexagonal head type.

C. Anchoring Cement: Factory-packaged, water-resistant, exterior rated, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at project site to create pourable anchoring, patching, and grouting compound.

2.04 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the shop to the greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Form works true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.

F. Cut, reinforce, drill, and tap to receive finish hardware, screws, and similar items.

G. Exposed Mechanical Fastenings: Flush countersunk screw or bolts, unobtrusively located, consistent with design of component except where specifically noted otherwise.

H. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

I. Bend members in jogs to produce uniform curvature for each configuration required; maintain cross section of member throughout the entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

J. Close exposed ends of hollow railing members with prefabricated end fittings.

K. Welding:

1. Use welds for permanent connections where possible. Grind exposed welds smooth.

2. Tack welds prohibited on exposed surfaces.

3. Steel shapes, plate, pipe, and tube: Conform to AWS D1.1/D1.1M.

4. Steel sheet: Conform to AWS D1.3/D1.3M.

2.05 FINISHES

A. Exterior Ferrous Metal – Galvanized:

1. Galvanized; ASTM A123/A123M, to 2.0 ounces per square foot.

2. Shop clean surfaces and apply phosphate film at factory for surfaces to be painted in the field.

3. Comply with NAAMM’s “Metal Finished Manual for Architectural and Metal Products” recommendations for applying and designating finishing.

4. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

3. EXECUTION

3.01 INSTALLATION

A. Install items in accordance with approved Shop Drawings.

B. Install components plumb, level, and rigid.

C. Welding:

1. Field welds prohibited. Only shop welding is acceptable.

2. Grind and fill exposed welds; finish smooth and flush.

3. Tack welds prohibited on exposed surfaces.

4. Steel shapes, plate, pipes, and tube: Conform to AWS D1.1/D1.1M.

5. Steel sheet: Conform to AWS D1.3/D1.3M.

D. Install sleeved components with anchoring cement.

E. Prevent contact of dissimilar metals by using zinc-rich paint, bituminous coating, or non-absorptive gaskets.

3.02 SITE PREPARATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for concrete, floating pier, pavement work, and other conditions affecting performance.

B. Do not begin installation before the final grading is completed and concrete has completely set, unless otherwise permitted by Owner.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Mark locations of the guardrails and handrails before installation.

3.03 ADJUSTING

A. Clean and touch up galvanized coatings at welded and abraded surfaces in accordance with ASTM A780, Annex A2.

END OF SECTION 08800

SECTION 09110
HERBICIDE TREATMENT

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Preparation and application of herbicides to eliminate undesirable plants for landscape establishment and restoration.

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02100 – Temporary Access and Facilities
2. Section 02300 – Site Resource Protection
3. Section 02500 – Vegetation Removal

1.02 QUALITY ASSURANCE

A. The work described in this section requires specialized knowledge, experience, skills and equipment to perform successfully. The proposed work site is a forest preserve and may contain flora, fauna and / or soils which are highly sensitive to disturbance, herbicide drift and overspray.

B. This Contract includes work tasks and site inspections which require the identification of native, introduced and / or invasive plants that may exist on the site at any time. The Contractor shall employ an experienced biologist, botanist, ecologist, or equivalent to oversee the work, oversee all herbicide use and recommend best management practices to assure that the herbicide applications are effective and that desirable species are not impacted.

C. The work in this section includes the use of herbicides for control of undesirable plant species. The Contractor shall employ persons trained in the prescription, preparation and application of such herbicides that are typically used in native landscape management and are licensed by the State of Illinois as Pesticide Operators or Applicators. The Contractor must submit a valid copy of these licenses for all personnel performing herbicide application on the project.

D. All pay items for herbicide application shall include a guaranty for effectiveness in eliminating the target species. Should the initial application fail to eliminate the target species, the Contractor shall re-apply the herbicide until those target species are eliminated at no additional charge to the Owner. The manufacturer's Product Data Sheet list of species controlled shall be used to determine effectiveness.

E. The Owner shall inspect the treated areas approximately 2 to 4 weeks after application to determine the effectiveness of the treatment. If the initial treatment is judged to be less than 100% effective, additional spot treatments may be ordered by the Owner until the target species are adequately eliminated.

1.03 SUBMITTALS

A. The Owner reserves the right to approve the Contractor or Subcontractor who will be directly involved in performing the required work. This approval shall be

dependent on the submittal to the Owner, at least 14 days prior to the start of work, of the following:

1. A list of 10 projects similar in scope and size which have been satisfactorily completed in the past 5 years that clearly demonstrate the ability to complete the work as specified. This submittal shall include the project name, project location, completion date, owners' name and contact information, size in acres and a detailed description of the work performed, landscape composition, equipment and herbicides used and any follow up work. In addition, all projects listed must involve selective species removal, tree preservation and herbicide applications.
2. A list of every person who is proposed to perform work with herbicides on the project, their years of licensed experience working with herbicides and proof of their possession of a current Illinois Pesticide Applicators or Operators License.
3. A list of all equipment proposed for use on the project, including type, make, model, year and Ground Pressure Rating (GPR) where applicable.

B. The Contractor shall submit a Product Data Sheet (PDS) and Safety Data Sheet (SDS) for each herbicide to be utilized for the work before the start of work.

1.04 SAFETY

A. It is the responsibility of the Contractor to perform the work according to the highest industry safety standards, the guidelines and requirements of the Occupational Safety and Health Administration (OSHA) and all other applicable local, state and federal requirements.

B. The work described herein is being performed on a public forest preserve and as such portions of the site may be either open to or generally accessible to the public. Extreme caution must be exercised when operating machinery or performing any tasks where there is the potential for personal injury.

2. PRODUCTS

2.01 HERBICIDES

A. Glyphosate, Non-Aquatic (e.g. Roundup Pro)

1. 41.00% active ingredient

B. Glyphosate, Aquatic (e.g. Aquamaster)

1. 53.80% active ingredient

C. Broadleaf, Turf, Post-emergent (e.g. SpeedZone)

1. 28.57% active ingredient 2,4-D
2. 0.62% active ingredient Carfentrazone-ethyl
3. 28.57% active ingredient Mecoprop-p acid
4. 1.7% active ingredient Dicamba

D. Clopyralid (e.g. Transline)

1. 40.90% active ingredient

E. Trichlopyr, Type 3A (e.g. Garlon 3A)

1. 44.40% active ingredient

F. Trichlopyr, Type 4 (e.g. Garlon 4)

1. 61.60% active ingredient

2.02 ADDITIVES

A. Non-Ionic Surfactant for Herbicides

B. Basal Oil Carrier

C. pH Balancer

D. Dye Marker

3. EXECUTION

3.01 GENERAL

A. Specific project requirements for herbicide treatments may be indicated on the Plans.

B. No mobilization or other work shall commence until a meeting with the Owner, Contractor and designated foreman is conducted on site. At this time the scope of work shall be reviewed and any specific instructions shall be identified. The Contractor shall notify the Owner at least 24 hours before the start or restart of work. For large scale blanket applications, the area shall be measured for payment before work begins.

C. Additional information and instructions regarding the work may be conveyed by the Owner through markings in the field. This may include staking or flagging for treatment limits, individual plants to be treated, restricted access areas, access routes and other specific requirements.

D. Before proceeding, Contractor shall provide the Owner with a list of herbicides, surfactants, water conditioners, dyes, pH balancers, and other chemicals and adjuvants to be used for implementation of this project. The Contractor shall maintain on site at all times the appropriate Safety Data Sheets (SDS) for all substances utilized on site. Herbicide application records shall be provided to the Owner on a weekly basis in the Owner's format as required for Illinois EPA NPDES permit compliance.

E. Herbicides shall be applied by a State of Illinois licensed applicator or licensed operator working under the direct (on site) supervision of a licensed applicator. The Owner requires that all applicators and operators working for the Contractor shall have on file with the Owner a copy of their herbicide licenses.

F. The Owner shall approve of all equipment used to apply herbicides. These may include mechanized boom spraying, portable back pack sprayers, wick applicators or other equipment and techniques.

G. The Contractor shall be responsible for positively identifying all species before they are treated with herbicide. Extreme caution shall be used to prevent over-application of herbicides and non-target damage to desirable plants. Only herbicides approved for aquatic applications shall be used where open water or saturated soils is present.

H. During the performance of the herbicide treatments, should any uncertainty arise regarding the specific plants to be treated or avoided, the Contractor or foreman shall immediately inform the Owner for a determination in the field.

I. It is of utmost importance during herbicide treatment operations that no individual plants of species to be preserved or otherwise identified as desirable to the Owner be damaged or come in contact with herbicides. Should any such significant damage or unauthorized removal occur which causes a loss of property to the Owner, the Contractor shall be required to perform the following remediation:

1. Remove and dispose of significantly damaged plants at no additional cost to the Owner.

2. Replace lost plant material, in the form of new plant material at a replacement ratio of 2 inches of replacement for each 1 inch of plant material damaged or lost. The Owner shall determine or approve the species, source, size, quantity and planting locations of the replacement material before any replacement work is started. The Contractor shall obtain, plant, mulch, water and guarantee the planting for one year with no additional cost to the Owner.

3. Unless indicated on the Plans or marked in the field for removal, the following list represents the most commonly found woody native species to be protected and preserved on the site:

Acer saccharum	Sugar Maple
Acer saccharinum	Silver Maple
Amelanchier spp.	Serviceberry
Carpinus caroliniana	American Hornbeam
Carya spp.	Hickories, (all species)
Celtis occidentalis	Hackberry
Crataegus spp.	Hawthorn (all species)
Juglans nigra	Black Walnut
Juglans cinerea	Butternut
Malus ioensis	Prairie Crabapple
Malus coronaria	Sweet Crabapple
Ostrya virginiana	Ironwood
Populus deltoides	Cottonwood (large specimens only)
Populus tremuloides	Quaking Aspen
Prunus serotina	Black Cherry
Quercus spp.	Oaks (all species)
Tilia Americana	Basswood

J. Sites which contain areas sensitive to disturbance such as wetlands, rare plant species, sensitive root zones and / or sensitive soils may be off-limits to machine access. No equipment shall enter these areas. Herbicide treatments shall be performed by hand or by equipment that can be located outside of the protected area and reached via a boom.

K. The Contractor shall be solely responsible for the repair of any and all other damage to the Owner’s property, including roads, trails, bridges, signs and other features.

L. After the herbicide treatment has been completed according to the conditions determined at the preconstruction site meeting, the Owner and Contractor shall

meet for a final review of the work area. If the original contract terms have been satisfied, the work shall be measured for payment.

M. The Contractor shall be solely responsible for adhering to the herbicide manufacturer's recommendations and requirements regarding safety and application techniques for maximum effectiveness. Special attention should be given to recommendations regarding temperature, humidity and rainfall.

3.02 GLYPHOSATE, NON-AQUATIC – BROAD HERBACEOUS APPLICATIONS

A. For new seeding or restoration of areas where complete elimination of herbaceous weeds is desired, apply glyphosate evenly and completely to the designated target area. The concentration rate for this pay item shall be a 2% solution.

B. For these non-target applications, a motorized boom sprayer rig or back pack sprayer may be used.

3.03 GLYPHOSATE, AQUATIC – BROAD HERBACEOUS APPLICATIONS

A. For use in wet or aquatic areas, especially where Common Reed (*Phragmites australis*), Reed Canary Grass (*Phalaris arundinacea*), Cattail (*Typha*) or Canada Thistle (*Cirsium arvense*) are present, Aquamaster or its' generic equivalents shall be used in place of Roundup at a 5% solution and as per Article 3.02 above.

3.04 BROADLEAF, TURF – WEED CONTROL IN TURF

A. For use before or during turf grass establishment, broadleaf weed control shall be utilized when directed by the Owner. Apply at 4.0 pints per acre for broadcast applications. Apply at 1.5 oz/gal for spot spray applications. Particular care must be exercised to avoid weather conditions where volatilization and herbicide drift can occur when used near other desirable vegetation. For newly seeded areas, assure that the seedlings have fully hardened off before application. Refer to the herbicide label for recommended timing.

3.05 CLOPYRALID – BROADLEAF APPLICATIONS

A. For use before and during native seed establishment for the control of Thistle (*Cirsium*), Clovers (*Trifolium*), Teasel (*Dipsacu*) and other difficult broadleaf weeds. The concentration rate for this pay item shall be a 0.75% solution.

B. Clopyralid may be applied as a broad non-target foliar spray or by spot spraying selective plants.

3.06 TRICHLOPYR, TYPES 3A & 4 – WOODY PLANT APPLICATIONS

A. For use to eliminate woody plant species either as a foliar spray, foliar wick, cut stump treatment or for girdling.

B. Stump treatment shall be applied to the stump cambium adjacent to the outer bark within 30 minutes of being cut using a wick or sponge applicator.

C. Herbicides for stump treatment shall be mixed with a basal oil carrier, dye and pH balancer to the specified concentration. Fuel oils shall not be used as carriers or for dilution. Mix herbicides at a location off site or where protection from spills and ground contamination can be assured. Use an impervious ground protection below all mixing locations.

D. Girdling is defined as the cutting and complete removal of a tree's bark including cork cambium, phloem and cambium around the entire circumference of the trunk such that the tree is caused to die. Some trees larger than 12″ DBH may be girdled if not adjacent to property boundaries, roadways, trails, or other assets and only if marked by the Owner. All trees designated for girdling shall be double cut. Cuts shall be made approximately 8-10 inches apart, parallel to each other and horizontal to the ground surface. Girdling cuts shall not be made higher than 3 feet above the ground surface.

E. All girdled trees shall have herbicide applied to the inside of both girdle rings.

F. A follow-up foliar application of herbicide to suckers, seedlings or other stimulated new growth of the target woody species shall be performed during the growing season immediately following the initial cutting and stump treatment of the said target species application. The Contractor shall initiate foliar herbicide application promptly when new stems are large enough to effectively treat, generally at a stem length of 3″ to 6″ and no larger than 12″. It is critical that regrowth is not allowed to achieve extensive size before treatment due to decreased herbicide effectiveness, increased herbicide quantities required and the additional risk of damage to non-target species. Failure of the Contractor to perform regrowth treatment in a timely fashion may result in the suspension of work and / or payment to the Contractor.

G. For all follow-up treatments, herbicide shall be applied to growing leaves utilizing a wick applicator. Spray application shall be used only upon approval of the Owner.

H. Herbicides for regrowth treatment shall be mixed with water, non-ionic surfactant, dye and pH balancer to the specified concentration. Mix herbicides at a location off site or where protection from spills and ground contamination can be assured. Use an impervious ground protection below all mixing locations.

I. The concentration rate for Trichlopyr per pay item shall be as follows:

1. Type 3A Foliar Spray: 5% solution
2. Type 4 Stump Treatment: 25% solution
3. Type 4 for Girdling: 5% solution

END OF SECTION 09110

SECTION 09200
WOODY AND HERBACEOUS PLANTS

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Preparation of the site for planting purposes
2. Planting of woody and herbaceous plants
3. Aftercare of woody and herbaceous plantings

B. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 02100 – Temporary Access and Facilities
2. Section 02500 – Vegetation Removal
3. Section 03120 – Finish Grading and Topsoil
4. Section 09110 – Herbicide Treatment

1.02 REFERENCE STANDARDS

A. The following referenced standards shall be adopted as part of the specifications. When these referenced standards conflict with the specifications contained herein, the specifications shall prevail.

1. ANSI Z60.1 American Standard for Nursery Stock (ASNS), most current edition.
2. ANSI A 300 – Standard Practices for Tree, Shrub and other Woody Plant Maintenance, most current edition and parts.
3. Interpretation of plant names and descriptions shall reference the following documents. Where the names or plant descriptions disagree between the several documents, the most current document shall prevail.
    a. USDA - The Germplasm Resources Information Network (GRIN) http://www.ars-grin.gov/npgs/searchgrin.html
    b. Manual of Woody Landscape Plants; Michael Dirr; Stipes Publishing, Champaign, Illinois; Most Current Edition.
4. Pruning practices shall conform to recommendations “Structural Pruning: A Guide For The Green Industry” most current edition; published by Urban Tree Foundation, Visalia, California.
5. Glossary of Arboricultural Terms, International Society of Arboriculture, Champaign IL, most current edition.

1.03 PREBID REVIEW

A. Information regarding the location and extent of the proposed plantings is shown on the Plans. However, it is recommended that the Contractor or Subcontractor conduct a thorough site inspection to determine the exact scope, location and site access limitations for purposes of costing and planning the Work.

1.04 CONTRACTOR QUALIFICATIONS AND REFERENCE SUBMITTALS

A. The work described in this section requires specialized knowledge, experience, skills and equipment to perform successfully. The Landscape Contractor and their personnel assigned to this project shall possess the following minimum requirements:

1. The ability to identify, select and evaluate all species of trees, shrubs and herbaceous plants typically utilized in native plantings and landscape restoration.

2. Experience and knowledge in applying standard horticultural and industry standards in the preparation of planting sites, plant installation and plant establishment.

3. Possession of, or the ability to acquire and operate the specific types of equipment required to perform the work.

4. A minimum of 8 years experience as a full-time business engaged in the primary service of providing planting and landscape services.

B. To demonstrate proof of qualifications, the Contractor shall provide a list of satisfactory reference projects as contained in the Bidder's Proposal. When this specification is included in a Request for Quotes (RFQ) projects, the bidder shall submit a list of at least 5 projects performed over the last 5 years which are most similar in size and scope to this Contract and that demonstrate the required work experience and competency. Information for each project shall include:

1. Name, location and owner of the project

2. Project description, completion date and contract value.

2. PRODUCTS

2.01 PLANT MATERIAL SELECTION AND SOURCING

A. Plant materials to be installed for this Contract may be selected and sourced by one or more of three methods:

1. Plants Selected and Purchased by the Contractor

a. The Contractor shall locate, select and purchase plant materials from nurseries based on the quality requirements contained in this section. The Owner reserves the right to inspect and approve some or all plant materials at their source location or approve the nursery source. When any plant material is rejected by the Owner, the Contractor shall provide a substitute selection and source for approval by the Owner. In general, the Owner is primarily interested in approving specific tree selections; shrubs and herbaceous plants may only require source approval. The Contractor shall be responsible for ordering, purchasing and transporting the plants to the work site.

2. Plants Selected by the Owner and Purchased by the Contractor

a. The Owner shall locate and select plant materials from nurseries based on the quality requirements contained in this section. The Contractor shall be responsible for ordering, purchasing and transporting these selected plants to the work site.

3. Plants Selected and Purchased by the Owner

a. The Owner shall locate, select and purchase plant materials in place from nurseries based on the quality requirements contained in this section. The Contractor shall be responsible for ordering and transporting these selected plants to the work site.

2.02 PLANT MATERIAL GUARANTEE AND REPLACEMENTS

A. Plant materials installed for this Contract shall be subject to a 1 year guarantee for viability and quality. Approximately 10 to 12 months after planting is complete, the Owner and Contractor shall jointly inspect the individual plantings to evaluate health, viability and quality as described in this section. Plants subject to rejection and replacement include:

1. Trees:

a. Damaged or dead central leader

b. Damaged or dead branches which disfigure the tree

c. Damaged or dead branches of over 20% of the canopy

d. Damaged trunk bark

2. Plants Selected and Purchased by the Contractor

a. The Contractor shall locate, select and purchase plant materials from nurseries based on the quality requirements contained in this section. The Owner reserves the right to inspect and approve some or all plant materials at their source location or approve the nursery source. When any plant material is rejected by the Owner, the Contractor shall provide a substitute selection and source for approval by the Owner. In general, the Owner is primarily interested in approving specific tree selections; shrubs and herbaceous plants may only require source approval. The Contractor shall be responsible for ordering, purchasing and transporting the plants to the work site.

3. Plants Selected by the Owner and Purchased by the Contractor

a. The Owner shall locate and select plant materials from nurseries based on the quality requirements contained in this section. The Contractor shall be responsible for ordering, purchasing and transporting these selected plants to the work site.

4. Plants Selected and Purchased by the Owner

a. The Owner shall locate, select and purchase plant materials in place from nurseries based on the quality requirements contained in this section. The Contractor shall be responsible for ordering and transporting these selected plants to the work site.

2.02 PLANT MATERIAL QUALITY - GENERAL

A. All plant material shall be true genus, species, variety and / or cultivar. They shall be sound, healthy and vigorous, display the typical growth habit of that particular species or selection and shall be free of diseases and insect pests. All plant material shall be free of damage from harvesting or handling, including scarred bark, broken branches, disturbed root systems or wind burn. All plant material

shall exhibit proper shape and form according to accepted nursery practices. Any plant not meeting these requirements shall be rejected and shall be replaced with specified stock at no additional cost to the Owner as per the warranty specifications found in this section.

B. It is the Owner's intent to only accept the highest quality plant material available for each specified species and size. The Owner reserves the right to personally inspect and / or select the plant material at the source for approval.

C. All plants shall be measured before pruning when their branches are in their normal position and shall possess a height and spread typical of the species. Caliper measurements for nursery grown trees shall be taken at a point on the trunk 6 inches above the natural ground line for trees up to and including 4 inches in caliper. Multi-stem trees shall be measured by height from the ground to an average of the highest growing tips. Shrubs shall be measured by height or width depending on the typical form of the species. At minimum all plants shall measure the specified size. Plants may be supplied at larger sizes without additional compensation with approval of the Owner.

D. No substitutions of species, size or source shall be allowed without prior approval of the Owner.

E. The Contractor shall thoroughly inspect the plants at the nursery and report any plant damage caused by the nursery to the Owner. Regardless of whether the plants are source by the Contractor or Owner, once loaded for transport, any damage to the plant material becomes the sole responsibility of the Contractor.

2.03 FIELD-GROWN WOODY PLANTS

A. All field-grown trees and shrubs shall be grown and harvested from Owner-approved nurseries located within approximately 90 miles of Libertyville, Illinois unless prior approval is granted by the Owner.

B. Field-grown balled and burlapped trees and shrubs shall be grown in native soils suitable for harvesting a firm and intact root ball. They shall be primarily clay soils with adequate fertility for normal growth rates. Soils that are high in loose organic material or consisting of high sand content are not acceptable. All burlap and twine used for root balls shall be natural biodegradable material. Plants delivered with damaged root balls shall also be rejected. After harvesting, root balls shall be protected from freezing.

C. All field-grown balled and burlapped trees shall have straight trunks and dominant central leader stems for trees. Primary side branches shall be well distributed along the central leader and shall not be dead, diseased or broken.

D. All field-grown balled and burlapped trees shall have a visible root flare above the top of the ball to indicate proper soil level at harvesting. Trees with excess soil above the root flare shall be rejected. The Contractor shall direct the grower to shave excess soils off the top of the root ball before digging to meet the root ball dimensions required for that particular tree size. All graft unions, where applicable, shall be completely closed, free of visible signs of graft failure and shall be visible above the soil line.

E. Field-grown plants shall only be harvested at the proper time required for successful transplanting according to accepted local nursery practices. Most plant species will require digging during spring from approximately March through early May, depending on annual temperature fluctuations. Certain species known to be

late to break dormancy such as Carpinus caroliniana, Crataegus spp., Quercus spp., Amelanchier spp. and others shall be dug only after vegetative bud swell begins. No field-grown balled and burlapped plants shall be harvested after vegetative bud opening and initial growth.

F. Plants sourced from re-wholesale sources shall not be allowed unless inspected and approved by the Owner. No plant harvested in a prior season and held over winter shall be accepted.

2.04 SMOOTH WALL PLASTIC CONTAINER-GROWN WOODY PLANTS

A. Smooth wall plastic container-grown plants shall be provided in the container sizes and plant dimensions as specified. They shall have originated and been grown within approximately 150 miles from Libertyville, Illinois unless prior approval is granted by the Owner.

B. Root systems of smooth wall plastic container-grown plants shall be vigorous and extensive such that the root / soil ball fills the entire container and stays intact when removed from the container without excessive root circling that cannot be remedied by corrective pruning. Plants which have not matured in the specified container size and severely 'root-bound' plants shall be rejected. Container sizes shall be suitable for the plant sizes specified such that the plant is provided adequate root mass volume for the plant size specified. Plants shall be provided according to the following guidelines for container size to plant size ratios:

1.

Container Size Designation	Plant Size
3 gallon	Shrubs: 12″-18″, Trees: 12″-24″ ht.
5 gallon	Shrubs: 18″-36″, Trees .5″ dia./3′ ht.
7 gallon	Trees: .75″ dia. or 4′ ht.
10 gallon	Trees: .75″-1.0″ dia. or 5′ ht.
15 gallon	Trees: 1.0″-1.25″ dia.
20 gallon	Trees: 1.25″-1.5″ dia.

2. Species that are known to produce a minimal stem growth to root mass ratio such as *Carya spp.* shall be exempt from the above requirements.

C. Copper impregnated plastic pots shall not be accepted.

2.05 ROOTMAKER SYSTEM CONTAINER-GROWN WOODY PLANTS

A. Plants specified to be provided under the Rootmaker System have unique requirements for provenance, propagation, culture and container size and type.

B. Rootmaker System plants must be grown within a 150 mile radius of Libertyville, Illinois unless prior approval of the Owner is granted.

C. Rootmaker System plants shall be propagated by seed, rooted stem cutting or root cutting depending on the species. Grafted plants shall not be accepted.

D. Rootmaker System plants shall be grown from propagule to finished plant size in Rootmaker containers under a graduated container size system which transplants the plant in increasingly larger containers when maximum container root volume is achieved. Finished plants may be delivered to the work site in standard smooth wall containers or balled and burlapped only when the source nursery has been inspected and approved by the Owner.

E. Due to the specific growing process required under the Rootmaker System, only Certified Rootmaker nurseries approved by the Owner shall be used to source this type of plant material. Approved nurseries include:

1. Possibility Place Nursery
7548 W. Monee Road
Monee, Illinois 60449
(708) 534-3988
www.possibilityplace.com

2. Majestic Oaks
8714 Richardon Road,
Spring Grove, IL 60081
(815) 675-6240
www.majesticoaksnursery.com

3. Woody Warehouse Nursery Inc.
3216 W. 850 N.
Lizton, IN 46149
(866) 766-8367
www.woodywarehouse.com

F. Root systems of Rootmaker System plants shall be vigorous and extensive such that the root / soil ball fills the entire container and stays intact when removed from the container without excessive root circling that cannot be remedied by corrective pruning. Plants which have not matured in the specified container size and severely 'root-bound' plants shall be rejected. Container sizes shall be suitable for the plant sizes specified such that the plant is provided adequate root mass volume for the plant size specified. Plants shall be provided according to the following guidelines for container size to plant size ratios:

1.

Container Size Designation	Plant Size
3 gallon Molded Plastic	Shrubs: 12″-18″, Trees: 12″-24″ ht. (RMI-3, RTG II-3)
5 gallon Molded Plastic	Shrubs: 18″-36″, Trees .5″ dia./3′ ht. (RMI-5, RTG II-5)
10 gallon Fabric	Trees .75″-1.25″ or 8′ ht.(RT II-10)
15 gallon Fabric	Trees: 1.25″-1.75″ dia. or 10′ ht.(RT II-15)
20 gallon Fabric	Trees: 1.5″-2.25″ (RT II-20)
30 gallon Fabric	Trees: 2.0″-3.0″ dia.(RT II-30)
In-Ground Fabric 12″	Trees: 1.0″-1.25″ (FCR12)
In-Ground Fabric 16-18″	Trees: 1.0″-1.5″ (FCR16-18)
In-Ground Fabric 24″	Trees: 1.5″-2.25″ (FCR24)

2. Species that are known to produce a minimal stem growth to root mass ratio such as *Carya spp.* shall be exempt from the above requirements.

2.06 CONTAINER-GROWN HERBACEOUS PLANTS

A. Herbaceous plants which are typically specified as Plugs shall be provided in either 32 count flats with individual cell dimensions of 2 ½″ square by 3 ½″ deep or

38 count integrated flats with cell dimensions of 2 1/8″ diameter by 4 7/8″ deep. Other container sizes listed as pints, quarts or gallons shall meet ASNS standards for dimensions.

B. Plants which have immature root systems or severely 'root-bound' plants causing rot degeneration shall be rejected.

2.08 TOPSOIL

A. Topsoil shall consist of natural loam, sandy loam, silty loam, silty clay loam, or clay loam humus-bearing soils which are fertile and friable, adapted to the sustenance of plant life and originating from the A soil horizon of prairie and / or agricultural lands. Topsoil shall be free of stones, roots, trash, debris, contaminants, residual herbicides and other materials deleterious to plant growth. A sample and a soil analysis test by an independent lab shall be submitted along with the source location of the material. Topsoil testing shall indicate a pH between 6.0 and 8.0 and an organic content of not less than 4%. For Pulverized Topsoil, the following particle gradation is required:

Sieve Designation	Percent Passing
1″ screen	100
¼″ screen	97 - 100
No. 10 U.S.S. mesh sieve	95 - 100
No. 140 U.S.S.	60 - 90

Provide full laboratory test results and a product sample for approval.

2.09 MULCH

A. Fine Hardwood Mulch for use in landscape plantings shall be fine-textured mulch, dark brown in color and derived from local hardwood trees. It shall be produced by processing the raw materials in a tub grinder two to three times ("double or triple ground") and screened such that 75% of the particles are ¾″ in diameter or less and 100% of the particles are 1″ in diameter or less. It shall be aged in stockpiles for a minimum of 4 months where interior temperatures reach a minimum of 140 degrees. The mulch shall be free from inorganic materials, contaminants, fuels, invasive weed seeds, diseases, harmful insects such as Emerald Ash Borer or any other type of material detrimental to plant growth. Provide a product sample for approval.

B. Wood Chips for use as mulch on tree rings and plant beds shall be arborist chips derived from the chipping of woody plant material. The wood chips shall be free from inorganic materials, contaminants, fuels, invasive weed seeds, diseases, harmful insects such as Emerald Ash Borer or any other type of material detrimental to plant growth. Provide a product sample for approval.

2.10 PLANT PROTECTION

A. Tree trunk protection shall be rigid plastic mesh Tree Bark Protectors, 48″ in length as available from A.M. Leonard (www.amleo.com) or Industrial Netting (www.industrialnetting.com).

B. Tree Protection Fencing for plant protection shall be 20 gauge galvanized hexagonal poultry netting, 60″ in height and with 1″ openings. The fence shall be supported by galvanized steel U-posts 6′ minimum length.

3. EXECUTION

3.01 DELIVERY, HANDLING AND STORAGE

A. Transport all plant material with protective covering to prevent desiccation. During loading and unloading, plants shall be handled such that stems are not stressed, scraped or broken and that root balls are kept intact and maintain their original shape. Minimize handling by unloading plants near the planting locations.

B. Store all plants on site at a location that is protected from sun and wind whenever possible. Both container and balled and burlapped shall be watered regularly to saturation. Any plant which will be stored for over 2 weeks or will be subjected to freezing conditions shall have the root systems completely covered with an appropriate mulch.

3.02 PLANTING SEASONS

A. All field-grown balled and burlapped trees and shrubs shall be planted within 60 days of their harvesting unless properly stored with adequate root ball protection and watering. They shall be spring planted only, generally between April 1 and June 15 unless authorized by the Owner.

B. Container-grown trees and shrubs shall be planted after the last frost of spring to June 1 and from August 15 until October 1 unless authorized by the Owner.

C. Certain container-grown or Rootmaker System native plants such as oaks have a preferred planting season of between August 15 and October 1.

3.03 LAYOUT AND UTILITIES

A. Unless indicated otherwise in the Contract Documents, the Owner shall mark all planting locations and planting bed edges. Once the layout is complete, it shall be the Contractor's responsibility to maintain the markings and replace them should they be disturbed.

B. The Contractor shall be responsible for the location and marking of all underground utilities or other obstructions before commencement of any ground disturbance and digging. Public utilities shall be located by calling J.U.L.I.E. at 800-892-0123 or www.illinois1call.com. Private utilities shall be located by the Owner. When failure to properly mark utilities results in damages caused by the Contractor, the Contractor shall be solely responsible for the cost of all repairs.

3.04 PLANTING AREA PREPARATION

A. When existing herbaceous vegetation at tree and shrub planting locations is over 12″ in height, the Contractor shall mow the entire area to be planted and mulched.

B. The Owner may request that the area be mowed and an herbicide applied. In such cases, Glyphosate (Roundup) shall be applied at the recommended rate 14 days or more before planting. Herbicide application is described in Section 09110 and shall be paid for separately from the planting.

C. When poor or inadequate soils are indicated or discovered during planting operations, the Owner may request that the poor soils be excavated, removed and replaced with topsoil. In these cases the Contractor shall excavate, load and haul off-site the unsuitable soils and replace the same volume with topsoil. This work shall be measured before work is begun and paid for as Topsoil Furnish and Place at the unit cost per cubic yard.

3.05 SOIL AMENDMENTS

A. When indicated in the Contract Documents, planting locations and plant beds may require amendment of the planting soil. In these areas the Contractor shall till the existing soil before spreading compost at a depth of 6v. The compost shall then be thoroughly blended with the existing soil by tilling. This work shall be paid for as Compost Soil Amendment, 6″ at the unit of Square Yards (SY).

3.06 PLANTING PROCEDURES

A. Refer to the Planting Details for graphic instructions of plant installation.

B. Excavation of the planting pit may be performed by hand, machine excavator or auger. Regardless of the excavation method used, the Contractor shall scarify the sides of the plant pit to eliminate any soil glazing when present. All planting pits must be planted and backfilled the same day. Open holes shall be covered or flagged to protect the public if plant installation is not immediate.

C. Plant pits shall be excavated at least twice the width of the root ball and with 45 degree sides sloping down to the base of the root ball. The planting pit depth shall be such that the installed plant may be set with the outer edge of the root ball level with the average elevation of the proposed grade. When the plant pit is over-excavated, soil shall be added to the bottom of the pit to achieve the correct depth and fully compacted. All topsoil shall be separated from underlying clay soils.

D. All plastic and fabric containers must be removed prior to planting. After removal of the container, inspect the root system for circling, matted or crowded roots at the container sides and bottom. Using a sharp knife or hand pruners, prune, cut and loosen any parts of the root system requiring corrective action. For balled and burlapped trees, inspect the base of the trunk and assure that the root flare or graft union is at the top of the ball. Trees with root flares or graft unions up to 2 inches below the top of the ball may be remedied by cutting the burlap off the top of the root ball and shaving the excess soil to the root flare or graft union. The root ball level shall then be raised to bring the tree to the proper finished elevation. Trees having a root flare or graft union deeper than two inches from the top of the root ball shall be rejected as defective.

E. For balled and burlapped plant material, do not cut or remove twine or burlap.

F. Plants shall be set in the center of the planting pit in a level and plumb position. The plant pit shall be backfilled with the native soil previously excavated, making sure that all of the original topsoil is utilized. Thoroughly compact the lower 1/3 of backfill to assure the plant remains in place. Complete the remaining backfill in 8″ lifts, tamping the topsoil to eliminate voids. Backfill to the top of the root ball and do not place any soil on top of the root ball. Excess soils shall be removed from the site.

G. For trees, loosen the existing soil surrounding the plant pit by hand or machine to a depth of at least 8′ and form a tree ring 8′ in diameter. Tree rings shall be uniform circles measured from the center of the plant. Form a raised soil ring 3″-4″ high just outside the edge of the plant pit to facilitate watering.

H. All plants must be watered at the time of planting. When water is not available at the planting site, the Contractor shall provide water with a truck-mounted tank. Thoroughly water the entire plant pit and root ball to saturation and re-tamp the surrounding soil as needed. Add additional soil if needed to the top of the root ball.

I. Spread a 4″ layer of mulch over the entire tree ring or plant bed, keeping the mulch layer 6-8′ from tree stems and bark.

J. Remove any twine, tags and flagging on the branches.

3.07 SUPPLEMENTAL WATERING

A. When directed by the Owner or according to an agreed schedule, the Contractor shall perform supplemental watering for all plantings which shall be paid for separately. The Contractor shall apply water to the root ball and plant pit of each plant in such a way as to assure complete saturation of the root system and adjacent soils. Water shall be applied at a reasonable velocity and distance such as to cause no harm to the tree or displacement of mulch or soil. The Schedule of Prices indicates the allotted quantity of watering occurrences. Moisture at the root ball will be monitored by the Owner, especially during dry periods.

B. The Owner may not be capable of providing access to a water supply in the immediate vicinity of the tree plantings and as such it should be assumed that all watering would require a mobile water tank, hydromulch rig or truck. The Owner shall approve all watering equipment. Watering equipment and vehicles shall not cause undo harm to the site. Pumps used to access water from lakes and ponds shall be provided by the Contractor.

3.08 PLANT PROTECTION

A. Plant protection shall be installed after all planting tasks are complete.

B. Tree Bark Protectors shall be installed using miniature black cable ties (4′ length) at the top, bottom and middle of the protector. Cut the protector to length as necessary for low branched trees.

C. Tree Protection Fencing shall be installed in a 3″-5″ diameter circle for each plant, depending on canopy spread. At least 3 posts per fence circle shall be used. Join the ends of fencing together with galvanized wire or small cable ties.

3.09 GUARANTEE PERIOD AND REPLACEMENTS

A. All plant material furnished, delivered, and installed by the Contractor shall be guaranteed to be in healthy and flourishing condition for a period of one year from the date of acceptance. The Contractor shall replace, without cost, all plants determined by the Owner to be dead or in an unacceptable condition during and at the end of the guarantee period. To be considered acceptable, plants shall be free of dead or dying branches and branch tips and shall bear foliage of normal density, size, and color.

B. Defective plants and other materials shall be removed within 30 days of notification by the Owner. Replacement plants and materials shall be of the same type, size and quality as the original plant unless a substitution is approved by the Owner. Replacement plants shall be installed within 30 days of notification by the Owner unless seasonal harvesting or planting requirements require delay. In those cases the plant shall be replaced as soon as the seasonal requirements can be met.

C. The warranty of all replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement.

D. Plant material supplied by Owner found to be defective during the guarantee period shall be subject to a re-installation warranty when the Owner has

documented and notified the Contractor of failure to execute the installation and follow up watering in the time frame and manner specified in the Contract. The Contractor shall deliver and install, without cost, upon the Owner's request, replacement plant materials acquired by the Owner when notification and documentation have occurred.

END OF SECTION 09200

SECTION 09300
TURF SEEDING

1. GENERAL

1.01 DESCRIPTION

A. This section includes:

1. Installation and establishment of turf-type seed mixes and related products.

2. Maintenance of seeded areas during establishment period.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, the following:

1. Section 02400 – Soil Erosion and Sediment Control

2. Section 03120 – Finish Grading and Topsoil

3. Section 09110 – Herbicide Treatment

1.02 QUALITY ASSURANCE

A. Contractor Qualifications: The work described in this section requires specialized knowledge, experience, skills and equipment to successfully complete. The Contractor shall possess the full capability to execute the work as specified, including trained, experienced and skilled personnel and possession or access to the required equipment. The Contractor shall also provide the name and qualifications of the foreman assigned to this project. The Contractor or Subcontractors responsible for the work in this section are subject to Owner approval as described in Article 1.12.

1.03 SUBMITTALS

A. Prior to delivery of any materials to the site, submit manufacturer or supplier material sheets for any and all materials to be used during this portion of the work. Include complete data on source, quantity and quality. No materials shall be delivered to project site until the corresponding submittal has been approved. Refer to the product descriptions below for specific submittal requirements.

2. PRODUCTS

2.01 FERTILIZER

A Fertilizer for all areas to be seeded with turf seed mixes shall be a balanced (such as 20-20-20) nitrogen – phosphorous - potassium composition that contains a minimum of 25% of the nitrogen component in a slow release form.

B. Submit the manufacturer’s product sheet with material analysis, nitrogen release information and quantity of bags required to provide 2 pounds of nitrogen per 1000 square feet for the specified seeding areas for approval.

C. Provide fertilizer to the site in original unopened bags from the manufacturer showing complete analysis of nitrogen, phosphorous, potassium, minor elements and major element source types.

2.02 EROSION CONTROL BLANKET

A. Erosion control blanket shall be:

1. S75BN Single Net Straw Blanket, a 9.3-lb. leno-woven biodegradable jute top netting with 100% straw fiber matrix, as provided by:

   North American Green, Inc.
   P.O. Box 66
   Evansville, IN 47618-9989
   (800) 772-2040
   www.nagreen.com

2. or approved equal

B. Erosion control blanket staples shall be:

1. 6″ in length, composed of Polyhydroxyalkanoate (PHA) plastic and 100% biodegradable from microbial activity in accordance with ASTM D5338 and ASTM D5271, as provided by:

   a. E-Staples by
   American Excelsior Company
   Arlington, Texas
   (800) 777-7645
   www.curlex.com

   b. Eco-Stake 6″ Hardwood Pins by
   North American Green, Inc.
   P.O. Box 66
   Evansville, IN 47618-9989
   (800) 772-2040
   www.nagreen.com

   c. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

2.03 HYDRO-MULCH AND HEAVY DUTY HYDROMULCH

A. Hydromulch for slopes 2:1 or less shall be:

1. ProMatrix Engineered Fiber Matrix (EFM), a hydraulically-applied seeding mulch composed of 100% recycled Thermally Refined wood fibers, crimped interlocking man-made biodegradable fibers and naturally derived polymers. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

   a. PROFILE Products LLC
   750 Lake-Cook Road – Suite 440
   Buffalo Grove, IL 60089
   (800) 366-1180
   www.profileproducts.com

2. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

B. Heavy Duty Hydromulch for slopes greater than 2:1 shall be:

1. Flexterra HP-FGM, a hydraulically-applied, 100% biodegradable seeding mulch composed of thermally refined wood fibers (80%), cross-linked biopolymers and water absorbents (10%), crimped, man-made interlocking fibers (5%) and micro-pore granules (5%). The material shall be phytosanitized and free from plastic netting. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

a. PROFILE Products LLC
750 Lake-Cook Road – Suite 440
Buffalo Grove, IL 60089
(800) 366-1180
www.profileproducts.com

b. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

2.04 WATER

A. Water shall be free from oil, acid, alkali, salts, and other harmful substances. Water may be utilized from potable or non-potable sources such as lakes and ponds. The Owner shall not be responsible for providing water. Any available water sources located on the Owners' property shall not be utilized without permission from the Owner.

2.05 SEED

A. The Contractor shall provide all seed in original unopened bags as mixed by the supplier. Each bag shall bear the supplier's guarantee of composition and percentage of purity and germination. Each bag shall list the botanical, common and cultivar names of each species, percentage of species mix, year of production and packaging, seed origin and net weight. Seed shall be protected against leakage, damage and moisture to insure viability and dormancy. No seed shall be sown until the Owner has inspected and approved the unopened seed mix bags.

B. Seed Mixes

When checked, seed mixes indicated on the Plans include the following:

1. ☒ LCFP PARKLAND MIX

SPECIES OR MIX	RATE (lbs. per A/1000 sf)	% +/-
Kentucky Bluegrass Mix	155 / 3.5	70%
Creeping Red Fescue	45 / 1.0	20%
Perennial Rye	20 / .5	10%
TOTAL	**220 / 5.0**	**100%**

a. Kentucky Bluegrass Mix shall be a blend of at least two improved cultivars selected for low maintenance and short germination and establishment time.

b. Improved Creeping Red Fescue shall be an improved cultivar or blend of cultivars.

c. Perennial Rye shall be an improved cultivar or blend of cultivars selected for disease resistance.

2. ☐ LCFP HIGH-TRAFFIC MIX

SPECIES OR MIX	RATE (lbs. per. A/1000sf)	% +/-
Turf-Type Tall Fescue Mix	300 / 6.9	85%
Kentucky Bluegrass Mix	50 / 1.1	15%
TOTAL	**350 / 8**	**100%**

a. Turf Type Tall Fescue Mix shall be a blend of at least two improved cultivars selected for drought tolerance, wear resistance, USDA Zone 5 hardiness and with a leaf texture suitable for blending with Kentucky Bluegrass. At least 30% of the mix shall be a rhizomatous selection such as Titan, Defiance, etc.

b. Kentucky Bluegrass Mix shall be a blend of at least two improved cultivars selected for low maintenance and short germination and establishment time.

3. ☐ LCFP LOW MAINTENANCE MIX

SPECIES OR MIX	RATE (lbs. per A/1000sf)	% +/-
Fine Fescue Mix	260 / 6	100%
TOTAL	**260 / 6**	**100%**

a. Fine Fescue Mix shall be a blend of creeping red, chewings, hard and sheep's fescue; acceptable commercial blends include Highlands Fescue Mix, Legend Fine Fescue Blend and Greenskeeper National Links Mixture.

b. When checked, seed mixes indicated on the Plans include the following:

3. EXECUTION

3.01 SEED BED PREPARATION

A. Seed bed preparation shall not begin until all other site work, topsoil spreading and finish grading have been completed. Before seed bed preparation, the Contractor shall assure that the final grading allows for proper drainage.

B. All areas to be seeded shall be inspected and approved by the Owner prior to the sowing of seed.

C. Surfaces to be seeded shall be loose and friable to a minimum depth of 3 inches. Hard and compacted surfaces are not acceptable and must be disked or tilled

and raked to provide a suitable seed bed. Any rocks, soil cods or other debris greater than 1″ in diameter that is generated shall be removed and disposed. The prepared surface shall be free from crusting and caking.

D. Seed beds that cannot be adequately cleaned of debris by manual raking and picking shall be cleaned by mechanical means using a dedicated rock / debris collecting tractor attachment.

3.02 FERTILIZATION

A. The specified fertilizer shall be applied a rate of 2 pounds of Nitrogen per 1000 square feet or 87 pounds of Nitrogen per acre using a calibrated drop spreader or other mechanical method that will result in uniform coverage. Application of the fertilizer by hand is not acceptable.

B. Fertilizer shall be applied prior to seeding. No fertilizer shall be applied until the Owner has inspected and approved the products. Payment for fertilization shall not be approved until proof of yield has been demonstrated by a counting of the fertilizer bags.

C. No fertilizer shall be applied in areas designated for native seed mixes.

3.03 SEEDING – GENERAL

A. All areas of bare soil which have been graded or otherwise disturbed by construction shall be seeded, unless specified on the Plans otherwise. Refer to the Plans for locations of the specified seed mixes.

B. Temporary work areas, staging areas, haul roads and all other similarly disturbed areas which require restoration shall be prepared and seeded according to the requirements contained in this section.

3.04 SEEDING METHODS

A. Shall be performed by the method(s) checked below:

1. ☒ Broadcast method using calibrated drop spreaders, either manually operated or using motorized equipment. Broadcast seeding is the only approved method in small or narrow areas where mechanical seeding equipment cannot make two passes as described below. After broadcasting seed, the seed bed shall be lightly raked either manually or with a machine drag attachment.

2. ☐ Mechanical seeding method using equipment which deposits seed in linear rows or furrows directly on the soil then packs and covers the seed in one continuous operation. This method may only be used when space allows the seed to be installed in two directions with the second pass being 45 to 60 degrees from the first pass. Mechanical seeding method shall not be used on grass trails or trail shoulders. Mechanical equipment must be calibrated to deposit the proper amount of seed at the proper depth, generally 1/8″ to ¼″ deep.

B. Regardless of the method used to deposit the seed, all seeded areas shall be rolled using a smooth or lightly spiked mechanical roller.

C. All seeding equipment shall be approved by the Owner prior to seeding. Seeding equipment shall be properly calibrated to the required seeding rates.

3.05 SEEDING SCHEDULES

A. Turf seeding is recommended to be performed between April 1 and June 1 or from August 1 and October 1 for optimum germination. The Contractor may elect to perform this seeding immediately after work progress allows; however, all responsibility for supplemental watering to stimulate germination and growth shall rest with the Contractor. Guaranty and maintenance requirements as specified herein are not changed or relieved by the timing of seeding.

3.06 EROSION CONTROL BLANKET

A. Immediately after seeding is complete, place erosion control blanket on all areas as designated on the Plans. Refer to the manufacturer's recommendation for selection of staple patterns and quantities appropriate to the site conditions.

B. The Contractor shall guarantee that all erosion control blanket remains securely in place until a minimum of 90% of the ground has been stabilized by germination and growth of permanent or temporary seed. Erosion control blanket shall be re-stapled, reapplied or otherwise reset as specified as often as necessary until stabilization has been achieved.

C. On slopes greater than 3:1 the Contractor shall install the erosion control blanket with a trenched edge at the top of the slope to resist water infiltration under the blanket.

3.07 HYDROMULCH

A. Immediately after seeding is complete, apply hydromulch on all areas as designated on the plans. Hydromulch shall not be applied to areas which are to receive erosion control blanket. Strictly comply with the equipment and material manufacturer's instructions and recommendations. The timing of the hydromulch application shall allow the product to fully cure before the next precipitation event.

B. The hydromulch shall be applied in at least two opposing passes at the following rates:

4H – 1V to 3H – 1V Slopes: 3000 lbs. / acre

3H – 1V to 2H – 1V Slopes: 3500 lbs. / acre

2H – 1V to 1H – 1V Slopes: 4000 lbs. / acre (Heavy Duty Hydromulch only)

3.08 WATERING

A. Supplemental watering of seeded areas shall be performed at the discretion of the Contractor. Watering may be necessary in order to conform to the guarantee requirements as described in this section.

3.09 TURF MOWING

A. All turf areas shall be maintained at mowed height of 3″ until achieving the performance and guarantee criteria for seeded areas. Mow turf promptly when it reaches a height of 6″ in height.

3.10 GUARANTEE

A. General: All guarantees for turf seeding and other related work in this section shall be solely at the cost of the Contractor. The guarantee period shall be in effect until the ground coverage requirement described below is met and the final acceptance is issued in writing by the Owner.

B. Seed Beds: Upon completion of seeding operations, the Contractor shall become responsible for protecting the seeded areas from any damage resulting from foot or vehicle traffic, vandalism or weather. When possible, isolate and contain the completed areas with temporary fencing. Erosion or soil subsidence caused by rain shall be repaired to the original grade, prepared for seed, reseeded and the appropriate erosion control product reapplied. Any damage which occurs before achieving the performance and guaranty criteria shall be repaired to original specifications by the Contractor at no expense to the Owner.

C. Seed Germination and Establishment: Seeded areas shall have a minimum of 90% ground coverage with active growth and no bare ground greater than two square feet before final acceptance. Approximately 90 days after the initial seeding (or the following spring for fall seeding), the site shall be inspected by the Owner and Contractor to determine turf coverage, condition and plan for remedial seeding if necessary. At the proper time as determined by the Owner, the Contractor shall promptly remove any erosion control blanket or hydromulch and reseed the bare areas according to the specifications as necessary until the minimum coverage is achieved. After each reseeding, the Contractor shall reinstall new erosion control blanket or reapply hydromulch as originally indicated on the plans. If, after three growing seasons (one growing season defined as either spring: May-June or fall: September-October), the required coverage has not been achieved, the Owner reserves the right to reduce payment or retainage for compensation for the amount of ground without adequate germination and growth.

D. Hydromulch: The Contractor shall guarantee that all hydromulch is applied at the recommended rate. Any areas where the minimum rate is not achieved shall be reapplied until meeting the specification. The Contractor shall guarantee that all hydromulch remains effective and shall reapply the hydromulch as needed until such time that the minimum seed coverage is achieved.

E. Erosion Control Blanket: Any erosion control blanket which becomes displaced for any reason shall be reinstalled to its original condition and position with additional staples. Any erosion control blanket which becomes damaged or otherwise ineffective shall be replaced with new product. All rills and gullies shall be repaired and the area shall be reseeded prior to reinstallation of erosion control blanket.

END OF SECTION 09300

SECTION 09310
NATIVE SEEDING

1. GENERAL

1.01 DESCRIPTION

A. Work under this section includes:

1. Installation of native seed mixes and related products.

2. Maintenance and care of seeded areas during the establishment period.

B. Other specification sections which may directly relate to the work in this section include, but are not limited to, include the following:

1. Section 02400 – Soil Erosion and Sediment Control

2. Section 03120 – Finish Grading and Topsoil

3. Section 09110 – Herbicide Treatment

1.02 CONTRACTOR QUALIFICATIONS

A. The work described in this section requires specialized knowledge, experience, skills and equipment to successfully complete. The Contractor shall possess the full capability to execute the work as specified, including trained, experienced and skilled personnel and possession or access to the required equipment.

B. The native seeding contractor shall provide proof of qualifications, including a work history documenting a minimum of 5 native seeding projects completed in the last 5 years which are comparable in scope, techniques and size. This information shall include a complete project description, lead foreman experience history, location, client name and contact phone numbers. The Contractor shall provide this information in the bidder's forms in described in Article 1.12 of this Contract.

C. This Contract includes work tasks and site inspections which require the identification of native, introduced and / or invasive plants that exist on the site at any time. The Contractor shall employ an experienced biologist, botanist, ecologist, or equivalent to oversee the work and monitor plant establishment and recommend best management practices to assure the success of the project. This person shall also oversee all herbicide use.

1.03 SUBMITTALS

A. Submit detailed seed data sheets as described in Article 2.04 of this section.

B. Submit samples or manufacturer's data sheets on all other materials used in the performance of this work.

C. Submit specific information on seeding equipment to be used for approval.

2. PRODUCTS

2.01 EROSION CONTROL BLANKET

A. Erosion control blanket shall be:

1. S75BN Single Net Straw Blanket, a 9.3-lb. leno-woven biodegradable jute top netting with 100% straw fiber matrix, as provided by:

a. North American Green, Inc.
P.O. Box 66
Evansville, IN 47618-9989
(800) 772-2040
www.nagreen.com

b. or approved equal

B. Erosion control blanket staples shall be:

1. 6″ in length, composed of Polyhydroxyalkanoate (PHA) plastic and 100% biodegradable from microbial activity in accordance with ASTM D5338 and ASTM D5271, as provided by:

a. E-Staples by
American Excelsior Company
Arlington, Texas
(800) 777-7645
www.curlex.com

b. Eco-Stake 6″ Hardwood Pins by
North American Green, Inc.
P.O. Box 66
Evansville, IN 47618-9989
(800) 772-2040
www.nagreen.com

c. or approved equal. Provide Manufacturer's product manufacturer's product sheet for any proposed equal product approval.

2.02 HYDROMULCH

A. Hydromulch for slopes 2:1 or less shall be:

1. ProMatrix Engineered Fiber Matrix (EFM), a hydraulically-applied seeding mulch composed of 100% recycled Thermally Refined wood fibers, crimped interlocking man-made biodegradable fibers and naturally derived polymers. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

a. PROFILE Products LLC
750 Lake-Cook Road – Suite 440
Buffalo Grove, IL 60089
(800) 366-1180
www.profileproducts.com

2. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

B. Hydromulch for slopes greater than 2:1 shall be:

1. Flexterra HP-FGM, a hydraulically-applied, 100% biodegradable seeding mulch composed of thermally refined wood fibers (80%), cross-linked biopolymers and water absorbents (10%), crimped, man-made interlocking fibers (5%) and micro-pore granules (5%). The material shall be phytosanitized and free from plastic netting. It shall be delivered in the manufacturer's sealed weather-resistant 50-pound bags, as manufactured by:

a. PROFILE Products LLC
750 Lake-Cook Road – Suite 440
Buffalo Grove, IL 60089
(800) 366-1180
www.profileproducts.com

2. or approved equal. Provide manufacturer's product sheet for any proposed equal product approval.

2.03 WATER

A. Water shall be free from oil, acid, alkali, salts, and other harmful substances. Water may be utilized from potable or non-potable sources such as lakes and ponds. The Owner shall not be responsible for providing water. Any available water sources located on the Owners' property shall not be utilized without permission from the Owner.

2.04 SEED MIXES

A. Seed mixes and seeding locations are indicated on the Plans. When a custom seed mix is specified, it shall be described in the Plans by species composition and relative quantities of each species per area of measurement.

B. Standard Seed Mixes: When indicated on the Plans, the following Standard Seed Mixes shall be provided.

1. ☒ LCFP COVER CROP MIX

SPECIES	COMMON NAME	LBS. / ACRE
Avena sativa	Oats	40.0
Lolium multiflorum	Annual Rye	20.0
TOTAL	60.00 LBS.	

2. ☐ LCFP PRAIRIE COVER CROP MIX

SPECIES	COMMON NAME	LBS. / ACRE
Avena sativa	Oats	25.0
Elymus canadensis	Canada Wild Rye	5.0
Lolium multiflorum	Annual Rye	15.0
Panicum virgatum	Switch Grass	0.75
Schizachyrium scoparium	Little Bluestem	1.0
Monarda fistulosa	Wild Bergamot	0.065
Rudbeckia hirta	Black-eyed Susan	0.065
TOTAL		46.88 LBS.

Note: LCFP Cover Crop Mix shall be delivered separate from all native seed mixes.

3. ☐ LCFP TALLGRASS PRAIRIE MIX

GRASS SPECIES	COMMON NAME	LBS. / ACRE
Andropogon gerardii	Big Bluestem	0.75
Bouteloua curtipendula	Sideoats Grama	1.5
Elymus canadensis	Canada Wild Rye	1.0
Panicum virgatum	Switch Grass	1.5

Schizachyrium scoparium	Little Bluestem	2.0
Sorghastrum nutens	Indian Grass	0.5
Sporobolus heteroleptis	Prairie Dropseed	0.75
TOTAL		8.0 LBS.

FORB SPECIES	COMMON NAME	OZ. / ACRE
Allium cernuum	Nodding Onion	3.0
Asclepias tuberosa	Butterfly Weed	3.0
Aster laevis	Smooth Blue Aster	1.0
Aster novae-angliae	New England Aster	0.5
Aster oolentangiense	Sky Blue Aster	0.5
Baptisia alba	White Indigo	4.0
Coreopsis palmata	Prairie Coreopsis	1.5
Dalea purpurea	Purple Prairie Clover	9.0
Desmodium canadense	Showy Tick Trefoil	3.0
Echinacea pallida	Pale Purple Coneflower	8.0
Eryngium yuccafolium	Rattlesnake Master	4.0
Liatris aspera	Rough Blazingstar	2.5
Liatris spicata	Marsh Blazingstar	4.0
Monarda fistulosa	Wild Bergamot	1.5
Oenothera pilosella	Prairie Sundrops	0.25
Penstemon digitalis	Foxglove Beardtogue	3.0
Pycnanthemum virginianum	Mountain Mint	0.5
Ratibita pinnata	Yellow Coneflower	3.0
Rudbeckia hirta	Black-eyed Susan	1.0
Rudbeckia subtomentosa	Sweet Black-eyed Susan	3.0
Solidago speciosa	Showy Goldenrod	1.0
Verbena stricta	Hoary Vervain	3.0
Veronicastrum virginicum	Culver's Root	0.25
Zizia aurea	Golden Alexanders	3.0
TOTAL OUNCES		63.5
TOTAL LBS.		3.97

4. ☒ **LCFP SHORTGRASS PRAIRIE MIX**

GRASS SPECIES	COMMON NAME	LBS. / ACR
Bouteloua curtipendula	Sideoats Grama	1.5
Carex bicknelli	Bicknell's sedge	1.0
Elymus canadensis	Canada Wild Rye	1.0
Panicum virgatum	Switch Grass	1.5
Schizachyrium scoparium	Little Bluestem	2.0
Sporobolus heteroleptis	Prairie Dropseed	1.0
TOTAL		8.0 LBS.

FORB SPECIES	COMMON NAME	OZ. / ACRE
Allium cernuum	Nodding Onion	3.0
Asclepias tuberosa	Butterfly Weed	3.0
Aster laevis	Smooth Blue Aster	1.0
Aster novae-angliae	New England Aster	0.5
Aster oolentangiense	Sky Blue Aster	0.5
Baptisia alba	White Indigo	4.0
Coreopsis palmata	Prairie Coreopsis	1.5
Dalea purpurea	Purple Prairie Clover	9.0
Desmodium canadense	Showy Tick Trefoil	3.0
Echinacea pallida	Pale Purple Coneflower	8.0
Eryngium yuccafolium	Rattlesnake Master	4.0
Liatris aspera	Rough Blazingstar	2.5
Liatris spicata	Marsh Blazingstar	4.0
Monarda fistulosa	Wild Bergamot	1.5
Oenothera pilosella	Prairie Sundrops	0.25
Penstemon digitalis	Foxglove Beardtogue	3.0
Pycnanthemum virginianum	Mountain Mint	0.5
Ratibita pinnata	Yellow Coneflower	3.0
Rudbeckia hirta	Black-eyed Susan	1.0
Rudbeckia subtomentosa	Sweet Black-eyed Susan	3.0
Solidago speciosa	Showy Goldenrod	1.0
Verbena stricta	Hoary Vervain	3.0
Veronicastrum virginicum	Culver's Root	0.25
Zizia aurea	Golden Alexanders	3.0
TOTAL OUNCES		63.5
TOTAL LBS.		3.97

5. ☐ **LCFP FESCUE PRAIRIE MIX**

GRASS SPECIES	COMMON NAME	LBS. / ACRE
Festuca sp.	Fine Fescue Mix (1)	150
Elymus canadensis	Canada Wild Rye	1.0
Panicum virgatum	Switch Grass	1.25
Schizachyrium scoparium	Little Bluestem	2.0
Sporobolus heteroleptis	Prairie Dropseed	0.75
TOTAL		155.0 LBS.

FORB SPECIES	COMMON NAME	OZ. / ACRE
Allium cernuum	Nodding Onion	3.0

Asclepias tuberosa	Butterfly Weed	3.0
Aster laevis	Smooth Blue Aster	1.0
Aster oblongifolius	Aromatic Aster	0.5
Baptisia alba	White Indigo	4.0
Camassia scilloides	Wild Hyacinth	3.0
Coreopsis palmata	Prairie Coreopsis	1.5
Dalea purpurea	Purple Prairie Clover	9.0
Desmodium canadense	Showy Tick Trefoil	3.0
Echinacea pallida	Pale Purple Coneflower	8.0
Eryngium yuccafolium	Rattlesnake Master	4.0
Liatris aspera	Rough Blazingstar	2.5
Liatris spicata	Marsh Blazingstar	4.0
Monarda fistulosa	Wild Bergamot	1.5
Oenothera pilosella	Prairie Sundrops	0.25
Penstemon digitalis	Foxglove Beardtogue	3.0
Pycnanthemum virginianum	Mountain Mint	0.5
Rudbeckia subtomentosa	Sweet Black-eyed Susan	3.0
Ruellia humilis	Wild Petunia	4.75
Solidago speciosa	Showy Goldenrod	1.0
Verbena stricta	Hoary Vervain	3.0
TOTAL OUNCES		63.5
TOTAL LBS.		3.97

Fine Fescue Mix shall be a blend of creeping red, chewings, hard and sheep's fescue; acceptable commercial blends include Highlands Fescue Mix, Legend Fine Fescue Blend and Greenskeeper National Links Mixture.

6. ☐ LCFP ROADSIDE PRAIRIE MIX

COVER CROP	**LBS./A**
Fine Fescue Mix	150
SUBTOTAL	**150**

NATIVE GRASSES	**LBS./A**
Andropogon scoparius	1.25
Panicum virgatum	1.25
Sporobolus heterolepsis	1.5
SUBTOTAL	**4**

NATIVE FORBS	**OZ./A**
Aster novae-angliae	1

Echinacea pallida	14
Monarda fistulosa	2
Pycnanthemum virginianum	.5
Rudbeckia hirta	2
Rudbeckia subtomentosa	4
SUBTOTAL	**23.5 (1.4 lbs.)**

7. ☒ LCFP WOODLAND SEED MIXES

GRASS SPECIES	COMMON NAME	LBS. / ACRE
Bromus pubescens	Woodland Brome	0.30
Carex normalis	Spreading Oval Sedge	0.20
Carex rosea	Curly Wood Sedge	0.25
Carex shortiana	Short's Sedge	0.15
Carex sprengelli	Long-beaked Sedge	0.15
Elymus canadensis	Canada Wild Rye	2.00
Elymus hystrix	Bottlebrush Grass	2.00
Elymus villosus	Silky Wild Rye	1.25
Luzula multiflora	Common Wood Rush	0.10
Muhlenbergia mexicana	Leafy Satin Grass	0.10
TOTAL		6.5 LBS.

FORB SPECIES	COMMON NAME	OZ. / ACRE
Allium cernuum	Nodding Onion	5.0
Anemone canadensis	Meadow Anemone	.25
Anemone virginiana	Tall Anemone	.40
Anemonella thalictroides	Rue anemone	.25
Aquilegia canadensis	Wild Columbine	.33
Claytonia virginica	Spring Beauty	.10
Dodecatheon media	Shooting star	.20
Eutrochium purpureum	Purple joe pye weed	.30
Geranium maculatum	Wild geranium	2.0
Helianthus strumosus	Pale-leaved sunflower	2.5
Heuchera richardsonii	Prairie alum root	.10
Penstemon calycosus	Small beardtongue	.10
Polygonatum biflorum	Smooth Solomon's seal	.75
Polemonium reptans	Jacob's ladder	.70
Podophyllum peltatum	May apple	.75
Rudbeckia triloba	Brown-eyed susan	.50
Sanguinaria canadensis	Bloodroot	1.0
Solidago flexicaulis	Broad-leaved goldenrod	.20
Solidago juncea	Early goldenrod	.20
Solidago ulmifolia	Elm-leaved goldenrod	.30
Symphyotrichum laeve	Smooth blue aster	.40

Thalictrum dasycarpum	Purple meadow rue	2.0
Veronicastrum virginicum	Culver's root	.10
TOTAL OUNCES		18.43
TOTAL LBS.		1.15

8. ☒ NATIVE LAWN MIX

GRASS SPECIES	COMMON NAME	LBS. / ACRE
Bouteloua curtipendula	Side Oats Grama	1.0 lbs
Koeleria macrantha	June Grass	1.0 lbs
Juncus tenuis	Path Rush	1.0 lbs
Danthonia spicata	Poverty Oat Grass	1.0 lbs
Redtop	Agrostis gigantea	1.0 lbs
Hordeum jubatum	Squirrel-tail Barley	1.0 lbs
TOTAL		6.0 LBS.

9. ☐ CUSTOM NATIVE SEED MIXES

One or more custom seed mixes are utilized for this project. Refer to the Plans for species compositions and quantities per area.

2.03 SEED MIX REQUIREMENTS – COVER CROP MIX

A. Unless approved by the Owner, all cover crop seed mixes shall be packaged and delivered separate from the native seed mixes to allow for seasonal differences and methods in seed installation.

2.04 SEED MIX REQUIREMENTS – PRAIRIE AND OTHER NATIVE MIXES

A. Prior to acquisition and delivery of seed, the Contractor shall submit suppliers' detailed seed data for approval by the Owner. Information for each species shall include lot number, harvest year and place of origin, test dates, processing performed, inoculants included, certified Pure Live Seed (PLS) weight, bulk weight including inert matter, other crop and weed seed percentages and adjusted bulk weight to meet PLS weight requirements. The submittal shall also indicate any lack of availability from the primary source and related information from other potential seed sources. Substitutions shall not be permitted without approval by the Owner. Once the seed data is approved, the Contractor shall deliver the seed in unopened bags with tags or data sheets attached matching the approved seed requirements described in this specification.

B. All species shall be sourced from within a 200 mile radius from Lake County, Illinois.

C. All species shall be provided on a Pure Live Seed (PLS) weight basis. PLS shall be defined as (purity) x (total germination). Tetrazolium (TZ) testing for viability may be utilized when appropriate.

D. All species with dispersal appendages (e.g. *Asclepias, Aster, Liatris, Solidago*, etc. shall be supplied on a de-fluffed basis.

E. All "hulled" species (e.g. *Desmodium, Dalea*, etc.) shall be supplied on a de-hulled basis.

F. All other species shall be cleaned as close to the bare caryopsis as possible without effecting seed viability.

G. All legume species (e.g. *Baptisia, Dalea, Desmodium*, etc.) shall be provided with a genus-specific bacterium inoculum for each different species.

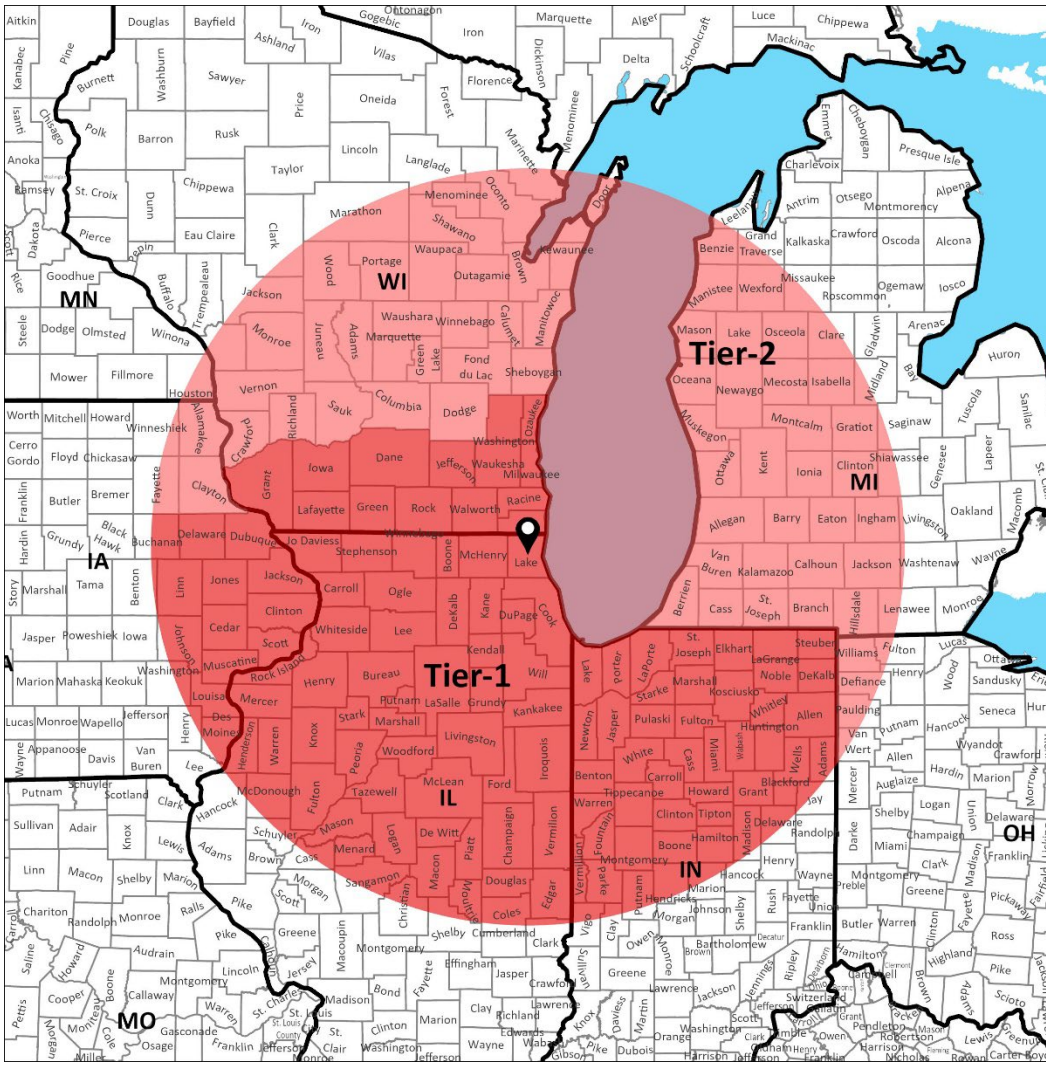
H. Seeds of all forbs should be stored in cold conditions whenever possible.

I. Seed bags shall be stored at the recommended temperature and not exposed to moisture.

J. Seed mixes shall be packaged for the appropriate installation method. This shall include segregation of seed by size to assure an even distribution of different species that vary greatly in size in relation to equipment metering and delivery requirements.

2.05 SEED MIX REQUIREMENTS – PROVENANCE

A. The District has a two-tier seed provenance system for native plant material sourcing. All native plant material shall be First-Tier whenever possible. If First-Tier plant material sourcing is not available, the District reserves the right to approve sourcing from Tier 2.



B. First-Tier seed provenance counties in Illinois, Wisconsin, Indiana and Iowa include:

a. **Illinois**: Bureau, Carroll, Cass, Champaign, Coles, Cook, De Witt, DeKalb, Douglas, DuPage, Edgar, Ford, Fulton, Henderson, Jo Daviess, Kane, Kendall, Knox, La Salle, Lake, Lee, Livingston, Logan, Macon, Marshall, McDonough, McHenry, McLean, Menard, Mercer, Moultrie, Ogle, Peoria, Piatt, Putnam, Rock Island, Sangamon, Schuyler, Stark, Stephenson, Tazewell, Vermilion, Warren, Winnebago, Whiteside, Warren, Will, and Woodford counties.

b. **Wisconsin**: Dane, Grant, Green, Iowa, Jefferson, Kenosha, Lafayette, Milwaukee, Ozaukee, Racine, Rock, Walworth, Waukesha, Waukesha, and Washington counties.

c. **Indiana**: Adams, Allen, Benton, Blackford, Boone, Carroll, Cass, Clinton, De Kalb, Delaware, Elkhart, Fountain, Fulton, Grant, Hamilton, Hendricks, Howard, Huntington, Jasper, Kosciusko, Lake, LaGrange, LaPorte, Madison, Marshall, Miami, Montgomery, Newton, Noble, Parke, Porter, Pulaski, Putnam, St. Joseph, Starke, Steuben, Tippecanoe, Tipton, Vermillion, Wabash, Warren, Wells, White, and Whitley counties.

d. **Iowa**: Buchanan, Cedar, Clinton, Delaware, Des Moines, Dubuque, Jackson, Johnson, Jones, Linn, Louisa, Muscatine, and Scott counties.

3. EXECUTION

3.01 SEED BED PREPARATION

A. Seed bed preparation shall not begin until all other site work, topsoil spreading and finish grading have been completed.

B. All areas to be seeded shall be inspected and approved by the Owner prior to the sowing of seed.

C. Surfaces to be seeded shall be loose and friable to a minimum depth of 3 inches. Hard and compacted surfaces are not acceptable and must be tilled and raked to provide a suitable seed bed. Any rocks greater than 1″ in diameter or soil cods or vegetative debris greater than 2″ in diameter that is generated shall be removed and disposed. Seed beds that cannot be adequately cleaned of debris by manual raking and picking shall be cleaned by mechanical means using a dedicated rock / debris collecting tractor attachment.

3.02 HERBICIDE APPLICATION BEFORE SEEDING

A. Areas which contain undesirable or weed species at the time of seeding shall be sprayed with an appropriate herbicide when directed by the Owner. Refer to Section 09110 – Herbicide Treatment for the specific requirements of this this work.

3.03 SEEDING – GENERAL

A. All areas of bare soil which have been graded or otherwise disturbed by construction shall be seeded, unless specified on the plans otherwise. Refer to the plans for locations of the specified seed mixes. No seed shall be sown during unfavorable conditions such as high winds or very wet soil.

B. Temporary work areas, staging areas, haul roads and all other similarly disturbed areas which require restoration shall be prepared and seeded according to the requirements contained in this section.

3.04 SEEDING SCHEDULE AND METHODS

A. When installing prairie and other types of native seed mixes, seeding schedules, methods and equipment shall be determined by the requirements for both soil erosion and sediment control management and the germination and establishment of the native seed mix. In order to accommodate both of these requirements, separate seeding of cover crop mix and the native mix may be required. Initial seeding shall be performed immediately after finish grading and seed bed preparation has been completed. Unless directed otherwise by the Owner, cover crop and native seed installation shall be performed according to the following schedule:

1. April 1 to October 15

   Install Cover Crop Mix only with hydromulch.

2. October 15 to April 1

B. For bare soil conditions which have not been seeded with Cover Crop, install both Cover Crop Mix and Native Mix in one installation with either hydromulch or erosion control blanket.

C. For areas previously seeded with Cover Crop, install Native Seed Mix only. No seed mulch or cover is required unless bare soil conditions are prevalent.

D. Native seeding shall not be installed during periods of snow or ice cover, wet soil conditions or during periods of high winds when using the broadcast method.

E. Seeding shall be performed using the Broadcast Method or by Drill Method using equipment especially suited to the installation of native seed mixes. All seeding equipment shall be approved by the Owner. A carrier agent such as sand, perlite, ground corn cobs or similar material shall be used when native seed size or quantity is insufficient to distribute evenly.

F. The broadcast method shall always be used when bare soil conditions and a prepared seed bed are present. The seed shall be distributed using only a dedicated broadcast spreader such as a Cyclone or Seed Slinger with proper calibration. Hand cast seeding shall not be acceptable. The seed shall be broadcast in two passes approximately 90 degrees from each other. The Owner may require that the seed be segregated by size or species and broadcast in separate passes. Immediately after seed dispersal, the seeded areas shall be lightly raked, either manually or utilizing a tractor and drag attachment and then rolled with a smooth surfaced roller.

G. Mechanical drill seeders shall be used only when existing vegetative cover prevents broadcast seeding. When used they shall be of the type specifically designed for native seed installation (such as those by Truax, Tye or John Deere) which utilizes multiple seed boxes to segregate seed species by size and places the various seeds at the proper planting depth. The seeder shall be equipped to install seed into existing vegetation when required. The seeder shall be equipped with separate drop tubes for each seed size, discs to open the seed furrows and a packer assembly to compact the soil directly over the seed. Mechanical drill seeding is the required method when existing cover crop is present. Mechanical drill seeding shall be performed at half rates in two directions to achieve the full specified rate.

H. All seeding shall be done at a right angle to the surface drainage when possible.

3.05 SEED BED ROLLING / CULTIPACKING

A. When included in the Schedule of Prices, the Contractor shall roll the seed bed immediately after broadcasting the seed. The roller shall be a smooth surfaced drum style typically used for sod installations, either manual, powered or tractor drawn.

3.06 EROSION CONTROL BLANKET

A. Immediately after seeding is complete, place erosion control blanket on all areas as designated on the plans. Refer to the manufacturer's recommendation for selection of staple patterns and quantities appropriate to the site conditions.

B. The Contractor shall guarantee that all erosion control blanket remains securely in place until a minimum of 90% of the ground has been stabilized by germination and growth of permanent or temporary seed. Erosion control blanket shall be re-stapled, reapplied or otherwise reset as specified as often as necessary until stabilization has been achieved.

C. On slopes greater than 3:1 the Contractor shall install the erosion control blanket with a trenched edge at the top of the slope to resist water infiltration under the blanket.

3.07 HYDROMULCH

A. Immediately after seeding is complete, apply hydromulch on all areas as designated on the plans. Hydromulch shall not be applied to areas which are to receive erosion control blanket. Strictly comply with the equipment and material manufacturer's instructions and recommendations. The timing of the hydromulch application shall allow the product to fully cure before the next precipitation event. The hydromulch shall be applied in at least two opposing passes at the following rates:

4H – 1V to 3H – 1V Slopes: 3,000 lbs. / acre
3H – 1V to 2H – 1V Slopes: 3,500 lbs. / acre
2H – 1V to 1H – 1V Slopes: 4,000 lbs. / acre (Heavy Duty Hydromulch only)

3.08 ESTABLISHMENT PERIOD

A. An establishment period shall commence 30 days following the satisfactory inspection and acceptance of the native seed mix. This period shall continue for a 2 year term during which the seeding shall be monitored and maintenance tasks prescribed. Pay items are included for all maintenance tasks.

3.09 MONITORING AND INSPECTIONS

A. The Contractor and the Owner shall inspect the site at least twice per year. These inspections shall occur approximately around May 1st and July 15th unless the parties agree to an adjusted schedule. The vegetative monitoring will be based on meander surveys of all seeded areas. During these inspections, the site shall be evaluated for germination and presence of both the desired native species and of the presence of non-native, weedy or invasive species. The Owner shall determine what if any maintenance actions should be performed to best assure the successful establishment of the desired species. These inspections shall continue through the second and final year of the term, with specific remedial actions determined and scheduled after each inspection of the site.

3.10 FIELD MOWING

A. Field Mowing shall consist of the mowing of native seeded areas to a height determined by the site inspections, typically at 6″, for purposes of reducing competition from undesirable species or to control weed seed germination. It shall be performed according to the scheduled time set at the time of inspection. Mowing which is performed outside of the scheduled times may be rejected for payment if the desired outcome is not achieved.

3.11 HERBICIDE TREATMENT – NATIVE SEEDED AREAS

A. Herbicide Treatments shall include either Glyphosate (Roundup) or Clopyralid (Transline) as described in Section 09110 – Herbicide Treatment. The Contractor shall apply the herbicides per the manufacturer's recommendations and as instructed by the Owner. The application may be selective in nature, or broadly applied depending on the composition of the vegetation present at the time of treatment.

3.12 NATIVE SEEDING - CONTINGENCY

A. When indicated by the site inspections, the Contractor shall perform additional seeding in specific areas as directed by the Owner. The seed mix shall be the original mix specified and the installation method shall be determined by the extent of vegetation present in the targeted areas.

3.13 GUARANTEE

A. Seed Beds: Upon completion of seeding operations, the Contractor shall become responsible for protecting the seeded areas from any damage resulting from foot or vehicle traffic, vandalism or weather. When possible, isolate and contain the completed areas with temporary fencing. Erosion or soil subsidence caused by rain shall be repaired to the original grade, prepared for seed, reseeded and the appropriate erosion control product reapplied. Any damage which occurs before achieving the performance and guaranty criteria shall be repaired to original specifications by the Contractor at no expense to the Owner.

B. LCFP Cover Crop Mix: Cover crop seeding shall have a minimum of 90% ground coverage with active growth and no bare ground greater than five (5) square feet before final acceptance. This minimum ground coverage shall be achieved within 90 days of the original seeding. After the 90 day period or the following spring for seeding performed in fall, the Contractor shall reseed any areas not meeting these criteria at no additional cost to the Owner.

C. LCFP Native Mixes: No minimum ground coverage or native species count guaranty is included in this Contract. However, should the Contractor fail to meet any or all of the material or execution requirements contained in this section, the Owner reserves the right to withhold payment or require the Contractor to perform the work again, including additional seed installation.

D. Hydromulch: The Contractor shall guarantee that all hydromulch is applied at the specified rate. Any areas where the specified rate is not achieved shall be reapplied until meeting the specification. The Contractor shall guarantee that all hydromulch remains effective and shall reapply the hydromulch as needed until such time that the minimum seed coverage is achieved.

E. Erosion Control Blanket: Any erosion control blanket which becomes displaced for any reason shall be reinstalled to its' original condition and position with additional staples. Any erosion control blanket which becomes damaged or

otherwise ineffective shall be replaced with new product. All rills and gullies shall be repaired and the area shall be reseeded prior to reinstallation of erosion control blanket.

END OF SECTION 09310

SPECIFICATIONS

FOR

LAKE COUNTY FOREST PRESERVES
LAKEWOOD PRESERVE

PROJECT NO. 3223.81

SEPTEMBER 24, 2025

BLECK & BLECK ARCHITECTS, LLC
200 E. CHURCH STREET
LIBERTYVILLE, IL 60048
PHONE: 847-247-0303
FAX: 847-247-1737

INDEX

DIVISION NUMBER

1.0 GENERAL REQUIREMENTS
INSTRUCTIONS TO BIDDERS – ALSO SEE INSTRUCTIONS FROM THE LAKE COUNTY FOREST PRESERVES
BID FORM – ALSO SEE INSTRUCTIONS FROM THE LAKE COUNTY FOREST PRESERVES

GENERAL CONDITIONS & SUPPLEMENTAL GENERAL CONDITIONS

2.0 SITE WORK
DEMOLITION
EXCAVATING & GRADING

3.0 CONCRETE
CAST-IN-PLACE CONCRETE

4.0 MASONRY
MASONRY

6.0 WOOD & PLASTICS
CARPENTRY & MILLWORK

7.0 THERMAL & MOISTURE PROTECTION
ROOFING AND SHEET METAL

8.0 DOORS & WINDOWS
METAL DOORS AND FRAMES
WOOD & PLASTIC DOORS
ALUMINUM DOORS, FRAMES & SASH
FINISH HARDWARE
GLASS & GLAZING

9.0 FINISHES
GYPSUM DRYWALL
ACOUSTICAL CEILINGS
PORCELAIN TILE
FLOORING
PAINTING & FINISHING

10.0 SPECIALTIES
BUILDING SPECIALTIES
- SIGNAGE
- TOILET & BATH ACCESSORIES
- WARDROBE & CLOSET SPECIALTIES
- FIRE EXTINGUISHER ACCESSORIES

15.0 MECHANICAL
PLUMBING
HV

16.0 ELECTRICAL
POWER
LIGHTING

END OF INDEX

DIVISION 1 – GENERAL REQUIREMENTS
INSTRUCTIONS TO BIDDERS

THE LAKE COUNTY FOREST PRESERVES, WILL RECEIVE SEALED BIDS FOR THE GENERAL CONSTRUCTION WORK AS DETAILED ON THE DRAWINGS AND SPECIFICATIONS PREPARED BY BLECK & BLECK ARCHITECTS, LLC, DATED, SEPTEMBER 24, 2025.PLEASE SEE THE GENERAL INSTRUCTIONS TO BIDDERS FROM THE LAKE COUNTY FOREST PRESERVES INCLUDED IN THIS BID PACKAGE OF DOCUMENTS.

CONTRACTORS MUST VISIT THE JOBSITE AND INSPECT SAME. CONTRACTORS WILL BE RESPONSIBLE FOR ALL VISIBLE FIELD CONDITIONS AND WILL INCLUDE THE COST OF REMOVAL, REPAIR, MODIFICATION, OR OTHER COSTS THAT MAY BE INCURRED TO COMPLETE THE CONTRACT. THIS SHALL INCLUDE ALL WORK NOT NECESSARILY SHOWN ON THE PLANS, BUT VISIBLE UPON INSPECTION.

ALL QUESTIONS PERTAINING TO THE WORK ARE TO BE DIRECTED TO THE LAKE COUNTY FOREST PRESERVES FOR AN INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING.

IF ANY PERSON CONTEMPLATING SUBMITTING A BID FOR CONSTRUCTION OF THE WORK IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PROPOSED CONTRACT DOCUMENTS, OR FINDS DISCREPANCIES IN OR OMISSIONS FROM ANY PART OF THE PROPOSED CONTRACT DOCUMENTS, HE MAY SUBMIT TO THE ARCHITECT A WRITTEN OR VERBAL REQUEST FOR INTERPRETATION THEREOF NOT LATER THAN TWO DAYS BEFORE BIDS WILL BE OPENED.

(1) THE PERSON SUBMITTING THE REQUEST SHALL BE RESPONSIBLE FOR ITS PROMPT DELIVERY.

(2) INTERPRETATION OR CORRECTION OF PROPOSED CONTRACT DOCUMENTS WILL BE MADE ONLY BY ADDENDUM, AND WILL BE E-MAILED OR DELIVERED TO EACH BIDDER OF RECORD.

(3) THE OWNER OR HIS AGENTS WILL NOT BE RESPONSIBLE FOR ANY OTHER EXPLANATIONS OR INTERPRETATION OF THE PROPOSED CONTRACT DOCUMENTS.

END OF INSTRUCTIONS TO BIDDERS

DIVISION 1 – GENERAL REQUIREMENTS
BID FORM

SEE THE LAKE COUNTY FOREST PRESERVES REQUIREMENTS INCLUDED IN THE BID PACKAGE DOCUMENTS.

DIVISION 1 – GENERAL REQUIREMENTS
GENERAL CONDITIONS

1. THE "2017 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT A201-2017 ARE PART OF THE CONSTRUCTION DOCUMENTS FOR THIS CONTRACT. A COPY OF DOCUMENT A201-2017 CAN BE OBTAINED ONLINE AT https://www.aiacontracts.org/contract-documents/25131-general-conditions-of-the-contract-for-construction OR FROM THE AMERICAN INSTITUTE OF ARCHITECTS, 222 MERCHANDISE MART PLAZA, SUITE 1049, CHICAGO, IL, 60654-1103, PHONE: 312-670-7770. SUPPLEMENTAL GENERAL CONDITIONS ATTACHED HERETO ARE ALSO PART OF THE GENERAL CONDITIONS APPLYING TO ALL CONTRACTORS BIDDING THE WORK.

SUPPLEMENTAL GENERAL CONDITIONS

1. GENERAL. THESE SUPPLEMENTAL GENERAL CONDITIONS CONTAIN CHANGES AND ADDITIONS TO THE A.I.A. GENERAL CONDITIONS, A.I.A. DOCUMENT A201-2017.

2. INDEMNITIES: THE RELATIONSHIP OF CONTRACTOR TO OWNER UNDER THIS AGREEMENT SHALL BE THAT OF AN INDEPENDENT CONTRACTOR AND NO AGENCY OR EMPLOYEE RELATIONSHIP SHALL BE IMPLIED BY THIS AGREEMENT. AS SUCH INDEPENDENT CONTRACTOR, CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY CLAIMS, DEMANDS, SUITS, LOSSES, COSTS, DAMAGES OR EXPENSES ARISING OUT OF ITS ACTS OR THOSE OF ITS EMPLOYEES, SERVANTS, AGENTS, OR SUBCONTRACTORS OR ANY OF THEM. CONTRACTOR AGREES TO PROTECT, DEFEND, INDEMNIFY AND HOLD OWNER HARMLESS FROM ANY AND ALL CLAIMS, DEMANDS, SUITS, ACTIONS, PENALTIES, ASSESSMENTS, DAMAGES OR LOSSES OF ANY KIND OR DESCRIPTION FOR DAMAGES OR INJURIES (INCLUDING DEATH) TO PERSON OR PROPERTY RECEIVED OR SUSTAINED DIRECTLY OR INDIRECTLY THROUGH OR ON ACCOUNT OF DEFECTIVE WORKMANSHIP OR MATERIALS INCORPORATED IN THE PROJECT OR ARISING OUT OF THE ACTS OR OMISSIONS OF CONTRACTOR, ITS AGENTS, EMPLOYEES, OR SUBCONTRACTORS. IT IS EXPRESSLY UNDERSTOOD THAT CONTRACTOR SHALL NOT BE RESPONSIBLE TO OWNER FOR DAMAGE OR INJURY SUSTAINED AS A DIRECT RESULT OF THE NEGLIGENT ACTS OR OMISSIONS OF OWNER, ITS AGENTS OR EMPLOYEES.

3. INSURANCE: TO INSURE CONTRACTOR'S PERFORMANCE OF THE WARRANTIES AND OBLIGATIONS SET FORTH IN THIS AGREEMENT, BUT NOT BY WAY OF LIMITATION, CONTRACTOR AGREES TO OBTAIN INSURANCE COVERAGE.

SEE INSURANCE REQUIREMENTS PER THE LAKE COUNTY FOREST PRESERVES SECTION 4.2 IN ATTACHED SAMPLE CONTRACT

A. CERTIFICATE HOLDER: **LAKE COUNTY FOREST PRESERVES**

CERTIFICATE HOLDER: **BLECK & BLECK ARCHITECTS, LLC**

ADDITIONAL INSURED: **LAKE COUNTY FOREST PRESERVES AND BLECK & BLECK ARCHITECTS, LLC**

PLEASE PROVIDE A SEPARATE CERTIFICATE OF INSURANCE FOR THE OWNER AND ARCHITECT.

ALL ORIGINAL COPIES OF CERTIFICATES OF INSURANCE ARE TO BE MAILED TO BLECK & BLECK ARCHITECTS, LLC OR EMAILED TO SHERYL@BLECKARCHITECTS.COM

POLICIES SHALL NAME THE OWNER AND BLECK & BLECK ARCHITECTS AS ADDITIONAL INSURED. THE CERTIFICATE SHOULD READ: "BLECK & BLECK ARCHITECTS, LLC AND OWNER(INSERT NAME) ARE ADDITIONAL INSURED ON GENERAL LIABILITY AS PER WRITTEN CONTRACT WITH RESPECTS TO WORK PERFORMED BY NAMED INSURED". ALL SUCH INSURANCE SHALL BE MAINTAINED IN FULL FORCE AND EFFECT FOR THE DURATION OF THE PROJECT AND CONTINUE FOR A PERIOD OF NOT LESS THAN ONE YEAR AFTER PROJECT IS ACCEPTED BY OWNER. EACH POLICY WILL CONTAIN A WAIVER OF SUBROGATION AGAINST OWNER AND ARCHITECT. EACH POLICY WILL PROVIDE 30 DAYS NOTICE OF TERMINATION TO OWNER AND ARCHITECT OF CANCELLATION. CONTRACTOR AGREES TO PROVIDE OWNER WITH CERTIFICATES EVIDENCING SUCH INSURANCE PRIOR TO BEGINNING WORK ON THE PROJECT. THESE CERTIFICATES WILL BE FILED WITH BLECK & BLECK ARCHITECTS' OFFICE AND THE OWNER. CONTRACTOR WILL PROVIDE UPDATED CERTIFICATES TO THE OWNER AND THE ARCHITECT AFTER PROJECT IS UNDERWAY.

B. DELETE IN ITS ENTIRETY SUBPARAGRAPH 3.18.1 OF THE A.I.A. GENERAL CONDITIONS AND SUBSTITUTE THE FOLLOWING NEW PARAGRAPH:

(1) CONTRACTUAL LIABILITY COVERAGE: CONTRACTUAL LIABILITY COVERAGE INCLUDING THE "INDEMNIFICATION FOR OWNER AND ARCHITECT" (HOLD HARMLESS CLAUSE) WHO MUST BE FULLY INSURED UNDER THIS POLICY FOR THE LIABILITY LIMITS SET FORTH ABOVE. THE OWNER AND THE ARCHITECT ARE TO BE CARRIED AS ADDITIONAL INSURED ON THE CONTRACTOR'S POLICIES.

(2) INDEMNIFICATION: TO THE FULLEST EXTENT PERMITTED BY LAW AND NOT WITHSTANDING ANY LIMITATIONS OR ALLOCATIONS OF LIABILITY ARISING UNDER THE DOCTRINE OF INDEMNITY. EACH SUBCONTRACTOR AND THE CONTRACTOR SHALL WAIVE ANY RIGHT OF CONTRIBUTION AND SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER, THE ARCHITECT AND THEIR AGENTS, EMPLOYEES AND CONSULTANTS FROM AND AGAINST ANY CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEY'S FEES, ARISING OUT OF OR RESULTING FROM OR IN CONNECTION WITH THE PERFORMANCE OF THE WORK, PROVIDED THAT ANY SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY ANY ACT OR OMISSION OF THE CONTRACTOR, ANY SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM OR ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT IT IS CAUSED IN PART BY A PARTY INDEMNIFIED HEREUNDER.

IN ANY AND ALL CLAIMS AGAINST THE OWNER, THE ARCHITECT OR ANY OF THEIR AGENTS, EMPLOYEES AND CONSULTANTS BY ANY EMPLOYEE OR THE CONTRACTOR, ANY SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM OR ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE, THE INDEMNIFICATION OBLIGATION UNDER THIS PARAGRAPH AGREEMENT SHALL NOT BE LIMITED IN ANY WAY BY ANY LIMITATION ON THE AMOUNT OF TYPE OF DAMAGES, COMPENSATION OR BENEFITS PAYABLE BY OR FOR THE CONTRACTOR OF ANY SUBCONTRACTOR UNDER WORKERS' OR WORKMEN'S COMPENSATION ACTS, DISABILITY BENEFIT ACTS OR OTHER EMPLOYEE BENEFIT ACTS. "CLAIMS, DAMAGES, LOSSES, AND EXPENSES" AS THESE WORDS ARE USED IN THIS PARAGRAPH

AGREEMENT SHALL BE CONSTRUED TO INCLUDE, BUT BE LIMITED TO: (1) INJURY OR DAMAGE CONSEQUENT UPON THE FAILURE OF OR USE OR MISUSES BY CONTRACTOR, ITS SUBCONTRACTORS, AGENTS, SERVANTS OR EMPLOYEES, OF ANY HOIST, RIPPING, BLOCKING, SCAFFOLDING, OR ANY AND ALL OTHER KINDS OF ITEMS OR EQUIPMENT, WHETHER OR NOT THE SAME BE OWNED, FURNISHED OR LOANED BY OWNER; (2) ALL ATTORNEYS FEES AND COSTS INCURRED IN BRINGING AN ACTION TO ENFORCE THE PROVISIONS OF THIS INDEMNITY OR ANY OTHER INDEMNITY CONTAINED IN THE GENERAL CONDITIONS, AS MODIFIED BY THE SUPPLEMENTARY CONDITIONS; AND (3) TIME EXPENDED BY THE PARTY BEING INDEMNIFIED AND THEIR EMPLOYEES, AT THEIR USUAL RATES PLUS COST OF TRAVEL, LONG DISTANCE TELEPHONE AND REPRODUCTION OF DOCUMENTS.

THE OBLIGATIONS OF THE CONTRACTOR UNDER THIS AGREEMENT SHALL NOT EXTEND TO THE LIABILITY OF THE ARCHITECT, HIS AGENTS, EMPLOYEES, OR CONSULTANTS ARISING OUT OF THEIR NEGLIGENCE TO THE EXTENT THAT SUCH NEGLIGENCE IS THE CAUSE OF THE INJURY OR DAMAGE.

4. GUARANTEE: ALL WORKMANSHIP AND MATERIALS ARE TO BE GUARANTEED AGAINST DEFECTS IN MATERIAL AND FAULTY WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE AND SHALL BE REPLACED OR REPAIRED AT NO COST TO THE OWNER. IF CONTRACTOR, AFTER NOTICE IN WRITING FROM ARCHITECT AND/OR OWNER, FAILS TO PROCEED WITHIN THREE (3) WORKING DAYS TO COMPLY WITH THE TERMS OF THE GUARANTEES, THE OWNER MAY HAVE THE DEFECTS CORRECTED AND THE CONTRACTOR AND/OR HIS SURETY SHALL BE LIABLE FOR ALL EXPENSES INCURRED.

THE CONTRACTOR SHALL GATHER ALL WRITTEN AND PRINTED WARRANTIES AND GUARANTEES, INSTRUCTIONS, BONDS, PARTS LISTS, AND OTHER LITERATURE FROM ALL SUPPLIERS AND COMPILE IT INTO A LOOSE-LEAF NOTEBOOK WHICH SHALL BE PRESENTED TO THE OWNER. TWO (2) SUCH NOTEBOOKS WILL BE REQUIRED.

AT THE OWNER'S REQUEST, EACH CONTRACTOR SHALL VISIT THE BUILDING TO CLARIFY FOR OPERATING PERSONNEL ANY QUESTIONS AS TO THE PROPER OPERATION
AND MAINTENANCE OF THE EQUIPMENT OR SYSTEMS INSTALLED.

5. OSHA REQUIREMENTS: CONTRACTOR SHALL COMPLY WITH PROVISIONS OF THE "OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970" AND AS AMENDED TO DATE.

6. JOB SITE OFFICE AND STORAGE. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ON THE JOB SITE A TEMPORARY OFFICE OR TRAILER AND PROTECTED STORAGE FACILITY FOR HIS OWN USE AND SHALL BE RESPONSIBLE FOR HIS OWN TELEPHONE AND UTILITY SERVICE. OFFICE SHALL BE LOCATED ON SITE WHERE APPROVED BY THE OWNER AND REMOVED WHEN WORK IS COMPLETE.

7. PERMITS. THE CONTRACTOR WILL PROCURE AND THE OWNER WILL PAY FOR ALL
BUILDING PERMITS, CERTIFICATES OF INSPECTION, USE, OCCUPANCY PERMITS, FEES, CHARGES AND BONDS (INCLUDING STATE AND COUNTY ROADWAY BONDS) REQUIRED BY THE "AUTHORITY" HAVING JURISDICTION.

PERMITS: THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED. THE CONTRACTOR SHALL ARRANGE FOR

ALL NECESSARY INSPECTIONS AND APPROVAL. THE OWNER SHALL GIVE SUCH ASSISTANCE, AS MAY BE REQUIRED, IN SECURING ATTENTION BY PUBLIC OFFICIALS.

8. TAXES: NO SALES TAX SHALL BE INCLUDED IN THE BASE BID.

9. LICENSES: THE CONTRACTOR SHALL PAY FOR ALL LICENSES NECESSARY FOR THE EXECUTION AND COMPLIANCE WITH THE LAWS. THE CONTRACTOR SHALL GIVE ALL NOTICES, PAY ALL FEES, AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK.

10. TEMPORARY SERVICES: TEMPORARY ELECTRICAL SERVICE SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR TO THE CONSTRUCTION SITE AS REQUIRED FOR POWER AND LIGHTING IN ACCORDANCE WITH OSHA GUIDELINES. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A PANEL, FUSING, AND DISTRIBUTION SYSTEM. ELECTRICAL POWER WILL BE PAID FOR BY THE CONTRACTOR.

PROVIDE NEW DISTRIBUTION PANEL AND METER FOR THE USE BY ALL TRADES. VERIFY WITH COMMONWEALTH EDISON CO. ON AVAILABLE POWER AND CONFIGURATION. ELECTRICAL CONTRACTOR TO INSTALL A CIRCUIT BREAKER PANEL WITH MIN. 3 - 20A CIRCUITS FOR POWER & 2 - 20A CIRCUITS FOR LIGHTING. PROVIDE REQUIRED RECEPTACLES AROUND THE CONSTRUCTION SITE FOR USE BY THE TRADES.

11. HEAT. THIS CONTRACTOR SHALL PROVIDE TEMPORARY PORTABLE HEAT DURING CONSTRUCTION, IF REQUIRED BY HIM TO DO HIS WORK, AND SHALL PAY FOR THE COST OF THE FUEL. UPON COMPLETION OF THE PERMANENT SYSTEM IT MAY BE PUT IN OPERATION, IF APPROVED IN WRITING BY THE OWNER, AND USED FOR TEMPORARY HEATING WITH UTILITY BILLS PAID FOR BY THE GENERAL CONTRACTOR.

12. TEMPORARY TOILET: THE GENERAL CONTRACTOR SHALL PROVIDE ON-SITE SANITARY TOILET FACILITIES IN SO FAR AS NECESSARY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CLEAN AND SANITARY CONDITIONS AT ALL TIMES.

(IF AVAILABLE) EXISTING FACILITIES WILL BE AVAILABLE FOR CONTRACTOR USE DURING NORMAL HOURS OF OPERATION. IF THE EXISTING ON-SITE FACILITIES ARE USED, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CLEAN AND SANITARY CONDITIONS AT ALL TIMES. (ANY REPAIRS OR MAINTENANCE OF THE EXISTING FACILITY SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR).

13. CLEANING UP: THE CONTRACTOR SHALL KEEP THE SITE CLEAN OF DEBRIS, LOOSE PAPER, CONSTRUCTION WASTE MATERIALS, ETC., AND SHALL HAVE ON SITE AT ALL TIMES A LARGE WASTE RECEPTACLE TO BE USED AT ALL TIMES. THE CONTAINER WHEN FULL SHALL BE REMOVED FROM THE SITE AND REPLACED BY AN EMPTY CONTAINER AND DEBRIS DISPOSED OF AT A LICENSED DUMPING LAND FILL AND THE COST FOR SAME SHALL BE PAID FOR BY THE CONTRACTOR.

IN ADDITION TO GENERAL BROOM CLEANING, THE CONTRACTOR SHALL PERFORM THE FOLLOWING FINAL CLEANING FOR ALL TRADES AT COMPLETION OF THE WORK:

A. REMOVE TEMPORARY PROTECTIONS.

B. REMOVE MARKS, STAINS, FINGERPRINTS AND OTHER SOIL OR DIRT FROM PAINTED, DECORATED, AND NATURAL FINISHED WOODWORK AND OTHER WORK.

C. REMOVE SPOTS, MORTAR, PLASTER, SOIL AND PAINT FROM CERAMIC TILE, MARBLE, AND OTHER FINISH MATERIALS AND WASH OR WIPE CLEAN.

D. CLEAN FIXTURES, CABINETWORK AND EQUIPMENT, REMOVING STAINS, PAINT, DIRT, AND DUST AND LEAVE IN UNDAMAGED, NEW CONDITION.

E. CLEAN ALUMINUM IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER.

F. CLEAN FLOORS THOROUGHLY WITH A WELL RINSED MOP CONTAINING ONLY ENOUGH MOISTURE TO CLEAN OFF ANY SURFACE DIRT OR DUST AND BUFF DRY BY MACHINE TO BRING THE SURFACES TO SHEEN.

14. SECURITY: THE CONTRACTOR SHALL CONFINE HIS EQUIPMENT AND PERSONNEL WITHIN THE LIMITS OF THE JOB SITE.

15. PROTECTION. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR WORK IN PLACE AND SHALL PROVIDE ALL NECESSARY RIGGING, CABLES, ETC., NECESSARY TO PROTECT HIS WORK. NO ROOF AREAS SHALL BE LEFT OPENED AT ANY TIME. PROVIDE NECESSARY WATER PROTECTION. ANY WORK OPENED DURING THE DAY SHALL BE CLOSED AND BE RAINTIGHT AT THE END OF EACH WORK DAY. DAMAGES DUE TO NORMAL RAINFALL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

16. WORK INCIDENTAL TO CONSTRUCTION: WORK CLASSIFIED AS INCIDENTAL TO THE CONSTRUCTION AND INCLUDED IN THE GENERAL COST OF THE WORK AS PART OF THE CONTRACT PRICE SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO, THE FOLLOWING:

A. CUTTING AND PATCHING FINISHED WORK BY OTHERS.

B. EXCAVATION AND BACKFILL REQUIRED TO INSTALL ITEMS FURNISHED UNDER THIS CONTRACT.

C. REPLACING OR REPAIRING DAMAGES TO WORK BY OTHERS DUE TO THE CONSTRUCTION.

D. BUILDING IN ALL NECESSARY ANCHORS, SUPPORTS, ETC. TO SECURE COMPONENT STRUCTURES.

E. MISCELLANEOUS SUPPORT STRUCTURES REQUIRED TO INSTALL ITEMS FURNISHED UNDER THIS CONTRACT.

F. ADJUSTING HEIGHTS OF INSTALLED ITEMS TO CORRECT FOR FIELD CONDITIONS.

G. FURRING OUT WALLS TO CONCEAL PIPES, STRUCTURAL SUPPORTS, OR TO BRING SURFACES PLUMB AND TRUE.

H. LOWERING CEILINGS AND/OR DROPPING SOFFITS TO CONCEAL DUCTWORK, PLUMBING PIPING, ELECTRICAL CONDUIT, HEATING PIPING, ETC.

I. LEVELING EXISTING OR NEW FLOORS TO MAKE TRUE AND LEVEL TO RECEIVE FINISHED MATERIALS.

J. CLEANING ALL GLASS AND FINISHED SURFACES.

17. RECORD DOCUMENTS: THE CONTRACTOR SHALL MAINTAIN AT THE SITE A SET OF DRAWINGS AND SPECIFICATIONS ON WHICH ARE MARKED THE DAY TO DAY MODIFICATIONS MADE TO THE PROJECT, INCLUDING BOTH BURIED AND VISIBLE ITEMS.

USING ERASABLE COLORED PENCIL (NOT INK OR INDELIBLE PENCIL), CLEARLY DESCRIBE THE CHANGE BY NOTE AND GRAPHIC LINE, AS REQUIRED. DATE ALL ENTRIES. CALL ATTENTION TO THE ENTRY BY A "CLOUD" AROUND THE AREA OR AREAS AFFECTED. IN THE EVENT OF OVERLAPPING CHANGES, DIFFERENT COLORS MAY BE USED FOR EACH OF THE CHANGES.

CHANGES NECESSITATED BY PRODUCT SUBSTITUTIONS OR JOB SITE CONDITIONS ARE TO BE VERIFIED WITH OTHER TRADES IF THE CHANGE AFFECTS INSTALLATION OF THEIR WORK.

UPON COMPLETION OF THE PROJECT DELIVER THE "RECORD DOCUMENTS" AND WRITTEN DESCRIPTION OF THE WORK COMPLETED TO THE ARCHITECT FOR COMPILING INTO ONE COMPLETE SET FOR THE OWNER.

THE PURPOSE OF THE FINAL RECORD DOCUMENTS IS TO PROVIDE FACTUAL INFORMATION REGARDING ALL ASPECTS OF THE WORK, BOTH CONCEALED AND VISIBLE, TO ENABLE FUTURE MODIFICATIONS TO PROCEED WITHOUT LENGTHY AND EXPENSIVE SITE MEASUREMENT, INVESTIGATION, AND EXAMINATION.

18. SUBSTITUTIONS. WHEN MATERIAL OR EQUIPMENT IS DEFINED IN ANY OF THE CONTRACT DOCUMENTS BY DESCRIBING A PROPRIETARY PRODUCT OR BY USING THE NAME OF A MANUFACTURER, THE SPECIFIED MATERIAL OR EQUIPMENT SHALL BE UNDERSTOOD AS INDICATING THE TYPE, FUNCTION, MINIMUM STANDARD OF DESIGN, EFFICIENCY AND QUALITY DESIRED AND SHALL NOT BE CONSTRUED AS TO ELIMINATE OTHER MANUFACTURER'S MATERIAL OR EQUIPMENT OF COMPARABLE QUALITY, DESIGN, AND EFFICIENCY.

FOR ANY EQUIPMENT OR MATERIAL SUBMITTED FOR CONSIDERATION AS A SUBSTITUTION, THE CONTRACTOR SHALL FURNISH THE ARCHITECT ALL REQUIRED DESCRIPTIVE LITERATURE, SHOP DRAWINGS, SAMPLES AND SUCH OTHER DATA AS MAY BE NECESSARY FOR USE IN ARRIVING AT A DECISION ON THE PROPOSED ALTERNATE. IN ALL INSTANCES THE ARCHITECT SHALL BE THE SOLE JUDGE AS TO WHETHER THE ALTERNATE MATERIAL OR EQUIPMENT IS ACCEPTABLE.

THE ARCHITECT SHALL BE REIMBURSED, BY THE CONTRACTOR WHO SUBMITTED AND RECEIVED ACCEPTANCE OF THE ALTERNATE, FOR ANY COSTS INCURRED WHICH ARE THE DIRECT RESULT OF THE ACCEPTANCE INCLUDING BUT NOT LIMITED TO DRAWING REVISIONS, SUPPLEMENTAL DRAWINGS, MEETING WITH MANUFACTURERS REPRESENTATIVES OR SUPPLIERS, ETC. THE COST FOR ANY ADDITIONAL CONSTRUCTION FEATURES WHICH ARE REQUIRED BECAUSE OF THE ACCEPTED ALTERNATE SHALL BE PAID FOR BY THE CONTRACTOR WHO REQUESTED THE ALTERNATE.

19. QUALITY CONTROL: THIS CONTRACTOR SHALL PROVIDE SUCH TESTS AS SPECIFIED PERTAINING TO THE WORK.

A. TESTING LABORATORY SERVICES. THE CONTRACTOR SHALL ENGAGE AND PAY FOR THE SERVICES OF AN APPROVED TESTING LABORATORY TO PERFORM FIELD AND LABORATORY TESTS, INSPECTING, AS REQUIRED AND SPECIFIED UNDER PERTINENT SECTIONS OF THESE SPECIFICATIONS. THE TESTING

LABORATORY SHALL BE QUALIFIED IN ACCORDANCE WITH ASTM E329. "RECOMMENDED PRACTICE FOR INSPECTION AND TESTING AGENCIES FOR CONCRETE AND STEEL USED IN CONSTRUCTION", AND APPROVED BY THE ARCHITECT AND OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE ALL TESTING LABORATORY ACTIVITIES.

B. CONCRETE TESTING. CONCRETE SHALL BE SAMPLED AND TESTED FOR QUALITY CONTROL DURING PLACEMENT BY THE APPROVED TESTING LABORATORY AS FOLLOWS:

(1) SAMPLING FRESH CONCRETE: THREE STANDARD CONCRETE CYLINDERS FOR STRENGTH TEST OF EACH CLASS OF CONCRETE SHALL BE TAKEN NOT LESS THAN ONCE A DAY NOR LESS THAN ONCE FOR EACH 50 CUBIC YARDS OF CONCRETE OR FOR EACH 5000 SQUARE FEET OF FLATWORK AREA PLACED. CYLINDERS SHALL BE STORED IN AN AREA DESIGNATED BY THE TESTING LABORATORY.

(2) CONCRETE CYLINDER TESTING: TEST CYLINDERS AT SEVEN (7) AND TWENTY-EIGHT (28) DAYS INTERVALS WITH THE THIRD CYLINDER HELD FOR FUTURE TESTING AS DIRECTED BY THE ARCHITECT.

(3) SLUMP: SLUMP TESTS WILL BE TAKEN ON SITE FOR EACH TRUCK LOAD PLACED. A RECORD WILL BE KEPT INDICATING DATE, LOCATION AND SLUMP OF EACH TRUCK LOAD.

(4) AIR CONTENT: SAMPLING PROCEDURE SHALL COMPLY WITH ASTM C231, PRESSURE METHOD. ONE SAMPLE SHALL BE TAKEN FOR EACH SET OF COMPRESSIVE STRENGTH CYLINDERS OF AIR ENTRAINED CONCRETE.

(5) CONCRETE TEMPERATURE: TEMPERATURE OF CONCRETE WILL BE TESTED EACH TIME COMPRESSIVE CYLINDERS ARE MADE FOR STRENGTH TESTS. TEST HOURLY WHEN AIR TEMPERATURE IS 40 DEGREES FAHRENHEIT OR BELOW.

(6) TEST REPORTS: TEST REPORTS SHALL BE REPORTED IN WRITING TO THE ARCHITECT AND THE CONTRACTOR. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONTRACTOR, NAME OF CONCRETE SUPPLIER AND TRUCK NUMBER, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF CONCRETE BATCH IN THE STRUCTURE, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTION AND MATERIAL, CONCRETE BREAKING STRENGTH AND TYPE OF BREAK FOR BOTH SEVEN DAY AND TWENTY-EIGHT DAY TESTS.

C. ENGINEERED FILL COMPACTION TESTS. AT ALL LOCATIONS WHERE ENGINEERED FILL IS UTILIZED AN INDEPENDENT TESTING LAB SHALL PERFORM MODIFIED PROCTOR TESTS ON THE MATERIALS BEING USED AS FILL TO DETERMINE OPTIMUM MOISTURE AND DENSITY. COMPACTION TESTS FOR ENGINEERED FILL UNDER INTERIOR SLABS, EXTERIOR SLABS, BITUMINOUS PARKING LOT AND RETENTION POND BERMS SHALL BE PROVIDED AT EACH LIFT. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COMPACTION AND MODIFIED PROCTOR TESTS REQUIRED TO INSURE CONFORMANCE WITH THE CONTRACT DOCUMENTS. COPIES OF ALL TESTS PERFORMED SHALL BE SUBMITTED TO THE ARCHITECT FOR HIS REVIEW.

20. CUTTING AND PATCHING. EACH CONTRACTOR SHALL DO HIS OWN CUTTING AND PATCHING. HE WILL RETAIN A SPECIALIST WHO IS TRAINED TO DO SAID WORK AND IT WILL BE COMPLETED IN A NEAT AND WORKMANLIKE MANNER.

PRIOR TO CUTTING WHICH AFFECTS STRUCTURAL SAFETY, SUBMIT WRITTEN REQUEST TO THE ARCHITECT FOR PERMISSION TO PROCEED WITH CUTTING.

21. BURNING. AIR POLLUTION RESTRICTIONS APPLICABLE TO THIS PROJECT ARE AS FOLLOWS: MATERIAL MAY NOT BE BURNED ON THE PREMISES. IF THE CONTRACTOR ELECTS TO DISPOSE OF WASTE MATERIALS OFF THE PREMISES BY BURNING, HE SHALL MAKE HIS OWN ARRANGEMENTS FOR SUCH BURNING AREA AND SHALL CONFORM TO ALL FEDERAL, STATE, AND CITY OR VILLAGE REGULATIONS.

22. SUPERINTENDENCE. THE CONTRACTOR SHALL GIVE HIS PERSONAL SUPERVISION TO THE WORK OR HAVE AT THE SITE OF THE WORK AT ALL TIMES A COMPETENT FOREMAN, SUPERINTENDENT, OR OTHER REPRESENTATIVE SATISFACTORY TO THE ARCHITECT/OWNER AND HAVING AUTHORITY TO ACT FOR THE CONTRACTOR.

23. WAIVERS OF LIEN. SUBMIT ALL PARTIAL AND FINAL WAIVERS OF LIEN FOR ALL CONTRACTS WITH PAYMENT APPLICATIONS SWORN TO BY THE GENERAL CONTRACTOR. SAID WAIVERS OF LIEN SHALL INCLUDE ALL SUB-CONTRACTORS, SUB SUB-CONTRACTORS, AND MATERIAL SUPPLIERS' WAIVERS OF LIEN. ALL WAIVERS OF LIEN FROM SUB CONTRACTORS MUST BE COMPLETE; THE SHORT FORM WAIVER OF LIEN WILL NOT BE ACCEPTED.

- CONTRACTOR MUST LIST THE NAMES AND TELEPHONE NUMBER OF ALL PARTIES WHO HAVE FURNISHED MATERIALS OR LABOR, OR BOTH, FOR SAID WORK AND THE AMOUNT DUE OR TO BECOME DUE TO EACH.

- WAIVERS SHALL LIST THE MAJOR SUPPLIER EVEN IF MATERIAL IS TAKEN FROM FULLY PAID STOCK. A WAIVER MAY BE REQUIRED FROM THE MATERIAL SUPPLIER EVEN IF THE WAIVER STATES "TAKEN FROM FULLY PAID STOCK".

- CONDITIONAL WAIVERS OF LIEN ARE NOT ACCEPTABLE.

- ALL WAIVERS OF LIEN MUST BE NOTARIZED INCLUDING WAIVERS FROM SUB-CONTRACTORS; SAID WAIVERS MUST INCLUDE THE STATEMENT: "SUBSCRIBED AND SWORN TO BEFORE ME THIS _____DAY OF _____, NOTARY PUBLIC _____."

- IF THE SUBCONTRACTOR OR MATERIAL SUPPLIER IS A CORPORATION THE WAIVER MUST BE SEALED WITH THE CORPORATE SEAL AND BE SIGNED BY AN OFFICER OF THE CORPORATION (NAME AND TITLE TO BE TYPED OR PRINTED).

- **ANY WAIVERS THAT ARE NOT PROPERLY NOTARIZED OR PROPERLY FILLED OUT WILL BE RETURNED FOR PROPER NOTARIZATION AND INFORMATION. THE CONTRACTOR SHALL RETURN SAID WAIVERS TO THE SUBCONTRACTOR OR MATERIAL SUPPLIER FOR PROPER EXECUTION AND NOTARIZATION.**

- A WAIVER OF LIEN WILL BE REQUIRED FROM ALL MATERIAL SUPPLIERS.

- **ALL FINAL WAIVERS MUST INCLUDE THE TOTAL AMOUNT OF THE CONTRACT. NO EXCEPTIONS.** THIS ALSO APPLIES TO ALL WAIVERS FROM MATERIAL SUPPLIERS.

IF NO SUBCONTRACTORS ARE HIRED THEN THE FOLLOWING STATEMENT MUST BE MADE: "MY MAJOR SUPPLIER IS (**NAME, TELEPHONE NUMBER AND ADDRESS OF** SUPPLIER)". IF ALL MATERIAL IS FROM FULLY PAID STOCK THE FOLLOWING STATEMENT IS TO BE MADE: "ALL MATERIAL TAKEN FROM FULLY PAID STOCK, DELIVERED TO JOB SITE IN OUR OWN TRUCK AND ALL LABOR IS PAID." IF LABOR ONLY IS CONTRACTED FOR, THE FOLLOWING STATEMENT MUST BE MADE: "ALL LABOR IS PAID." EVEN IF THIS STATEMENT IS ON THE SUBCONTRACTOR'S WAIVER, A PARTIAL AND FINAL WAIVER FROM THE MATERIAL SUPPLIER MAY BE REQUIRED.

IF THE ABOVE REQUIREMENTS ARE NOT COMPLIED WITH, THE PAYOUT REQUEST WILL BE RETURNED TO THE GENERAL CONTRACTOR.

24. APPLICATION FOR PAYMENT. SUBMIT ORIGINAL AND TWO COPIES. **IF ORIGINAL AND TWO COPIES ARE NOT SUBMITTED, THE APPLICATION FOR PAYMENT WILL BE RETURNED.** PAYMENT APPLICATIONS SHALL BE SUBMITTED ON THE CONTRACTOR'S "COMPUTERIZED" APPLICATION FOR PAYMENT, OR A.I.A. DOCUMENT G-702, 2017, ENTITLED "APPLICATION AND CERTIFICATE FOR PAYMENT AND A.I.A. DOCUMENT G-703 "CONTINUATION SHEET", BOTH OF WHICH MAY BE OBTAINED FROM THE AMERICAN INSTITUTE OF ARCHITECTS, 222 MERCHANDISE MART PLAZA, SUITE 1049, CHICAGO, IL, 60654-1103.

NOTE: IF PAYOUT REQUEST IS TO BE PROCESSED BY A TITLE COMPANY, THEN THE APPLICATION FOR PAYMENT MUST BE ON THE FORM PROVIDED BY THE TITLE COMPANY. AN ORIGINAL AND TWO COPIES OF THE COMPLETE PAYOUT ARE TO BE DELIVERED TO OUR OFFICE FOR REVIEW AND PROCESSING.

25. OWNER'S RIGHT TO DO WORK. IF THE CONTRACTOR SHOULD NEGLECT TO EXECUTE THE WORK PROPERLY OR FAIL TO PERFORM ANY PROVISIONS OF THIS CONTRACT, THE OWNER, AFTER THREE (3) DAYS WRITTEN NOTICE TO THE CONTRACTOR, MAY WITHOUT PREJUDICE TO ANY OTHER REMEDY, MAKE GOOD SUCH DEFICIENCIES AND MAY DEDUCT THE COST THEREOF FROM THE PAYMENT DUE THE CONTRACTOR.

WORK WHICH IS NOT PART OF THE CONTRACT WILL BE COMPLETED BY OWNER SELECTED CONTRACTORS AND THIS CONTRACTOR WILL COOPERATE WITH EACH OWNER SELECTED CONTRACTOR TO INSURE A COMPLETE AND ACCEPTABLE INSTALLATION.

26. COOPERATION WITH OTHER CONTRACTORS: THIS CONTRACTOR SHALL COOPERATE WITH OTHER CONTRACTORS ON SITE AND SHALL SCHEDULE WORK SO AS NOT TO INTERFERE WITH OTHER CONTRACTORS WORK, IN-SO-FAR AS POSSIBLE. STAGING OF CONTRACTORS EQUIPMENT AND RIGGING SHALL BE COORDINATED WITH OTHER CONTRACTORS ON SITE.

27. SHOP DRAWINGS AND SAMPLES. **SUBMIT FOUR (4) SETS** OF SHOP DRAWINGS FOR APPROVAL. ALL SHOP DRAWINGS MUST BE DATED AND NOTE ORIGINATING SUBCONTRACTOR AND MANUFACTURER, OR SUPPLIER. MANUFACTURER'S DESCRIPTIVE DATA INCLUDING CATALOG CUTS, FINISH MATERIALS, EQUIPMENT, AND FIXTURES - SHOWING DIMENSIONS, PERFORMANCE CHARACTERISTICS, CAPACITIES, WIRING DIAGRAMS, CONTROLS, SCHEDULES AND OTHER PERTINENT INFORMATION SHALL BE SUBMITTED. WHERE PRINTED MATERIALS DESCRIBE MORE THAN A SINGLE PRODUCT OR MODEL, THE ITEM TO BE FURNISHED SHALL BE CLEARLY IDENTIFIED. SUBMIT FOUR (4) SETS OF COPIES OR THREE (3) SAMPLES EACH OF FINISH MATERIALS, CLEARLY IDENTIFIED. SHOP DRAWINGS WILL BE CHECKED FOR GENERAL & DESIGN COMPLIANCE WITH THE CONTRACT DOCUMENTS. ALL DIMENSIONS, CLEARANCES, INHERENT STRUCTURAL STABILITY,

FINISH, PROJECT ACCESSIBILITY, CODE REQUIRED LOADING, ETC. ARE THE RESPONSIBILITY OF THE FURNISHING & INSTALLING CONTRACTOR.

SUBMIT SHOP DRAWINGS FOR THE FOLLOWING BUT NOT LIMITED TO: **ALL SECTIONS OF THE SPECIFICATIONS** EXCEPT:

DEMOLITION
EXCAVATING & GRADING
BITUMINOUS PAVING

28. INTEREST. INTEREST ON PAYMENTS DUE THE CONTRACTOR, AND FOR WHICH NO DISPUTES ARE OUTSTANDING, SHALL ACCRUE 30 DAYS FROM DATE OF APPROVAL OF PAYMENT BY THE ARCHITECT. NO INTEREST SHALL ACCRUE ON DISPUTED PAYMENT REQUESTS.

29. ARBITRATION. THE OWNER SHALL NOT BE REQUIRED TO SUBMIT TO ARBITRATION FOR ANY DISPUTE WHICH MAY ARISE AND MAY ELECT TO HAVE ANY SUCH DISPUTE RESOLVED THROUGH THE JUDICIAL SYSTEMS OF THE STATE OF ILLINOIS; THE OWNER MAY JOIN PARTIES IN ANY SUCH ACTION AS ARE PERMITTED UNDER THE LAWS OF THE STATE OF ILLINOIS.

30. PERFORMANCE AND LABOR AND MATERIAL PAYMENT BOND ARE TO BE SUBMITTED WITHIN FIVE BUSINESS DAYS AFTER EXECUTION OF THE CONSTRUCTION CONTRACT. AN ORIGINAL COPY MUST BE SUBMITTED TO THE ARCHITECT. IF A FAXED COPY IS SENT, AN ORIGINAL MUST BE RECEIVED WITHIN THREE DAYS. IF THE OWNER REQUESTS THE CONTRACTOR TO FURNISH IN ACCORDANCE WITH AIA DOCUMENT A311, A PERFORMANCE AND LABOR AND MATERIAL BOND, THE PERFORMANCE BOND SHALL BE IN THE FULL AMOUNT OF THE CONTRACT PRICE. THE PERFORMANCE BOND SHALL, IN ADDITION TO THE LANGUAGE OF AIA DOCUMENT A311, CONTAIN THE FOLLOWING PROVISIONS:

A. THIS PERFORMANCE BOND SHALL REMAIN IN FULL FORCE AND EFFECT THROUGH THE ONE-YEAR GUARANTEE PERIOD AS REQUIRED BY THE CONTRACT DOCUMENTS;

B. THE SURETY SHALL REIMBURSE THE OWNER FOR ALL ATTORNEYS FEES, ARCHITECT FEES, COURT COSTS AND OTHER COSTS AND EXPENSES INCURRED BY THE OWNER AND ARISING OUT OF ANY FAILURE BY THE CONTRACTOR TO COMPLETE THE CONTRACT IN
ACCORDANCE WITH THE CONTRACT DOCUMENTS.

C. ALL COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEYS' FEES, WHICH ARE INCURRED BY OWNER/ARCHITECT SHALL BE PAID FOR BY THE CONTRACTOR OR HIS SURETY.

IN THE EVENT THE OWNER DETERMINES THAT THE SURETY AS SELECTED BY THE CONTRACTOR IS FINANCIALLY INSECURE OR OTHERWISE POTENTIALLY UNABLE TO MEET ITS OBLIGATIONS UNDER THE PERFORMANCE OR LABOR AND MATERIAL PAYMENT BONDS, THE OWNER SHALL SO NOTIFY THE CONTRACTOR IN WHICH EVENT THE CONTRACTOR SHALL, WITHIN A PERIOD OF TEN (10) DAYS FROM SUCH NOTIFICATION, OBTAIN A NEW SURETY OR SURETIES ACCEPTABLE TO THE OWNER.

31. DUST CONTROL:

A. THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATIONS, EMBANKMENTS, STOCKPILES, ACCESS ROADS, AND ALL OTHER WORK AREAS FREE FROM EXCESS DUST TO SUCH REASONABLE DEGREE AS TO AVOID CAUSING A HAZARD OR

NUISANCE TO OTHERS. APPROVED TEMPORARY METHODS CONSISTING OF SPRINKLING, CHEMICAL TREATMENT, OR SIMILAR METHODS WILL BE PERMITTED TO CONTROL DUST. DUST CONTROL SHALL BE PERFORMED AS THE WORK PROCEEDS AND WHENEVER A DUST NUISANCE OR HAZARD OCCURS.

B. ALL EXISTING PAVED AREAS AND ROADWAYS, ESPECIALLY HEAVILY TRAVELED ROADS, ADJACENT TO THE PROJECT CONSTRUCTION SITE SHALL BE KEPT CLEAN OF EARTH AND DEBRIS RESULTING FROM THE CONTRACTOR'S OPERATIONS DURING THE CONSTRUCTION PERIOD.

32. JOB COMPLETION. THE CONTRACTOR SHALL COMMENCE WORK IMMEDIATELY, OR AS ARRANGED WITH THE OWNER, UPON AWARD OF THE CONTRACT, AND WILL EFFICIENTLY, DILIGENTLY, AND EXPEDITIOUSLY CONDUCT THE WORK IN A MANNER TO ASSURE SUBSTANTIAL COMPLETION WITHIN THE NUMBER OF DAYS AGREED TO ON THE BID.

33. TRADE ACCESS TO THE BUILDING CONSTRUCTION SPACE. IN ORDER TO INSURE AN ORDERLY SCHEDULING AND INSTALLATION OF MATERIAL, PRIORITY OF ACCESS TO THE CONCEALED CONSTRUCTION SPACES SHALL BE AS FOLLOWS:

FIRST TO BE INSTALLED - MECHANICAL HVAC DUCTWORK
SECOND TO BE INSTALLED - PLUMBING PIPING
THIRD TO BE INSTALLED - ELECTRICAL CONDUIT AND FIXTURES

ANY WORK CONFLICTING WITH A TRADE HAVING A HIGHER PRIORITY OF ACCESS SHALL BE REMOVED AND REROUTED AS REQUIRED WITHOUT ANY ADDITIONAL EXPENSE TO THE OWNER.

34. PUNCH LIST: PRIOR TO ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL COMPLETION" BY THE ARCHITECT, THE GENERAL CONTRACTOR SHALL SUBMIT A "PUNCH LIST" OF WORK YET TO BE COMPLETED OR CORRECTED UNDER THE TERMS OF THE CONTRACT DOCUMENTS. SEE AIA 201, ARTICLE 9.

35. ALL CONTRACTORS MUST VISIT THE SITE PRIOR TO THE BID DUE DATE TO VERIFY THE EXTENT OF WORK TO BE PERFORMED AND TO BE AWARE OF ALL EXISTING CONDITIONS.

36. CONSTRUCTION LAYOUT: CONTRACTOR TO RETAIN THE SERVICES OF A REGISTERED LAND SURVEYOR WHO MUST BE APPROVED BY THE OWNER TO LAYOUT AND STAKE THE ENTIRE PROJECT INCLUDING, BUT NOT LIMITED TO FOUNDATION PIER LOCATIONS, BUILDING CORNERS, RETAINING WALLS, FOOTINGS, ETC. IN THE PRESENCE OF THE ARCHITECT OR OWNERS' REPRESENTATIVE. WHEN THE LAYOUT IS COMPLETE, WILL STAKE AND INDICATE LAYOUT OF EXISTING UNDERGROUND UTILITIES (ELECTRIC, WATER, SEWER, TELEPHONE, ETC.). IF ANY CONFLICTS EXIST, THE ARCHITECT ALONG WITH OWNER WILL AUTHORIZE ADJUSTMENT IN CONTRACTORS' LAYOUT TO ELIMINATE CONFLICT. ONLY AFTER CONTRACTOR HAS RECEIVED IN WRITING APPROVAL OF LAYOUT FROM OWNER MAY HE PROCEED WITH CONSTRUCTION.

37. A SET OF PIPING AND EQUIPMENT DRAWINGS WILL ACCOMPANY THESE SPECIFICATIONS SHOWING THE ARRANGEMENTS AND SIZES OF PRINCIPAL CONNECTIONS TO THE APPARATUS, AND SHALL BE CONSIDERED A PART OF AND ILLUSTRATING SAME. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION WILL PERMIT. ALL CHANGES FROM THE CONTRACT DOCUMENTS, NECESSARY TO MAKE THE WORK CONFORM TO THE BUILDING AS CONSTRUCTED OR CONFORM TO RULES OF GOVERNMENTAL AUTHORITIES HAVING

JURISDICTION (N.F.P.A., O.S.H.A., AND THE LOCAL BUILDING CODES) SHALL BE MADE BY EACH CONTRACTOR WITHOUT EXTRA COST TO THE OWNER.

38. SITE PROTECTION. CONTRACTOR SHALL PROVIDE TEMPORARY FENCES, BARRICADES, OR OTHER MEANS OF PROTECTION AS MAY BE REQUIRED TO PROTECT THE OWNER'S ADJOINING PROPERTY AND PROPERTIES OF OTHERS FROM DAMAGE DUE TO THE CONSTRUCTION OPERATION AND SHALL KEEP THE PREMISES CLEAN OF ALL DEBRIS.

39. NO SMOKING POLICY. NO SMOKING ON THE PREMISES.

40. THE GENERAL CONTRACTOR SHALL PROVIDE THE NAME, ADDRESS, AND TELEPHONE NUMBER OF ALL SUBCONTRACTORS PERFORMING WORK.

END OF SECTION

DIVISION 2 – SITE WORK
DEMOLITION

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION NECESSARY TO PROVIDE EXTERIOR AND INTERIOR BUILDING DEMOLITION, INCLUDING NOTED ON DRAWINGS AND HEREIN SPECIFIED, BUT NOT LIMITED TO THE FOLLOWING.

C. EXTERIOR: CUTTING AND PATCHING OF ROOF AND WALLS AND REMOVAL OF EQUIPMENT. REMOVAL OF EXTERIOR CONCRETE AND MASONRY.

D. INTERIOR: CUTTING AND PATCHING OF WALLS, FLOORS AND CEILINGS. REMOVAL OF DOORS, FRAMES, ETC.

2. DEMOLITION PROCEDURE.

A. TAKE SALVAGE VALUE OF EQUIPMENT/FIXTURES, MATERIALS, ETC. INTO ACCOUNT WHEN BIDDING. SALVAGE WILL BECOME PROPERTY OF THE GENERAL CONTRACTOR -- UNLESS NOTED OTHERWISE.

1. SALVAGE EQUIPMENT AND FIXTURES INDICATED.

B. GENERAL CONTRACTOR TO SCHEDULE DEMOLITION AND REMOVAL TO COINCIDE WITH "ULTIMATE" CLOSURE WITH OTHER TRADES.

C. DEMOLITION MATERIALS AND EQUIPMENT TO BE MOVED FROM SITE AS SOON AS POSSIBLE.

D. IN REMOVING PIPE TRADE EQUIPMENT AND FIXTURES, MAKE PROPER DISCONNECTION AND TEMPORARY CAPPING, DRAIN FIXTURES BEFORE DISCONNECTING.

E. CONTRACTOR IS RESPONSIBLE FOR CAUSED PHYSICAL DAMAGE TO BUILDING OCCURRING DURING THIS OPERATION TO ANY WORK REMAINING. REPLACE AT NO COST TO THE OWNER.

F. MAINTAIN TOTAL BUILDING CLOSURE FROM ELEMENTS AND INTRUSION AT ALL TIMES.

G. KEEP EXISTING HEATING, LIGHTING, AND OUTLETS WHERE CALLED TO REMAIN OR WHERE PRACTICAL FOR TEMPORARY USE.

H. GENERAL CONTRACTOR TO MAKE SURE ALL SAFETY MEASURES ARE REINFORCED DURING THIS WORK AND "RAW" ROOFS AND WALL OPENINGS ARE TEMPORARILY SEALED AFTER AND DURING DEMOLITION WORK.

I. REMOVE ALL BRICK, STONE, AND CONCRETE DEBRIS FROM JOB SITE IN THE MOST EXPEDITIOUS MANNER.

3. SAFETY. CONTRACTOR SHALL PROTECT ALL SURROUNDING MATERIALS AND FINISHES WHICH ARE DESIGNATED TO REMAIN. PROVIDE ALL NECESSARY SHORING, BRACING, AND TEMPORARY SUPPORTS IN ALL AREAS WHERE DEMOLITION IS

REQUIRED. CONDUCT DAILY CHECKS ON ALL WEDGES, JACKS, BRACES, ETC. TO INSURE COMPLETE TIGHTNESS AND STABILITY.

END OF SECTION

DIVISION 2 – SITE WORK
EXCAVATING AND GRADING

1. SCOPE OF WORK.

THE SITE HAS BEEN PRE-PREPARED TO AN ELEVATION PLANE 5” BELOW FINISH GRADE.

2. PUMPING. PROVIDE, OPERATE AND MAINTAIN ALL REQUIRED PUMPS, SUCTION AND DISCHARGE LINES, WELL POINTS, ETC. AND POWER FOR RUNNING SAME TO KEEP ALL EXCAVATIONS, BASEMENTS, PITS, TRENCHES, ETC. FREE FROM STANDING WATER.

3. UNDERPINNING & SHORING. INSTALL SHORING AND BRACING NECESSARY TO PREVENT BANK CAVING.

4. GENERAL EXCAVATION. BLADE OFF ORGANIC MATTER AND STORE AS DIRECTED. USE FOR FINISH GRADING. DISPOSE OF TRASH OR RUBBLE.

EXCAVATE FOR ALL BASEMENTS, FOOTINGS, TUNNELS, DUCTS, RETAINING WALLS, PIERS, PAVING CURBS, PARKING LOT, CONCRETE WALKS AND ALL OTHER EXCAVATING FOR THE WORK INCLUDED IN THIS CONTRACT. FOOTINGS SHALL EXTEND TO REQUIRED BEARING (3000 LBS/SQ.FT. OF SOIL) REGARDLESS OF DIMENSIONS, AND THE CONTRACTOR SHALL BE PAID EXTRA. DEPTH OF PARKING LOT IS 12".

PROTECT COMPLETED EXCAVATION AGAINST FREEZING.

5. FILL AND BACKFILL. BACKFILL WALLS, FOOTINGS, FOUNDATIONS 4" BELOW FINISH GRADES OUTSIDE BUILDING AND TO SUBGRADE AT PAVING AREAS. DISPOSE OF ALL EXCESS MATERIALS OFF-SITE UNLESS ON SITE APPROVED AREAS ARE AVAILABLE. PROVIDE ADDITIONAL FILL TO MEET GRADES SHOWN.

GENERAL FILL AND BACKFILL MATERIALS. SAND, CLAY, GRAVEL, CRUSHED STONE OR OTHER NON-ORGANIC OR IMPERISHABLE MATERIALS. DEPOSIT IN 6" LAYERS AND COMPACT TO 95% AT INTERIOR AND EXTERIOR AREAS. FLOODING MAY BE DONE IF APPROVED AND IF THE MATERIAL IS SUITABLE. MIXING OF DISSIMILAR MATERIALS IS UNACCEPTABLE.

BACKFILL UNDER CONCRETE AND BITUMINOUS FLATWORK: ALL EXCAVATIONS BELOW CONCRETE AND BITUMINOUS FLATWORK SHALL BE BACKFILLED WITH CLEAN GRANULAR FILL. (SAND OR PEA GRAVEL.)

INTERIOR FILL UNDER SLABS AND EXTERIOR FILL UNDER WALKS, PAVEMENTS, OR CURBING: LAKE OR BANK SAND. THREE INCH (3") SAND FILL UNDER SLABS IS INCLUDED IN THE CONCRETE SPECIFICATIONS.

6. GRADING. FINISH GRADE TO ELEVATIONS SHOWN ON THE DRAWINGS. ROUGH GRADE TO UNIFORM DEPTHS AND LEVEL AND GRADE TO SLOPE AWAY FROM ALL BUILDINGS TO ELIMINATE WATER POCKETS. FINISH GRADE AS DIRECTED BY THE ARCHITECT AND/OR GENERAL CONTRACTOR.

END OF SECTION

DIVISION 3 - CONCRETE
PLAIN & REINFORCED CONCRETE & ALL SPECIALITY PAVING

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR CAST IN PLACE PLAIN AND REINFORCED CONCRETE. THE WORK SHALL INCLUDE BUT IS NOT NECESSARILY LIMITED TO FOUNDATION WALLS, FOOTINGS, SLABS, CURBS, PITS, EQUIPMENT PADS AND PAVEMENTS.

2. LINES & LEVELS. BY GENERAL CONTRACTOR: SEE SUPPLEMENTAL GENERAL CONDITIONS.

3. QUALITY ASSURANCE.

A. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

B. WORKMANSHIP. FINISHED CONCRETE SHALL ACCURATELY CONFORM TO THE DRAWINGS. EXPOSED CONCRETE WALLS SHALL BE SMOOTH, DENSE, COMPACT AND FREE FROM FORM MARKS AND JOINTS. (FILL AND HAND RUB SMOOTH ALL IMPERFECTIONS.)

C. CODES AND STANDARDS. ALL WORK INCLUDED IN THIS SECTION SHALL BE PERFORMED IN ACCORDANCE WITH PERTINENT PROVISIONS OF THE FOLLOWING CODES AND STANDARDS, EXCEPT WHERE OTHERWISE SHOWN OR INDICATED.

1. ACI 301 & 318 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" IS A STANDARD INTENDED TO BE USED ESSENTIALLY IN ITS ENTIRETY, BY REFERRAL IN PROJECT SPECIFICATIONS, TO COVER ALL USUAL REQUIREMENTS FOR CAST-IN-PLACE CONCRETE FOR BUILDINGS.

2. ACI 347 "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK".

3. ACI 302.1 R-89 "GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION".

4. ACI 309 "STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE".

4. MATERIALS.

A. PORTLAND CEMENT: A.S.T.M. C150 TYPE 1.

B. AGGREGATES: COURSE AND FINE: ASTM C33-78.
(FREE FROM DELETERIOUS MATERIALS)

1. FINE AGGREGATES: HARD, CLEAN AND SHARP SAND.

2. COURSE AGGREGATES: CLEAN CRUSHED ROCK OR WASHED GRAVEL.

C. WATER: CLEAN, POTABLE AND FREE OF SALTS AND ALKALIS.

D. AIR ENTRAINING ADMIXTURE: ASTM C260.

5. CONCRETE AND MASONRY REINFORCING STEEL. FURNISH AND INSTALL ALL CONCRETE REINFORCING IN ACCORDANCE WITH ACI 318 (LATEST EDITION) "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". FURNISH ALL STEEL
BAR MASONRY REINFORCING TO BE INSTALLED BY MASONRY CONTRACTOR. ALL MASONRY WIRE REINFORCING BY MASONRY CONTRACTOR.

A. BAR REINFORCEMENT: ASTM A 615, GRADE 60.

B. COLD DRAWN WIRE REINFORCEMENT: ASTM A82.

C. WELDED WIRE REINFORCEMENT: ASTM A 185.

SUBMIT SHOP DRAWINGS FOR ALL REINFORCEMENT IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES". PROVIDE BENT CORNER BAR REINFORCING FOR HORIZONTAL REINFORCEMENT AND LAP BARS 20 DIAMETERS AT ALL CORNERS.

6. PROPORTIONING AND MIXING OF CONCRETE.

A. STRENGTH. PROVIDE THE FOLLOWING CLASSES OF CONCRETE WHERE SHOWN ON THE DRAWINGS.

SLABS ON GRADE OR ABOVE GRADE, COLUMNS, ALL EXTERIOR CONCRETE, CURBS, LIGHT POLE BASES, ETC.	4000 PSI MIN @ 28 DAYS
FOOTINGS AND WALLS	3000 PSI MIN @ 28 DAYS

B. SLUMP.

REINFORCED FOUNDATION WALLS & FOOTINGS	3" *MAX. 2" MIN.
PAVEMENTS AND SLABS	3" *MAX 2" MIN.
REINFORCED BEAMS, COLUMNS, AND WALKS	4" *MAX 2" MIN.

*MAY BE INCREASED ONE INCH FOR METHODS OF CONSOLIDATION OTHER THAN VIBRATION. SLUMP SHALL BE DETERMINED IN ACCORDANCE WITH ASTM C143

C. READY MIXED CONCRETE SHALL CONFORM WITH ASTM C94.

D. PROVIDE AIR ENTRAINED CONCRETE BY ADDING AIR ENTRAINING ADMIXTURE TO THE PORTLAND CEMENT CONCRETE MIX FOR ALL EXTERIOR CONCRETE, INCLUDING BUT NOT LIMITED TO WALLS, STAIRS, CURBS, WALKS, DRIVES, EQUIPMENT PADS, SIGN AND LIGHT POLE BASES. THE TOTAL AIR CONTENT SHALL BE

6% ± 1%. VARIATION IN PERCENT AIR CONTENT PER ACI 211.1-81 BASED ON MAXIMUM SIZE OF AGGREGATE AND THE SLUMP OF THE CONCRETE MIX.

7. SAND FILL. AFTER THE SUBGRADE HAS BEEN APPROVED, THIS CONTRACTOR WILL PLACE UNDER ALL INTERIOR AND EXTERIOR SLABS 3" (MINIMUM) OF COMPACTED DEPTH OF LAKE OR BANK SAND.

8. PLACING CONCRETE. PREVENT SEPARATION OR SEGREGATION OF MATERIALS. VIBRATE AND PUDDLE TO PREVENT HONEYCOMB.

9. PROTECTION AND CURING. PROTECT FROM RAIN, FREEZING, EXCESSIVE HEAT OR PREMATURE DRYING. CURING SHALL BE BY FORMS IN PLACE, COVERINGS OR APPROVED MEMBRANE COMPOUNDS PER MANUFACTURER'S SPECIFICATIONS. THE FOLLOWING DETAILED RECOMMENDATION FOR ACCEPTABLE PRACTICES SHALL BE FOLLOWED:

A. ACI 305 RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING.

B. ACI 306 RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING.

10. FINISH. INTERIOR SLABS - HARD TROWELED

WALKS AND PAVING – LIGHT BROOMED

11. CURBS. STRAIGHT TYPE, COMBINATION CURB AND GUTTER OR POURED INTEGRAL WITH WALKS AS INDICATED ON DRAWINGS. PROVIDE CONTROL JOINTS 10'- 0" O.C. AND EXPANSION JOINTS 50'-0" O.C.

12. DAMPPROOFING: APPLY DAMPPROOFING ON ALL EXTERIOR FOOTINGS AND FOUNDATION WALLS BELOW GRADE. DAMPROOFING SHALL BE SPRAY-MASTIC AS MANUFACTURED BY W.R. MEADOWS. APPLY IN STRICT ACCORDANCE TO MANUFACTURER'S SPECIFICATIONS.

SURFACE PREPARATION: ALL SURFACES TO BE COATED MUST BE THOROUGHLY CLEANED OF ALL SCALE, LOOSE MORTAR, RUST, DIRT, OIL, GREASE AND OTHER FOREIGN MATTER. USE A WIRE BRUSH, SANDBLAST OR OTHER METHODS IN KEEPING WITH GOOD PRACTICES. BEFORE APPLICATION, FILL VOIDS, CRACKS AND HOLES IN CONCRETE WITH CEMENT MORTAR AND ALLOW TO DRY.

13. WALKS. 4" THICK CONCRETE WITH 6 X 6 #10 MESH ON 3" MIN. COMPACTED SANDFILL. SCORE AS DIRECTED. INSTALL EXPANSION JOINTS AT LEAST EVERY FIFTY (50) FEET AND AT BUILDING AND CURBS.

14. CONCRETE SLABS. ALL CONCRETE FLOORS, WALKS AND RAMPS SHALL BE REINFORCED WITH 6 X 6 #10 (6 X 6 - W1.4 X W1.4) WELDED WIRE FABRIC UNLESS NOTED OTHERWISE. CONCRETE FLOORS AND PAVEMENTS WHERE DRAINAGE IS REQUIRED SHALL PITCH TO THE DRAINS.

15. ANCHORS. BUILD IN ALL ANCHORS, HANGERS, INSERTS, SHELF ANGLES, THIMBLES, SLEEVES, ETC. FURNISHED AND SET BY CONTRACTOR FOR THE VARIOUS BRANCHES OF THE WORK.

16. FINISHED CONCRETE FLOORS. PROVIDE INTEGRAL CONCRETE FINISHED FLOORS THROUGHOUT. TROWEL TO A LEVEL, DENSE SMOOTH SURFACE AND WHEN SUFFICIENTLY SET, TROWEL AGAIN TO HARD SMOOTH FINISH. SCORE AS DIRECTED. FLOOR SEAL AREAS AS INDICATED AND SPECIFIED UNDER THIS SECTION.

17. CONSTRUCTION JOINTS. PROVIDE CONSTRUCTION JOINTS WHERE POURS BEGIN AND ALSO WHERE INDICATED ON DRAWINGS. CONSTRUCTION JOINTS SHALL HAVE 1/2" STEEL DOWEL BARS 24" LONG AT 24" O.C. EMBEDDED IN THE FINISH POUR WITH THE EXPOSED END GREASED TO RECEIVE ADJOINING CONCRETE FLOORS. ALL JOINTS ARE TO BE FORMED WITH VULCO SCREED JOINTS 24 GA. GALV. BY VULCAN METAL PRODUCTS INC.

18. CONTROL JOINTS. SAW CUT CONTROL JOINTS IN SLABS, TO FORM PANELS OR PATTERNS AS SHOWN. CONTROL JOINT DEPTH TO BE 1/4 TO 1/5 SLAB THICKNESS. LOCATE THE UNINDICATED JOINTS IN A MANNER TO DIVIDE THE SLAB
INTO AREAS NOT IN EXCESS OF 600 SQ. FT., WITH ONE DIMENSION BEING NOT GREATER THAN 120% OF THE OTHER DIMENSION.

19. WIRE MESH REINFORCEMENT. EDGES OF WIRE MESH SHALL BE LAPPED NOT LESS THAN 8 INCHES. END LAPS SHALL NOT BE MADE MIDWAY BETWEEN SUPPORTING OR OVER SUPPORTING MEMBERS OF CONTINUOUS STRUCTURE. END LAPS ARE TO BE OFFSET IN ADJACENT WIDTHS TO PREVENT CONTINUOUS LAP. PANELS SHALL BE FORMED UP TO CONSTRUCTION JOINTS BUT WITH NO WIRE PASSING THESE JOINTS.

WIRE MESH IS TO BE SUPPORTED ON CHAIRS OR ON OTHER APPROVED DEVICES
DESIGNED FOR THIS PURPOSE. THE NUMBER, DIMENSIONS AND LOCATION OF THESE ARE TO BE SUCH THAT THE FINAL LOCATION OF THE MESH IN THE CONCRETE IS ACCORDING TO DESIGN. HOOKING THE MESH TO PULL IT INTO PLACE IS NOT AN ACCEPTABLE TECHNIQUE.

20. VAPOR BARRIER. 6 MIL POLYETHYLENE PLASTIC SHEETING UNDER ALL FLOOR SLABS ON GRADE WITHIN HEATED AREAS. LAP ALL EDGES 8" MINIMUM.

21. PERIMETER INSULATION. INSTALL PERIMETER INSULATION, 2" THICK RIGID EXTRUDED POLYSTYRENE (EPS), AS INDICATED ON DRAWINGS.

22. ISOLATION JOINTS: (BITUMINOUS PREFORMED FIBER JOINT FILLER: ASTM D 1751-73.) ISOLATION JOINTS SHALL BE INSTALLED AROUND ALL INTERIOR STRUCTURAL COLUMNS, AND WHERE SLABS ABUT PERIMETER FOUNDATION WALLS.

23. WATERSTOPS: FURNISH AND INSTALL WHERE INDICATED OR AS REQUIRED AT COLD JOINTS. WATERSTOPS AS MANUFACTURED BY GREENSTREAK. STOPS SHALL BE #721 SPLIT TYPE, 4" WIDE.

24. FLOOR SEALER. ALL CONCRETE SLABS SHALL BE TREATED WITH "PROTECRETE" D+SRT (DENSIFIER PLUS SURFACE REPELLENT TREATMENT) AS MANUFACTURED BY APPLIED CONCRETE TECHNOLOGY, INC. ARLINGTON HEIGHTS, ILLINOIS, PHONE: 847-253-0496. SEALER SHOULD BE APPLIED FULL STRENGTH IMMEDIATELY FOLLOWING SURFACE FINISHING TEXTURING OF CONCRETE SLABS. FOLLOW MANUFACTURER'S APPLICATION GUIDELINES. ADDITIONAL COATS, IF REQUIRED, WILL BE PERFORMED AT NO EXTRA COST.

25. CONCRETE TESTING: CONCRETE SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

CONCRETE SAMPLING METHODS: ASTM C 172

STANDARD TEST METHOD FOR UNIT WEIGHT, YIELD AND AIR CONTENT (GRAVIMETRIC) OF CONCRETE: ASTM C 138

STANDARD TEST FOR AIR CONTENT OF FRESHLY MIXED CONCRETE:

BY PRESSURE METHOD: ASTM C 231
BY VOLUMETRIC METHOD: ASTM C 173

CAPPING OF CYLINDERS: ASTM C 617

METHOD OF MAKING AND CURING CONCRETE TEST SPECIFICATION: ASTM C 31 AND ASTM C 192

STANDARD METHOD OF TEST FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS: ASTM C 39

PERFORM TESTS AS DIRECTED IN THE SUPPLEMENTAL GENERAL CONDITIONS.

END OF SECTION

DIVISION 4 - MASONRY
MASONRY

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR MASONRY. THE WORK SHALL INCLUDE BUT IS NOT LIMITED TO BRICK, CONCRETE BLOCK, AND CUT STONE.

C. PROVIDE TEST DATA INDICATING ABSORPTION CHARACTERISTICS AND MORTAR COMPATIBILITY.

2. CEMENT, SAND, LIME & OTHER AGGREGATES. SHALL CONFORM TO THE STANDARDS AS SPECIFIED IN CONCRETE SPECIFICATIONS.

3. MORTAR. TYPE N – COLOR BY ARCHITECT. SAND SHALL BE CLEAN, NO. 1 TORPEDO SAND. MORTAR SHALL BE MIXED ACCURATELY AND THOROUGHLY IN A MECHANICAL MIXER.

4. CONCRETE BLOCK. SHALL CONFORM TO A.S.T.M. C-90-70 GRADE N-1 STANDARD SPECIFICATION, CURED 28 DAYS. NON-LOAD BEARING BLOCK: ASTM C-129-71 "WAYLITE" WITH MATCHING TEXTURE AND FINISH AS LOAD-BEARING BLOCK. CORNERS TO BE BULLNOSE PROFILE.

5. MASONRY WALL REINFORCING:

REINFORCING:	ASTM A82
SINGLE WYTHE WALLS:	"BLOK TRUSS" #AA600
CAVITY WALLS:	"BLOK TRUSS" #AA660

GALVANIZED JOINT REINFORCEMENT COATING REQUIREMENTS:

INTERIOR WALLS	ASTM A641 CLASS 3 (.80 OZ. ZINC COATING PER SQ. FT.)
EXTERIOR WALLS	ASTM A153 B2 (1.50 OZ. ZINC COATING PER SQ. FT.)

ALL MASONRY WALLS SHALL BE REINFORCED WITH REINFORCEMENT AS MANUFACTURED BY AA WIRE PRODUCTS CO., CHICAGO, IL OR EQUAL. REINFORCEMENT SHALL BE INSTALLED EVERY 16" OF HEIGHT. INTERSECTING WALLS AND CORNERS SHALL BE REINFORCED WITH PREFABRICATED ASSEMBLIES "T" AND "L" SHAPES RESPECTIVELY.

6. WORKMANSHIP FOR CONCRETE BLOCK. ALL WORKMANSHIP AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE RECOMMENDATIONS AS SET FORTH IN THE "TECHNICAL NOTES ON BRICK AND TILE CONSTRUCTION" PUBLISHED BY THE STRUCTURAL CLAY PRODUCTS INSTITUTE, 1520 EIGHTEENTH STREET, N.W.,
WASHINGTON, D.C.

7. BUILDING IN OTHER WORK. BUILD IN ALL WOOD GROUNDS, BLOCKS, BRICK VENTS, LOUVERS, INSERTS, IRON FRAMES, THIMBLES, BRACKETS OR OTHER ITEMS

AND BED ALL BEARING PLATES FURNISHED AND SET IN PLACE BY OTHER CONTRACTORS.

WHERE ADDITIONAL THICKNESS OF PARTITIONS IS REQUIRED TO CONCEAL PIPES, CONDUIT AND OTHER WORK, IT SHALL BE PROVIDED BY THIS CONTRACTOR EVEN THOUGH NOT SPECIFICALLY SHOWN ON THE DRAWINGS.

THIS CONTRACTOR SHALL DO ALL CUTTING OF BLOCK AS MAY BE NECESSARY TO COVER PIPES, DUCTS, ETC. AND SHALL BUILD IN ALL SUCH PIPES, DUCTS, ETC.

8. CLEANING AND POINTING. ALL BRICKWORK SHALL BE THOROUGHLY CLEANED AND POINTED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR CLEANING BRICK. PROTECT LIMESTONE FROM BRICK CLEANING OPERATIONS.

9. FLASHING. SELF ADHERING 40 MIL RUBBERIZED ASPHALT WITH STAINLESS STEEL DRIP EDGE. PROVIDE FLASHING OVER ALL EXTERIOR OPENINGS, AT BASE OF ALL EXTERIOR WALLS AND UNDER ALL SILLS, AND AS SHOWN ON THE DRAWINGS. THE FLASHING MEMBRANE AT MASONRY OPENINGS SHALL BE TURNED UP AT THE ENDS AND PLACED INSIDE THE HEAD JOINT, FORMING A DAM.

A. ACCEPTABLE PRODUCTS AND MANUFACTURERS:

1. GRACE PERM-A-BARRIER OR APPROVED

10. REMOVAL OF RUBBISH. AS THE WORK PROGRESSES, REMOVE ALL RUBBISH FROM PREMISES AND THOROUGHLY BROOM CLEAN FLOOR AS WORK IS FINISHED. THE OWNER SHALL EMPLOY SUCH LABOR AS MAY BE NECESSARY TO CLEAN PREMISES OF ALL RUBBISH IN CASE OF DISPUTE AND SHALL PRO-RATE THE EXPENSE BETWEEN THE VARIOUS CONTRACTORS CONCERNED AS THE ARCHITECT SHALL DETERMINE.

11. JOINTS. FLUSH HEAD JOINT, RAKED BED JOINT CONCRETE BLOCK: STACKED BOND THROUGHOUT WHEREVER EXPOSED. 3/8" "V" TOOL.

12. PORCELAIN TILE. SEE PORCELAIN TILE SPECIFICATION.

13. SEALANT JOINTS: FINAL POINTING OF ALL JOINTS IN COPING STONES AND EXPOSED EDGES OF BED JOINTS IN SILLS SHALL BE NON-STAINING SEALANT. PROVIDE BACKING FOAM ROPE FOR SEALANT JOINTS. JOINT SEALANT SHALL COMPLY WITH THE LIMESTONE INSTITUTE SPECIFICATIONS. PROVIDE WEEPS AT ALL CAVITIES. THE CONTRACTOR SHALL PROVIDE ALL ANCHORS, DOWELS, AND OTHER ANCHORING DEVICES SHOWN ON SHOP DRAWINGS. ALL DEVICES TO BE STAINLESS STEEL TYPE 302 OR 304. SUBMIT SAMPLE FOR APPROVAL. PROVIDE EXPANSION JOINTS TO ALLOW FOR THERMAL AND STRUCTURAL MOVEMENT. FILLER MATERIAL SHALL BE NON-STAINING. PROTECT ALL SET STONE FROM MORTAR DROPPINGS OR OTHER ADJACENT CONSTRUCTION OPERATIONS. COVER ALL TOPS OF STONE EACH DAY TO PROTECT AGAINST MOISTURE PENETRATION. CLEAN ALL STONE WITH APPROVED CLEANING AGENTS. DO NOT CLEAN WITH ACIDS OR ALLOW ACIDS FROM BRICK CLEANING TO COME IN CONTACT WITH LIMESTONE.

14. PARTITIONS. ALL PARTITIONS SHALL EXTEND ABOVE CEILINGS AS INDICATED. GROUT IN ALL VOIDS AROUND STRUCTURAL STEEL TO SEAL ALL OPENINGS.

15. CAVITY WALLS SHALL BE KEPT FREE OF MORTAR TO ALLOW THE PROPER FUNCTIONING OF THE ASSEMBLY, INCLUDING FLASHING AND WEEP HOLES, TO CONVEY WATER TO THE EXTERIOR OF THE WALL. PROVIDE MORTAR NET AS INDICATED ON THE DRAWINGS.

END OF SECTION

DIVISION 7 – THERMAL & MOISTURE PROTECTION

1. SCOPE OF WORK:

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION NECESSARY FOR METAL PANEL WORK INCLUDING WORK NOTED ON DRAWINGS AND HEREIN SPECIFIED.

C. WORK IN THIS SECTION SHALL INCLUDE DESIGN, FABRICATION, SUPPLY AND INSTALLATION OF ALUMINUM COMPOSITE PANELS WITH AN AIR BARRIER (AND SUBGIRTS IF REQUIRED).

D. RELATED WORK: STUD FRAMING, STRUCTURAL STEEL AND EXTERIOR PLYWOOD SHEATHING.

2. QUALITY ASSURANCE. SUPPLIER/INSTALLER SHALL HAVE MINIMUM 10 YEARS PROVEN EXPERIENCE AND MUST HAVE COMPLETED AT LEAST 5 MAJOR PROJECTS IN THE SPECIFIED ALUMINUM COMPOSITE MATERIAL PANEL SYSTEM.

3. DESIGN AND PERFORMANCE REQUIREMENTS.

A. DESIGN, FABRICATE AND ERECT A PRESSURE EQUALIZED WALL PANEL SYSTEM (ALUCOBOND) TO MEET THE FOLLOWING REQUIREMENTS.

1) RAIN PENETRATION: PREVENT RAIN PENETRATION THROUGH WALL SYSTEM. DESIGN SYSTEM BASED ON “RAIN SCREEN PRINCIPLE”. INCORPORATE MEANS OF DRAINING TO THE EXTERIOR.

2) WIND LOAD: DESIGN WALL SYSTEM TO RESIST WIND LOADS, POSITIVE AND NEGATIVE, EXPECTED IN THIS GEOGRAPHICAL REGION WITHOUT CAUSING RATTLING, VIBRATION OR EXCESSIVE DEFLECTION OF PANELS, OVERSTRESSING OF FASTENERS, CLIPS AND OTHER DETRIMENTAL EFFECTS ON SYSTEM.

3) STRUCTURAL AND THERMAL MOVEMENT: ACCOMMODATE MOVEMENT OF SUPPORTING STRUCTURAL FRAMING AND MOVEMENT CAUSED BY THERMAL EXPANSION AND CONTRACTION OF SYSTEM COMPONENT PARTS WITHOUT CAUSING BOWING, BUCKLING, DELAMINATION, OIL CANNING, FAILURE OF JOINT SEALS, EXCESSIVE STRESS ON FASTENERS OR ANY OTHER DETRIMENTAL EFFECTS.

B. PANEL FLATNESS TOLERANCE: FABRICATE PANELS NOT EXCEEDING THE FOLLOWING TOLERANCES:

1) RISES AND FALLS ACROSS THE PANEL, (LOCAL BUMPS AND DEPRESSIONS) WILL NOT BE ACCEPTED.

2) .062" IN A CONCAVE / CONVEX DIRECTION, MEASURED PERPENDICULAR TO THE NORMAL PLANE.

C. PANEL REMOVAL: SYSTEM/PROCEDURE TO ALLOW REMOVAL OF INDIVIDUAL PANELS WITHIN WALL SYSTEM.

END OF SECTION

DIVISION 6 – WOOD & PLASTICS
CARPENTRY AND MILLWORK

1. SCOPE OF WORK:

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION NECESSARY FOR ANY ROUGH AND FINISH CARPENTRY WORK INCLUDING WORK NOTED ON DRAWINGS AND HEREIN SPECIFIED.

C. CONSULT THE PLANS AND SPECIFICATIONS OF OTHER CONTRACTORS FOR ANY CARPENTRY WORK WHICH IS NECESSARY FOR THOROUGH COMPLETION OF ALL WORK. THIS INCIDENTAL WORK IS INCLUDED IN THIS SPECIFICATION.

D. WHEN WORK CONNECTS WITH WORK OF OTHER TRADES, THE CARPENTRY CONTRACTOR SHALL DO ALL NECESSARY CUTTING AND FITTING SO AS TO COMPLETE CONSTRUCTION IN A FINISHED CONDITION. FURNISH LABOR, AND MATERIALS TO THE FURTHERANCE OF THIS AND WHETHER OR NOT DISTINCTLY SHOWN OR SPECIFIED.

2. MATERIALS AND WORKMANSHIP: CARPENTRY WORK SHALL BE WARRANTED TO STAND FOR AT LEAST ONE YEAR FROM THE DATE OF COMPLETION OF THE BUILDING WITHOUT OPENING OF JOINTS, WARPING, CRACKING OR SHOWING OTHER DEFECTS AND THE CONTRACTOR SHALL MAKE GOOD AT HIS OWN EXPENSE ANY DEFECTS WHICH MAY OCCUR DURING THAT PERIOD.

3. TEMPORARY ENCLOSURES: COVER ALL OPENINGS. MAINTAIN SECURITY DURING
ALL CONSTRUCTION. PROTECT FROM WEATHER.

4. ROUGH HARDWARE: PROVIDE ALL NAILS, SPIKES, SCREWS, BOLTS, AND OTHER SIMILAR ROUGH HARDWARE REQUIRED.

5. GROUNDS AND NAILERS: FURNISH THE MASONRY AND PARTITIONS CONTRACTORS WITH ALL BLOCKS, STRIPS, PLUGS ETC. THAT ARE TO BE BUILT INTO THE WORK OF PARTITIONS FOR THE ANCHORING OF ANY GROUNDS, BUCKS, FRAMES ETC.. ROOF CURBS, CANTS, DOOR BUCKS SHALL BE 2" DIMENSION WOLMANIZED FIR AND KERF CUT.

6. CAULKING: ALL CAULKING MATERIALS TO BE ONE COMPONENT SEALANT NON SAG, MODIFIED POLYURETHANE, CONFORMING TO ASTM C-920:

DYNOMIC (TREMCO), SONOPLASTIC NPI (SONNEBORN), CHEM-CALK-900 (BOSTIK) OR EQUAL.

A. CAULK ALL EXTERIOR WORK WHERE METAL JOINS MASONRY, AT ALL ENDS, METAL FRAMES, CAPS EXPANSION JOINTS AND WHEREVER INDICATED ON THE PLANS. SUBMIT SPECIFICATION, MANUFACTURER LITERATURE WITH INSTALLATION INSTRUCTIONS AND COLOR SAMPLE FOR APPROVAL.

B. PRIMER, WHERE REQUIRED, SHALL BE USED AS RECOMMENDED, IN WRITING, BY THE MANUFACTURER. THE PRIMER SHALL HAVE BEEN TESTED FOR NON-STAINING CHARACTERISTICS AND DURABILITY ON SAMPLES OF ACTUAL SURFACES TO BE SEALED.

C. BACK-UP MATERIALS AND PREFORMED JOINT FILLERS SHALL BE NON-STAINING, COMPATIBLE WITH SEALANT AND PRIMER, AND OF A RESILIENT NATURE, SUCH AS CLOSED CELL POLYETHYLENE ROD, CLOSED CELL URETHANE OR NEOPRENE, BUTYL, OR EPDM. MATERIALS IMPREGNATED WITH OIL, BITUMEN OR SIMILAR MATERIALS SHALL NOT BE USED.

7. STEEL DRYWALL FRAMING:

A. STUDS AND RUNNERS: SCREW-TYPE COMPLYING WITH ASTM C 645.

PROVIDE STUDS AT 16" O.C. OF THE SIZE INDICATED WITH RUNNERS OF COMPATIBLE SIZE FOR FRICTION FIT TO STUDS. STUDS TO BE PROVIDED WITH KNOCKOUTS TO FACILITATE PIPE AND CONDUIT INSTALLATION. SILLS SHALL BE ANCHORED TO THE FLOOR WITH CASE NAILS, BOLT OR RAM SET.

1. FABRICATE FROM 25 GAUGE GALVANIZED STEEL, EXCEPT WHERE INDICATED OR SPECIFIED AS 20 GA.

2. METAL CHANNEL FURRING: SCREW TYPE FURRING CHANNELS COMPLYING WITH ASTM C 645, FABRICATED FROM 25 GA. STEEL WITH MANUFACTURER'S STANDARD ZINC PROTECTIVE COATING.

8. FIBERGLASS INSULATION: FURNISH AND INSTALL FIBERGLASS BATTS AS MANUFACTURED BY OWENS CORNING FIBERGLASS CORPORATION WHERE INDICATED.
ALL PARTITIONS ON MAIN FLOOR TO BE INSULATED.

A. SOUND CONTROL BATTS:

WALLS: 3-1/2" - SOUND ATTENUATION BATTS UNFACED
CEILING: 3-1/2" - SONOBATTS UNFACED

B. THERMAL BATTS:

WALLS: 3-1/2 THICKNESS (R-11) KRAFT FACED OR THICKNESS AS INDICATED ON THE PLAN.

9. FURRING/INSULATION: ON EXTERIOR WALLS INSTALL RIGID INSULATION (1-1/2" STYROFOAM, EXPANDED POLYSTYRENE) BETWEEN "SHEETROCK Z FURRING CHANNELS" (U.S.G. CORPORATION) AT 24" O.C. AFFIXED TO INTERIOR SIDE OF WALL. AT INTERIOR CORNER SPACE SECOND CHANNEL NO MORE THAN 12" FROM CORNER AND CUT INSULATION TO FIT. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

10. FIRE SAFING: FIRE BARRIER CAULKING SHALL BE CP25N/S AS MANUFACTURED BY 3M CO. INSTALL PER MANUFACTURER'S SPECIFICATION FOR ALL PIPING, CONDUIT, DUCTS OR PENETRATION OF RATED CONSTRUCTION ELEMENTS.

11. ROUGH LUMBER: NO. 2 CONSTRUCTION GRADE SPF. TREATED SOUTHERN PINE, 40% CCA PENETRATION. ALL METAL CLAD FASCIAS AND TRIM TO BE NO. 2 AND BETTER PINE.

12. FINISH HARDWARE: PROVIDE ALL LABOR TO INSTALL FINISH HARDWARE. SEE "FINISH HARDWARE" SECTION, DIVISION 8.

13. DOORS & WINDOWS: PROVIDE ALL LABOR AND MATERIAL FOR DOORS, WINDOWS, AND FRAMES. SEE DOORS AND WINDOWS DIVISION 8.

14. ARCHITECTURAL WOODWORK.

A. SCOPE. ALL EXTERIOR AND INTERIOR WOODWORK EXPOSED TO VIEW, INCLUDING ALL PLYWOOD, EXPOSED WOOD, WOOD DOORS AND PLASTIC LAMINATES.

B. GENERAL REQUIREMENTS.

(1) QUALITY STANDARDS OF THE ARCHITECTURAL WOODWORK INDUSTRY SHALL BE APPLICABLE AS DESCRIBED IN THE GUIDE BY THE ARCHITECTURAL WOODWORK INSTITUTE AWI.

(2) COMPETENCE. THE ARCHITECT RESERVES THE RIGHT TO APPROVE THE WOODWORK MANUFACTURER.

(3) SHOP DRAWINGS. FURNISH FOR ALL WORK FOR APPROVAL BY THE ARCHITECT. SEE SUPPLEMENTAL GENERAL CONDITIONS.

(4) FIELD DIMENSIONS. VERIFY ALL DIMENSIONS AND MOLDING SHAPES. MATCH EXISTING SHAPES AND SIZES TO AFFORD A UNIFORM APPEARANCE IN THE RESTORATION AREA.

(5) DELIVERY AND STORAGE. NO WORK SHALL BE DELIVERED TO THE JOB SITE UNTIL THE BUILDING IS SUFFICIENTLY DRY SO WOODWORK WILL NOT BE DAMAGED BY MOISTURE.

(6) FINISHING. FINISHED SURFACES SHALL BE FREE OF ALL TOOL OR MACHINE MARKS. SURFACES SHALL BE FINISHED EQUIVALENT TO HAND SANDPAPERED WORK.

15. WOOD DOORS & GRILLES. SEE DOORS AND WINDOWS DIVISION 8.

16. PITCHED WOOD TRUSSES:

A. SCOPE: THE WORK INCLUDES WOOD TRUSS SHOP DRAWINGS, AND THE FURNISHING, DELIVERY AND ERECTION OF WOOD TRUSSES.

B. DESIGN LOAD: 30 P.S.F. LIVE LOAD CAPACITY WITH 15% DURATION FACTOR, AND APPLICABLE SUPERIMPOSED SNOW DRIFT LOADS.

C. DESIGN STANDARDS: SHALL CONFORM TO THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, PUBLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION AND THE DESIGN SPECIFICATIONS FOR METAL PLATE CONNECTED WOOD TRUSSES, PUBLISHED BY THE TRUSS PLATE INSTITUTE.

D. CONNECTOR PLATES: ALL CONNECTOR PLATES SHALL BE MANUFACTURED FROM STEEL MEETING THE REQUIREMENTS OF ASTM A446 GRADE A, AND SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A525. COATING DESIGNATION G60.

E. QUALITY CONTROL: LUMBER TO BE NO. 2 DENSE SOUTHERN PINE FB 1400 (MIN.) DEFECTS SUCH AS WANE OR KNOTS OCCURRING IN THE

CONNECTOR PLATE AREA ARE TO COMPLY WITH TRUSS PLATE INSTITUTE QUALITY CONTROL MANUAL QCM-77.

F. BRACING: ALL TRUSSES MUST BE SECURELY BRACED BOTH DURING ERECTION AND AFTER PERMANENT INSTALLATION IN ACCORDANCE WITH "BRACING WOOD TRUSSES" RECOMMENDATIONS (BWT-76) AS PUBLISHED BY THE TRUSS PLATE INSTITUTE AND AS DETAILED BY THE TRUSS MANUFACTURER.

END OF SECTION

DIVISION 7 – THERMAL & MOISTURE PROTECTION
ROOFING & SHEET METAL

1. SCOPE OF WORK:

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR ALL ROOFING, METAL FLASHINGS, SHINGLES, ALUMINUM DOWNSPOUTS, GRAVEL STOPS, ALUMINUM GUTTER, SOFFITS, AND FASCIA SYSTEM, AND MISCELLANEOUS ALUMINUM FLASHINGS.

2. WORK NOT INCLUDED. INTERIOR DOWNSPOUTS AND HEADS. SHEET METAL WORK FOR HEATING AND VENTILATION, METAL DOORS AND FRAMES.

3. INSPECTION. EXAMINE ALL SURFACES AND CONDITIONS TO BE METAL FLASHED AND NOTIFY ARCHITECT IN WRITING OF ANY DEFECTS AFFECTING THE INSTALLATION OF METAL FLASHINGS. INSTALLATION SHALL BE CONSIDERED ACCEPTANCE OF EXISTING CONDITIONS.

4. SUBMITTALS. SUBMIT IN ACCORDANCE WITH SUPPLEMENTAL GENERAL CONDITIONS SPECIFICATIONS. SUBMIT INSTALLATION INSTRUCTIONS, SHOP DRAWINGS AND SAMPLES FOR APPROVAL OF EACH PRODUCT AND SYSTEM. SUBMIT SAMPLES OF ALL FORMED METAL AND ACTUAL COLOR SAMPLES BEFORE PROCEEDING WITH WORK.

5. MEASUREMENTS AND DETAILS. TAKE ALL FIELD MEASUREMENTS. CONSULT WITH AND COOPERATE WITH OTHER CONTRACTORS INSTALLING ADJACENT WORK.

6. PREPARATION OF SURFACES. CLEAN OFF ALL ROOF SURFACES, SWEEPING UP ALL DUST, RUBBISH, ETC.

7. RUBBISH. CLEAN AND REMOVE FROM THE PREMISES ALL RUBBISH AND ACCUMULATED MATERIALS NOT CAUSED BY OTHER TRADES.

8. SOFFIT AND FASCIA SYSTEM:

FURNISH ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE INSTALLATION OF ALL CUSTOM FABRICATIONS AND ALL ALUMINUM SIDING AND RELATED WORK INDICATED ON DRAWING OR SPECIFIED HEREIN. THE COLOR SHALL BE BLACK.

SIDING SHALL BE MADE OF 5” EXPOSURE ALUMINUM- WHITE-DAIRY BARN LP SMARTSIDE ON SHELTERS

FASCIA: 26GA GALV STEEL W/ KYNAR 500 FINISH

DOWNSPOUTS: NONE

GUTTERS: NONE

9. METAL FLASHINGS: METAL FLASHINGS SHALL BE 26GA GALV STEEL W/ KYNAR 500 FINISH

10. SHINGLES: PAC CLAD STANDING SEAM, 24” SPACING, 26GA GALV STEEL W/ KYNAR 500 FINISH- COLOR BY ARCHITECT

11. VALLEYS & FLASHING. VALLEYS SHALL BE 26GA STEEL W KYNAR FINISH WITH CRIMPED "V" FOR EXPANSION. CARRY OVER 12" ON EACH SIDE OF VALLEY AND NAIL AND CEMENT SHINGLES. FOLD BACK ENDS OF FLANGES 3/4" SECURE WITH CLEATS AT 24" O.C. STEP FLASHING TO BE 26GA GALV STEEL W/ KYNAR 500 FINISH. ICE-DAM PROTECTION SHALL BE CONTINUOUS 36" OUT ON BOTH SIDES, RUNNING THE LENGTH OF ALL VALLEYS AND EXTEND 24" FROM PERIMETER TO WARM SIDE OF WALL.

END OF SECTION

DIVISION 8 – DOORS & WINDOWS
METAL DOORS & FRAMES

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR METAL DOORS, FRAMES, HOLLOW METAL, WINDOW FRAMES, FIXED METAL PANELS, ANCHORS, ETC.

2. SUBMITTALS. SUBMIT IN ACCORDANCE WITH THE SUPPLEMENTAL GENERAL CONDITIONS.

3. CODE & LABEL REQUIREMENTS. FIRE RATED DOORS AND FRAMES SHALL BEAR THE LABEL OF THE NFPA, UL, OR FM.

4. SHOP FINISH. ONE FACTORY APPLIED COAT OF BAKED-ON RUST INHIBITING PRIMER.

5. HARDWARE ATTACHMENT. SECURE TEMPLATES AND COORDINATE WORK WITH HARDWARE CONTRACTOR AND DRILL, FIT AND REINFORCE. PROVIDE BOXES FOR STRIKES AND HOLES FOR RUBBER DOOR SILENCERS IN ALL FRAMES. REFER TO DRAWINGS FOR ELECTRIC STRIKE AT DOOR 124.

6. CONSTRUCTION.

FRAMES: WELDED MITERED CORNERS (WELD, GRIND AND DRESS SMOOTH ENTIRE FACE-MITER SEAM BETWEEN HEAD AND JAMB, BOTH FACES), SPREADERS, EXTERIOR FRAMES: 14 GA. COLD ROLLED GALVANIZED STEEL, INTERIOR FRAMES: 16 GA. GALVANIZED COLD ROLLED CONTOUR AS DETAILED, MORTISE FOR 1-1/2 PAIR HINGES MINIMUM FOR EACH DOOR. EXTERIOR FRAMES TO BE GALVANIZED - A60.

EXTERIOR DOORS: 1-3/4" FLUSH PANEL, 16 GAUGE GALVANIZED, NO EDGE OR FACE SEAMS, REINFORCE WITH 22 GAUGE HAT CHANNEL STIFFENERS AT 6" O.C., WELDED AT 5" O.C.. INSULATION: FIBERGLASS BATT, 0.8 LBS/FT3 DENSITY. (CECO "MEDALLION" OR ARCHITECT APPROVED EQUAL). PROVIDE 16 GAUGE CLOSURE CHANNELS AT TOP AND BOTTOM OF DOORS.

INTERIOR DOORS: 1-3/4" FLUSH PANEL, 18 OR 16 GAUGE, NO FACE SEAMS, SINGLE HEMMED EDGE SEAM. KRAFT FIBER HONEYCOMB CORE, (CECO "REGENT" OR ARCHITECT APPROVED EQUAL).

DOOR GRILLES. SEE DOOR SCHEDULE AND PLANS FOR DOOR GRILLE REQUIREMENTS. FURNISH AND INSTALL VISION PROOF GRILLES (CHEVRON-TYPE). GRILLES IN METAL DOORS TO BE CONSTRUCTED OF 24 GA. STEEL BLADES.

7. INSTALLATION. GENERAL CONTRACTOR: INSTALL AND BRACE PLUMB ALL FRAMES, INSTALL HARDWARE AND HANG DOORS.

MASONRY CONTRACTOR: BUILD IN ALL ANCHORS IN MASONRY WALLS.

8. WEATHER-STRIPPING. WEATHER-STRIP ALL EXTERIOR DOORS. COORDINATE

WITH HARDWARE SUPPLIER.

9. HARDWARE REINFORCEMENT AND PREPARATION: PROVIDE CONCEALED REINFORCEMENT OF SHEET OR BAR STEEL TO RECEIVE MORTISE TYPE HARDWARE. MORTISE, DRILL AND TAP TO TEMPLATE REQUIREMENTS FOR FIELD INSTALLATION OF HARDWARE.

MINIMUM REINFORCEMENT:

	FRAMES	DOORS
HINGE REINFORCEMENT	7 GAUGE	7 GAUGE
LOCK REINFORCEMENT	12 GAUGE	7 GAUGE
CLOSURE & SURFACE APPLIED HARDWARE	12 GAUGE	12 GAUGE

DRILLING AND TAPPING FOR SURFACE APPLIED HARDWARE TO BE DONE IN THE FIELD BY INSTALLER.

PREPARE JAMB REBATES FOR RUBBER DOOR SILENCERS. LOCATE THREE FOR SINGLE DOOR AND TWO AT HEAD FOR PAIRS OF DOORS.

END OF SECTION

DIVISION 8 – DOORS & WINDOWS
WOOD & PLASTIC DOORS

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR WOOD AND PLASTIC DOORS, INCLUDING WORK NOTED ON DRAWINGS AND HEREIN SPECIFIED.

2. SUBMITTALS. SUBMIT IN ACCORDANCE WITH THE SUPPLEMENTAL GENERAL CONDITIONS.

3. CODE & LABEL REQUIREMENTS. FIRE RATED DOORS AND FRAMES SHALL BEAR THE LABEL OF THE NFPA, UL, OR FM.

4. HARDWARE ATTACHMENT. SECURE TEMPLATES AND COORDINATE WORK WITH HARDWARE CONTRACTOR AND DRILL, FIT AND REINFORCE.

5. CONSTRUCTION.

WOOD SPECIES: RIFT CUT WHITE OAK

WOOD DOORS: WOOD DOORS SHALL COMPLY WITH THE STANDARD AND SPECIFICATION PUBLISHED BY THE A.W.I. (ARCHITECTURAL WOODWORK INSTITUTE). ALL MATERIALS SUPPLIED FOR THIS PROJECT SHALL CONFORM TO AWI SECTION 1300 QUALITY STANDARDS.

ACCEPTABLE MANUFACTURERS: KARONA OR EQUAL.

FINISH SHALL CONFORM WITH A.W.I. FINISH SYSTEM #3 - CONVERSION VARNISH. (ALKYD-UREA) STAIN TO BE SELECTED BY ARCHITECT.

MINERAL CORE DOORS: UL LISTED, WEYERHAEUSER CODE NO.S DFM-90, DFM-60 AND DFM-45. SEE SCHEDULE FOR RATING REQUIREMENTS.

6. DOOR GRILLES. SEE DOOR SCHEDULE AND PLANS FOR DOOR GRILLE REQUIREMENTS. FURNISH AND INSTALL VISION PROOF GRILLES (CHEVRON-TYPE). WOOD DOORS TO HAVE GRILLES AND STOPS TO MATCH WOOD VENEER SPECIES.

7. INSTALLATION. GENERAL CONTRACTOR TO INSTALL HARDWARE AND HANG DOORS. COORDINATE WITH HARDWARE SUPPLIER.

END OF SECTION

DIVISION 8 – DOORS AND WINDOWS
ALUMINUM DOORS, FRAMES AND SASH

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR COMPLETE INSTALLATION OF ALUMINUM DOORS, FRAMES AND SASH.

C. RELATED WORK. THE FINISH HARDWARE SUPPLIER SHALL BE RESPONSIBLE FOR FURNISHING PHYSICAL HARDWARE TO THE ENTRANCE MANUFACTURER PRIOR TO FABRICATION AND FOR COORDINATING HARDWARE DELIVERY REQUIREMENTS WITH THE HARDWARE MANUFACTURER, THE GENERAL CONTRACTOR AND THE ENTRANCE MANUFACTURER TO INSURE THE BUILDING PROJECT IS NOT DELAYED.

2. QUALITY ASSURANCE. INSTALLATION SHALL BE BY EXPERIENCED MECHANICS AND QUALIFIED ERECTORS. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDED SPECIFICATION.

3. SHOP DRAWINGS: SUBMIT FOR ALL WORK. SEE SUPPLEMENTAL GENERAL CONDITIONS.

4. GUARANTEE. GUARANTEE INSTALLATION AND MATERIALS FOR TWO YEARS AFTER FINAL ACCEPTANCE.

5. CAULKING. GE SILICONE 1600 IN COLORS TO MATCH ADJACENT MATERIALS. USE APPROVED MASTICS UNDER ALL SILLS AND FRAME MEMBERS TO ASSURE A WATER TIGHT SEAL.

6. ACCESSORIES. PROVIDE ALL ANCHORS, CLIPS, INSERTS, FINS, COLUMN COVERS, AND ANY OTHER ACCESSORIES NECESSARY TO MAKE A COMPLETE INSTALLATION.

7. DOORS AND FRAMES. PROVIDE ALUMINUM DOORS AND THERMALLY BROKEN FRAMES, AS DETAILED. SYSTEM COMPONENTS SHALL BE KAWNEER: 350 MEDIUM STILE DOORS AND 451T THERMALLY BROKEN FRAMES 2" X 4-1/2" PROFILE. ALL EXPOSED SURFACES SHALL BE FREE OF SCRATCHES AND OTHER SERIOUS BLEMISHES AND SHALL RECEIVE AN ARCHITECTURAL CLASS I COLOR ANODIC COATING, DARK BRONZE.

SUBMIT ACTUAL COLOR SAMPLES FOR APPROVAL BY OWNER AND ARCHITECT. SYSTEM SHALL INCLUDE REINFORCEMENTS, SIDELITES, TRANSOMS, ALL HARDWARE INCLUDING THRESHOLD, CLOSER, PUSH-PULLS, WEATHER-STRIPPING OF FOUR EDGES, CUTOUTS FOR CYLINDERS, STRIKES AND BALL BEARING HINGES (1-1/2 PAIR BUTTS) PUSH-PULL HARDWARE SHALL BE CO-9 (PULLS), CR (PUSH) BRONZE HANDLES US108. CYLINDER SHALL BE FURNISHED BY THE HARDWARE SUPPLIER AND SHALL BE INSTALLED BY THE DOOR INSTALLER. PROVIDE ADAMS RITE MS-1850A-505 DEADLOCK AT EXTERIOR DOOR.

8. ALUMINUM SASH: SASH SHALL BE KAWNEER 451T THERMALLY BROKEN WITH 2" X 4-1/2" PROFILE WITH 1" GLAZING. FINISH TO BE WHITE EXTRUSION SHALL BE 6063-T5 ALLOY AND TEMPER (ASTM B221 ALLOY G.S.

10A-T5). FASTENERS, WHERE EXPOSED, SHALL BE ALUMINUM, OR STAINLESS IN ACCORDANCE WITH ASTM A-164. PROVIDE ALUMINUM SILL FLASHING SECTIONS AS DETAILED.

END OF SECTION

DIVISION 8 – DOORS & WINDOWS
FINISH HARDWARE

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR FINISH HARDWARE. THIS CONTRACT SHALL INCLUDE ALL FINISH HARDWARE, LOCKS AND KEYING SYSTEM. KEYING IS TO BE COORDINATED WITH THE OWNER PRIOR TO ORDERING THE HARDWARE.

2. WORK NOT INCLUDED. INSTALLATION SHALL BE BY THE CARPENTRY CONTRACTOR.

3. SERVICES INCLUDED. THIS CONTRACTOR SHALL DELIVER A HARDWARE SCHEDULE WHICH INCLUDES THE COMPLETE FURNISHING, LAYING OUT, SCHEDULING AND KEYING OF ALL LOCKS. THE SCHEDULE SHALL BE REVIEWED BY THE ARCHITECT FOR COMPLIANCE WITH DESIGN REQUIREMENTS AND THE OWNER FOR KEYING. THIS CONTRACTOR SHALL PROVIDE ALL TEMPLATES TO THE HOLLOW METAL SUPPLIER AND WOOD DOOR MANUFACTURER.

4. GUARANTEE. THIS CONTRACTOR SHALL GUARANTEE AND SERVICE ALL LOCKS AND DEVICES FOR A PERIOD OF ONE YEAR AGAINST ALL DEFECTS IN MATERIAL.

5. ALLOWANCE. AN ALLOWANCE SHALL BE INCLUDED IN THE GENERAL CONTRACT TO COVER ALL REQUIRED HARDWARE. THE ARCHITECT SHALL SELECT ALL HARDWARE REQUIRED. THE COST OF HARDWARE SHALL NOT EXCEED THE ALLOWANCE AND THIS CONTRACTOR SHALL CREDIT BACK TO THE OWNER ANY UNUSED FUNDS.

FOR EACH SWING DOOR - $500.00 PER LEAF.

6. SUBMITTALS:

A. HARDWARE SCHEDULE: ORGANIZE IN "HARDWARE SET" FORMAT. INDICATE MANUFACTURER'S NAME, PRODUCT DESCRIPTION, FINISH AND LOCATIONS OF EACH ITEM WITH FASTENINGS REQUIRED. EXPLAIN SYMBOLS, ABBREVIATIONS, AND CODES. SUBMIT COMPLETE KEYING SCHEDULE.

B. PRODUCT DATA: SUBMIT MANUFACTURER'S CUT SHEETS FOR EACH ITEM. INDICATE COMPLIANCE WITH NATIONAL, STATE AND LOCAL, HANDICAPPED ACCESSIBILITY STANDARDS.

C. SAMPLES: MAY BE REQUESTED FOR ARCHITECT'S APPROVAL. SUBMIT WITH HARDWARE SCHEDULE. SAMPLES WILL BE RETURNED TO SUPPLIER.

D. PRODUCT: DOOR HANDLES TO BE SCHLAGE "L" SERIES WITH ATHENS SHAPE AND BRUSHED BRASS FINISH.

END OF SECTION

DIVISION 8 – DOORS & WINDOWS
GLASS & GLAZING

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES AND TRANSPORTATION FOR ALL GLASS AND GLAZING WORK.

2. MEASUREMENTS. ALL SIZES SHALL BE TAKEN IN THE FIELD FROM ACTUAL SASH OPENINGS. THIS CONTRACTOR SHALL ASSUME THE RESPONSIBILITY IN REGARD TO CORRECT SIZES. SIZES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND ARE TO BE USED FOR ESTIMATING ONLY.

3. MATERIALS. GLASS SHALL BE PITTSBURGH PLATE GLASS CO., LIBBEY-OWENS FORD COMPANY, FORD GLASS CO., OR AN APPROVED EQUAL.

A. ALL SASH & GLAZED OPENINGS: 1/4 TEMPERED CLEAR

4. GLASS. WHEREVER 1/4" GLASS IS CALLED FOR, IT IS IMPLIED TO BE FLOAT GLASS, UNLESS NOTED OTHERWISE.

5. SECURING OF GLASS. GLAZE IN ACCORDANCE WITH STANDARD PRACTICE. SECURE WITH MOLDINGS OR STOPS. GLASS IN METAL FRAMES SHALL BE GLAZED WITH MATCHING VINYL GLAZING BEADS AND/OR "THIOKOL" SEALANTS AS REQUIRED. GLAZING CLIPS TO BE FURNISHED BY THIS CONTRACTOR. PROVIDE RECOMMENDED CLEARANCES FOR DEFLECTION, EXPANSION AND MOVEMENT IN FRAMES.

6. FIXED GLAZING: USE ALUMINUM "450" SERIES OR EQUAL FOR 1/4" GLAZING. KYNAR 500 WHITE FINISH
1-3/4" X 4-1/2" SECTIONS. BED ALL SECTIONS IN MASTIC SEALANT. CAULK ALL WORK AT COMPLETION. COLOR TO BE WHITE.

7. BIRD PROTECTION GLASS: FURNISH AND INSTALL ORNILUX – MIKADO A70 DOUBLE GLAZING LT:66% LR 16% SHGC 0.33 U VALUE 0.24 ARNOLD-GLAS.COM ORNILUX.COM ALTERNATE: PPG (OR EQUAL) W/ SAME PERFORMANCE AND 2X2 FRIT PATTERN.

END OF SECTION

DIVISION 9 – FINISHES
GYPSUM DRYWALL/PLASTER

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. FURNISH LABOR, MATERIALS, EQUIPMENT SERVICES AND TRANSPORTATION TO COMPLETE ALL OF THE GYPSUM DRYWALL, VENEER PLASTER AND SKIM COAT PLASTER.

2. WORK INCLUDED. ALL GYPSUM BOARD INSTALLATION, ACCESSORIES, TAPING AND JOINT REINFORCEMENT AND FINISHING FOR SUBSEQUENT PAINT, WALL COVERING OR OTHER FINISH. ALL GYPSUM LATH BOARD INSTALLATION AND VENEER PLASTER FINISHING. ALL SKIM COAT PLASTER.

3. GYPSUM DRYWALL & GYPSUM LATH WITH VENEER PLASTER. FURNISH AND INSTALL IN ACCORDANCE WITH THE "GYPSUM DRYWALL CONSTRUCTION HANDBOOK", 2000, PUBLISHED BY THE U.S. GYPSUM COMPANY.

WHERE WALLS ARE TO BE SOUND PROOFED WITH SOUND ATTENUATING FIBERGLASS BATS (AS NOTED ON PLAN), ACOUSTICAL SEALANT SHALL BE APPLIED AT FLOOR, CEILING, JAMBS, AT ALL CUTOUTS AND PENETRATIONS SUCH AS ELECTRICAL OUTLETS, CABINETS, PLUMBING, HEATING AND AIR CONDITIONING DUCTS, TELEPHONE, COMPUTER, SECURITY AND INTERCOM HOOKUPS.

A. GYPSUM DRYWALL: 5/8" FIRE CODE WALLBOARD.

4. DRYWALL ACCESSORY MATERIALS.

A. FASTENERS: PROVIDE THE KIND SPECIFIED AND OF THE TYPE AND SIZE RECOMMENDED BY THE DRYWALL MANUFACTURER FOR THE APPLICATIONS SHOWN.

B. ACOUSTICAL SEALANT: FOR SOUND RATED PARTITIONS AND CEILING SYSTEMS: PROVIDE NON-SHRINKING, NON-DRYING, NON-MIGRATING SEALANT RECOMMENDED BY THE DRYWALL MANUFACTURERS MEETING ASTM C557 REQUIREMENTS.

C. JOINT TREATMENT MATERIALS: MEETING ASTM C475.

D. CORNER REINFORCEMENTS, CASING BEADS AND METAL TRIM: FABRICATED FROM 26 GAUGE GALVANIZED SHEET STEEL WITH PERFORATED FLANGES, DESIGNED TO RECEIVE JOINT COMPOUND.

E. RESILIENT CHANNELS: RC-1, AS MANUFACTURED BY U.S. GYPSUM CO.

5. PORTLAND CEMENT PLASTER/ACRYLIC FINISH

PART I - GENERAL

1.01 SCOPE: GUIDE SPECIFICATIONS FOR THE MINIMUM REQUIREMENTS FOR THE SYSTEM AND APPLICATION OF PORTLAND CEMENT PLASTER (STUCCO) WITH AN ACRYLIC FINISH.

1.02 THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THIS SYSTEM OF PORTLAND CEMENT PLASTER AS SHOWN ON DRAWINGS AND/OR AS DESCRIBED HEREIN.

1.03 FLASHING, CAULKING, SEALANTS, SEALERS, SHALL BE FURNISHED AND INSTALLED BY OTHERS.

1.04 STANDARDS: WORKMANSHIP AND INSTALLATION SHALL BE PERFORMED PER:

A. NORTHWEST WALL & CEILING BUREAU STANDARDS

B. ASTM C-1063 INSTALLATIONS OF LATHING AND FURRING FOR PORTLAND CEMENT PLASTER.

C. ASTM C-926 APPLICATION OF PORTLAND CEMENT PLASTER.

D. WHERE PRODUCTS AND OR SYSTEMS ARE SPECIFIED THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE BUILDING CODES AND/OR MANUFACTURERS REQUIREMENTS.

1.05 QUALIFICATIONS: APPLICATOR AND/OR CONTRACTOR MUST BE QUALIFIED IN THE WORKMANSHIP OF PLASTERING. MUST BE ABLE TO SHOW COMPLETED WORK OF EQUAL SCOPE.

1.06 SUBMITTALS: THE APPLICATOR AND/OR CONTRACTOR SHALL BE PREPARED AND MAY BE REQUIRED TO SUPPLY MOCK-UP FINISH SAMPLES.

A. DO NOT PROCEED WITH LATHING OR PLASTERING UNTIL ALL PRODUCTS AND/OR FINISH SAMPLES ARE APPROVED, IF REQUIRED.

1.07 BE PREPARED FOR A PRE-JOB MEETING WITH THE ARCHITECT, OWNER, GENERAL CONTRACTOR, AND THE NORTHWEST WALL & CEILING BUREAU, IF REQUIRED, BEFORE THE START OF LATHING AND PLASTERING PROCEDURES.

1.08 MATERIALS: TO BE DELIVERED TO JOB IN ORIGINAL CONTAINERS WITH LABELS INTACT AND LEGIBLE.

A. STORAGE AND PROTECTION OF ALL PRODUCTS ARE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE SCOPE OF THE WORK.

1.09 JOB CONDITIONS/ENVIRONMENTAL REQUIREMENTS FOR CEMENT PLASTER.

A. COLD WEATHER

1. DO NOT USE FROZEN MATERIAL.

2. DO NOT APPLY CEMENT PLASTER TO FROZEN SURFACES OR SURFACES CONTAINING FROST.

3. DO NOT MIX MATERIALS OR APPLY CEMENT PLASTER WHEN AMBIENT TEMPERATURE IS LESS THAN 35 DEGREES F./1.6 DEGREES C.

B. HOT WEATHER

1. PROTECT CEMENT PLASTER FROM UNEVEN AND EXCESSIVE EVAPORATION DURING HOT, WINDY, AND DRY WEATHER.

2. MOIST CURING AFTER EACH COAT OF CEMENT PLASTER WITH WATER IF AMBIENT TEMPERATURE IS MORE THAN 75 DEGREES/24 DEGREES C. MOIST CURE FOR 48 HOURS AFTER APPLICATION OF COATS.

3. HOT, OR DRY, OR WINDY WEATHER THE CEMENT PLASTER SHOULD BE MOISTENED DOWN AND THEN COVERED WITH A SINGLE SHEET OF POLYETHYLENE PLASTIC.

4. MOIST CURING IS REQUIRED AT THE START AND END OF WORK DAY.

5. HUMIDITY HIGHER THAN 75%. MOIST CURING NOT REQUIRED.

1.10 DOUBLE BACK METHOD - WHEREBY THE SCRATCHED AND BROWN COATS ARE APPLIED AND CURED AS ONE SYSTEM IS APPROVED.

A. THE SECOND COAT (BROWN) SHOULD BE APPLIED AS SOON AS THE FIRST COAT IS RIGID.

1.11 JOB CONJHIONS/ENVIRONMENTAL REQUIREMENTS FOR ACRYLIC FINISH

A. DO NOT USE ACRYLIC FINISH MATERIALS IF THEY HAVE BEEN FROZEN.

B. DO NOT APPLY ACRYLIC FINISH WHEN AMBIENT TEMPERATURE IS LESS THAN 40 DEGREES F/4.4 DEGREES C.

C. DO NOT APPLY ACRYLIC FINISH UNLESS THE TEMPERATURE HAS BEEN 40 DEGREES F./4.4 DEGREES C FOR AT LEAST 24 HOURS BEFORE THE APPLICATION.

D. COLD WEATHER: IF HEATING AND TENTING IS REQUIRED TO PERFORM THE APPLICATION OF THE ACRYLIC FINISH COAT, IT IS NOT THE RESPONSIBILITY OF THE ACRYLIC FINISH CONTRACTOR TO PROVIDE IT.

E. DO NOT APPLY FINISH COAT WHEN THERE S ANY FORM OF PRECIPITATION.

F. PROTECT CEMENT PLASTER FROM ALL FORMS OF PRECIPITATION DURING THE APPLICATION AND THE SETTING/CURING PERIOD OF FINISH COAT. ENSURE THAT THE FINISH IS FULLY SET PRIOR TO REMOVING PROTECTIVE COVERING.

G. DO NOT APPLY FINISH COAT TO BASE COAT OF CEMENT PLASTER IF SUN IS DIRECTLY ON THE WALL SURFACE AND TEMPERATURE IS 75 DEGREES F /24 DEGRESS C. WORK IN SHADE WHENEVER POSSIBLE.

1.12 CONTROL JOINTS:

A. IT IS NOT REQUIRED TO CUT LATH BEHIND CONTROL POINTS IF FLANGES OF CONTROL JOINT IS DESIGNED TO GET A GOOD KEY OF THE CEMENT PLASTER.

B. PANELS SHOULD BE RELATIVELY SQUARE.

C. NO AREA SHOULD EXCEED 18 LINEAL FEET IN LENGTH WITHOUT A CONTROL JOINT.

D. INSTALL CONTROL JOINTS FOR SURFACE AREAS OF APPROXIMATELY 150 SQUARE FEET.

E. WHERE DISSIMILAR BACK-UP MATERIALS JOIN.

F. CONTROL JOINTS ARE RECOMMENDED AT SURFACE PENETRATIONS, (WINDOWS, DOORS, ETC) AND AT AREAS OF STRUCTURAL STRESS.

PART II - MATERIALS/PRODUCTS

2.01 BUILDING PAPER

A. FEDERAL SPECIFICATIONS UU-B-790A, STYLE 2, GRADE D, 60 MINUTE WATER RESISTANCE.

2.02 LATH:

A. EXPANDED METAL LATH

B. WOVEN WIRE LATH: 17 GAUGE 1 1/2" MESH

C. WELDED WIRE LATH: 16 GAUGE

D. RIB LATH

2.03 ACCESSORIES

A. SHAPES USED AS GROUNDS, SIZED AND DIMENSIONED TO PROVIDE FOR REQUIRED PLASTER THICKNESS.

B. ALL ACCESSORIES MANUFACTURED OF GALVANIZED STEEL, ZINC, ALUMINUM, OR PLASTIC MATERIALS.

C. CONFIGURATION OF CASING BEADS AND CONTROL JOINTS TO PROVIDE LIP FLANGE AND/OR EMBEDMENT SECTION.

D. CORNER BEADS TO BE P.V.C. OR WELDED WIRE.

E. STANDARD TRIM ITEMS: CONTROL JOINTS, CASING BEADS, EXTERIOR CORNER BEADS, AND BASE SCREEDS.

2.04 PLASTER MATERIAL

1. PORTLAND CEMENT: ASTM C150 TYPE I OR II

2. PORTLAND CEMENT & POZZOLANIC "FLY ASH": ASTM C 150 & ASTM C618

3. MASONRY CEMENT: ASTM C91

4. LIME: ASTM C206-TYPE S

5. SAND: ASTM C144, TYPE USED FOR CEMENT PLASTER.

6. WATER: CLEAR AND FREE FROM SUBSTANCES HARMFUL TO PLASTER.

7. 1/2" CHOPPED FIBER GLASS STRANDS.

8. ADDITIVES: MAY BE ADDED PER MANUFACTURERS RECOMMENDATIONS FOR THE AID OF PUMPING, CURING, AND BONDING.

2.05 MIX GENERAL

A. ACCURATE PROPORTIONS OF MATERIALS FOR EACH BATCH. MEASURING DEVICES OF KNOWN VOLUME FOR ALL MATERIALS.

B. SIZE BATCHES FOR COMPLETE USE WITHIN MAXIMUM OF ONE HOUR AFTER MIXING.

C. WITHHOLD 10 MIXING OF WATER UNTIL MIXING IS ALMOST COMPLETE THEN ADD AS NEEDED TO PRODUCE NECESSARY CONSISTENCY. KEEP WATER TO A MINIMUM.

2.06 MIX PROPORTIONS BY VOLUME. SELECTION OF EITHER A, B, OR C MIX ONLY. DO NOT INTER-MIX THESE THREE SECTIONS OR CHANGE VOLUME PROPORTIONS OF THESE SECTIONS.

A. 1 PORTLAND CEMENT
1 MASONRY CEMENT
1 1/2 - 2 1/2 IBS. OF 1/2" CHOPPED FIBERGLASS
4 - 5 SAND
SAND

B. 1 PORTLAND CEMENT
1/2 LIME
1 1/2 - 2 1/2 IBS. OF 1/2" CHOPPED FIBERGLASS
3 1/2-4 1/2 SAND
WATER

C. TYPE 1 P PORTLAND CEMENT
1 MASONRY CEMENT
1 1/2 - 2 1/2 IBS. OF 1/2" CHOPPED FIBERGLASS
4-5 SAND
WATER

2.07 ACRYLIC FINISH

A. FACTORY MIXED 100 PURE ACRYLIC BASED INTEGRAL COLOR.

B. MANUFACTURER SHALL BE APPROVED BY THE NORTHWEST WALL & CEILING BUREAU.

PART III - EXECUTION

3.01 CEMENT PLASTER DIRECTLY OVER A CONCRETE SURFACE.

A. CONCRETE SURFACE MUST BE CLEAN OF DUST, LOOSE PARTICLES, OIL, AND OTHER FOREIGN MATTER WHICH WOULD AFFECT A BOND OF CEMENT PLASTER TO CONCRETE.

B. APPLY A LIQUID BONDING AGENT TO CONCRETE SURFACE PER MANUFACTURERS STANDARDS.

C. MINIMUM THICKNESS OF CEMENT PLASTER BASE COAT 3/8", MAXIMUM THICKNESS 5/8".

D. TEST BOND OF CEMENT PLASTER TO CONCRETE SURFACE.

E. CEMENT PLASTER MUST BE APPLIED WITH SUFFICIENT FORCE (BY HAND OR MACHINE) TO DEVELOP FULL ADHESION BETWEEN PLASTER AND THE SUBSTRATE.

F. CEMENT PLASTER BASE COAT MUST BE RODDED OFF TO A TRUE FLAT PLANE. EVEN AND LEVEL WITH SCREEDS. FOLLOW THIS BY WOOD FLOATING OR

DARBYING THE SURFACE. FILL ALL VOIDS AND DRESS SURFACE FOR ACRYLIC FINISH.

3.02 CEMENT PLASTER DIRECTLY OVER MASONRY SURFACE.

A. MASONRY SURFACES MUST HAVE TWO COATS OF CEMENT PLASTER.

B. MASONRY SURFACE TO BE CLEAN AND IN CONDITION FOR A DIRECT BOND OF CEMENT PLASTER. PRE-WET THE WALL BEFORE PLASTERING.

C. CEMENT PLASTER MUST BE APPLIED WITH SUFFICIENT FORCE (BY HAND OR MACHINE) TO DEVELOP FULL ADHESION BETWEEN PLASTER AND THE SUBSTRATE.

D. APPLY A 1/4"-3/8" CEMENT PLASTER BASE COAT. LET CURE FOR 48 HOURS BEFORE APPLYING SECOND BASE COAT. ROUGH SURFACE FOR GOOD BOND OF SECOND COAT.

E. APPLY SECOND BASE COAT SO THAT TOTAL THICKNESS OF BOTH COATS IS 1 /2" TO 3/4" THICK.

F. CEMENT PLASTER BASE COAT MUST BE RODDED OFF TO A TRUE FLAT PLANE. EVEN AND LEVEL WITH SCREEDS. FOLLOW THIS BY WOOD FLOATING OR DARBYING THE SURFACE. FILL ALL VOIDS AND DRESS SURFACE FOR ACRYLIC FINISH.

3.03 INSTALLATION OF LATH & ACCESSORIES.

1. ALL ITEMS TO BE ATTACHED SO THAT THEY ARE LEVEL, PLUMB AND TRUE, AND CREATE A PROPER SCREED AND DEPTH FOR THE CEMENT PLASTER.

2. ATTACH BUILDING PAPER, LATH, AND ACCESSORIES PER STANDARDS AND CODE.

3.04 CEMENT PLASTER OVER LATH.

A. TOTAL THICKNESS OF BASE COATS TO MEET CODE REQUIREMENTS FOR FIRE RATED CONSTRUCTION (MINIMUM 7/8" THICK FOR FRAME CONSTRUCTION).

B. EXAMINE WALL SURFACE TO ENSURE PROPER APPLICATION OF LATH AND ACCESSORIES.

C. NOMINAL PLASTER BASE COAT THICKNESS:

   1. FIRST COAT "SCRATCH - 3/8"-1 /2"

   2. SECOND COAT "BROWN -3/8"-1/2"

D. CEMENT PLASTER MUST BE APPLIED WITH SUFFICIENT FORCE (BY HAND OR MACHINE) TO DEVELOP FULL ADHESION BETWEEN PLASTER AND THE SUBSTRATE.

E. FIRST COAT TO COMPLETELY EMBED LATH. CROSS RAKE SLIGHTLY TO PROVIDE KEY FOR SECOND BASE COAT. COAT MUST BE UNIFORM IN THICKNESS.

F. SECOND COAT APPLIED SO THAT IT MEETS THE REQUIRED TOTAL THICKNESS AND IT MUST BE UNIFORM IN ITS THICKNESS.

G. SECOND COAT OF CEMENT PLASTER MUST BE RODDED TO THE DESIRED THICKNESS AND LEVELED TO SCREEDS. ROD OFF TO A TRUE FLAT PLANE. FOLLOW THIS BY WOOD FLOATING OR DARBYING THE SURFACE. FILL ALL VOIDS AND DRESS SURFACE FOR ACRYLIC FINISH.

H. COMPLETED SECOND COAT OF CEMENT PLASTER BASE TO CURE FOR 10-14 DAYS. SEE GENERAL CONDITIONS.

3.05 ACRYLIC FINISH COAT:

A. MUST BE APPLIED CONTINUOUSLY AND IN ONE OPERATION TO THE ENTIRE WALL AREA.

B. A WET EDGE MUST BE MAINTAINED.

C. FINISH TO BE APPLIED SO THAT THERE ARE NO SCAFFOLD LINES OR OTHER MARKS DUE TO THE APPLICATION.

D. THE MIXING AND APPLICATION MUST FOLLOW THE MANUFACTURERS RECOMMENDATIONS.

E. TEXTURE AND COLOR AS SELECTED BY ARCHITECT AND/OR OWNER.

END OF SECTION

DIVISION 9 - FINISHES
PAINTING & FINISHING

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, TRANSPORTATION AND SERVICES FOR INTERIOR AND EXTERIOR PATCHING, POINTING, SEALING, SANDING, PAINTING AND STAINING AND WALL COVERING FOR PAINTING AND FINISHING WORK.

2. WORK INCLUDED.

A. ALL FINISHED AREAS
B. ALL CONCRETE BLOCK
C. STEEL RAILINGS
D. METAL DOORS AND FRAMES
E. EXTERIOR STRUCTURAL METAL
F. ELECTRICAL COVERS & PANELS
G. EXPOSED WOODWORK
H. DRYWALL
I. WOOD SHELVING
J. INTERIOR STRUCTURAL STEEL

3. WORK NOT INCLUDED.

A. SHOP COATS OF ORNAMENTAL METAL, MISCELLANEOUS IRON AND ALUMINUM SASH.

B. ALUMINUM AND FINISHED HARDWARE, EXCEPT AS NOTED HEREIN.

C. CONCRETE FLOORS.

D. ACOUSTICAL CEILINGS.

E. BRICK & STONE.

4. EXAMINATION & INSPECTION. EXAMINE PAINTING AND FINISHING PROVISIONS OF THE SPECIFICATIONS FOR OTHER BRANCHES OF WORK. INSPECT ALL WORK TO BE PAINTED AND REPORT TO THE ARCHITECT IN WRITING ANY CONDITION THAT WILL AFFECT THE QUALITY OF WORKMANSHIP ON ANY SURFACE WHICH IS NOT IN FIT CONDITION TO BE PAINTED. FAILURE OF THIS CONTRACTOR TO MAKE NECESSARY INSPECTIONS AND WRITTEN NOTIFICATIONS WILL LEAVE THE ENTIRE RESPONSIBILITY FOR SATISFACTORY WORK ENTIRELY ON THIS CONTRACTOR.

5. SAMPLES. PREPARE FOR THE ARCHITECT'S APPROVAL, SAMPLES OF ALL PAINTING AND FINISHING. THE ARCHITECT SHALL BE PERMITTED TO CHANGE COLOR AFTER THE PRIME IS APPLIED AT NO EXTRA COST TO THE OWNER, UNLESS IT IS NECESSARY TO ADD ADDITIONAL COATS.

6. PROTECTION OF WORK. FURNISH DROP CLOTHS TO PROTECT FLOORS AND OTHER FINISHED WORK FROM DAMAGE. THIS CONTRACTOR WILL BE RESPONSIBLE

FOR ANY DAMAGE DONE TO THE WORK OF OTHER CONTRACTORS, REPAIRING SAME TO THE SATISFACTION OF THE ARCHITECT AND SHALL AT HIS OWN EXPENSE REPLACE ANY MATERIALS DAMAGED.

CLEAN OFF ALL PAINT SPOTS, OIL AND STAINS FROM THE FLOORS, WOODWORK, GLASS, HARDWOOD AND OTHER FINISHED SURFACES.

7. MATERIALS. COMPARABLE MATERIALS AS MANUFACTURED BY PRATT & LAMBERT, SHERWIN WILLIAMS, BENJAMIN MOORE, OR PITTSBURG.

SEE INTERIOR DESIGN DRAWINGS.

8. WORKMANSHIP.

A. MATERIALS ARE TO BE APPLIED IN A FIRST-CLASS MANNER BY SKILLED MECHANIC AND SHALL BE EVEN SPREAD AND SMOOTH FLOWED ON WITHOUT RUNS OR SAGGING.

B. PUTTYING OF NAIL HOLES, CRACKS ETC. SHALL BE DONE AFTER THE FIRST COATING WITH PUTTY OF A COLOR TO MATCH THAT OF FINISH.

C. UNDERCOATS OF PAINT, UNDERCOATING AND ENAMEL SHALL BE TINTED TO THE APPROXIMATE SHADE OF THE FINAL COAT.

D. ALL COATS WHETHER PAINTS, STAIN, PASTE FILLER, VARNISH, OR ENAMEL SHALL BE THOROUGHLY DRY BEFORE THE APPLICATION OF SUCCESSIVE COATS.

E. EXTERIOR PAINTING SHALL NOT BE DONE DURING FREEZING OR RAINY WEATHER OR UNTIL SURFACE IS THOROUGHLY DRY.

F. "HOT SPOTS" OR "SOFT SPOTS" IN PLASTER OR CEMENT SHALL BE NEUTRALIZED OR TOUCHED UP WITH THE PRIMER AFTER THE FIRST COAT TO PRODUCE AN EVEN RESULT IN THE FINISH COAT.

G. METALS. PAINT ALL RADIATION COVERS, RADIATORS, GRILLES, RAILINGS ETC.

H. DOORS. THE UPPER AND LOWER EDGES OF ALL DOORS SHALL BE FINISHED AT LEAST TWO COATS IN PAINTED WORK.

I. POINT UP ALL MASONRY, PLASTER ETC. AROUND ELECTRICAL BOXES AND MECHANICAL PIPES AS REQUIRED FOR COVER PLATES TO COVER OPENINGS.

J. SHOP PRIME COATS. ALL EXPOSED METAL SURFACES HEREIN SPECIFIED WILL BE DELIVERED TO THE PAINTING CONTRACTOR FINISHED IN A PRIMER COAT AS SPECIFIED IN "WORK NOT INCLUDED." THIS CONTRACTOR SHALL ACQUAINT HIMSELF WITH THE PRIMARY COAT APPLIED BY THE VARIOUS MANUFACTURERS.

9. PAINTING AND FINISHING SCHEDULE. **SEE INTERIOR DESIGN DRAWINGS.**

10. COVERAGE. ALL WORK SHALL COVER TO SUFFICIENTLY SEAL AND HIDE BASE SURFACES. IF ADDITIONAL COATS AND TOUCH UP ARE NECESSARY, THEY SHALL BE APPLIED AT NO ADDITIONAL CHARGE TO THE OWNER.

END OF SECTION

DIVISION 10 - SPECIALTIES
BUILDING SPECIALTIES

1. SCOPE OF WORK.

   A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

   B. PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND TRANSPORTATION FOR THE FURNISHING AND INSTALLING OF THE BUILDING SPECIALTIES AS NOTED.

2. SHOP DRAWINGS. PREPARE AND SUBMIT TO THE ARCHITECT SHOP DRAWINGS OF ALL ITEMS TO BE FURNISHED UNDER THIS SECTION IN ACCORDANCE WITH THE SUPPLEMENTAL GENERAL CONDITIONS.

3. VISUAL DISPLAY BOARDS: FURNISH AND INSTALL AS SPECIFIED AND SHOWN ON THE DRAWINGS.

4. EXTERIOR SPECIALTIES AND FLAGPOLES: FURNISH AND INSTALL AS SPECIFIED AND SHOWN ON THE DRAWINGS.

5. SIGNAGE: FURNISH AND INSTALL AS SPECIFIED AND SHOWN ON THE DRAWINGS. COMPLY WITH REQUIREMENTS OF STATE, FEDERAL AND LOCAL CODES GOVERNING THE ACCOMMODATION OF THE PHYSICALLY DISABLED.

   A. TOILET ROOM IDENTIFICATION: PROVIDE ACCESSIBLE SIGNAGE ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR AT ALL ACCESSIBLE REST ROOMS.

   B. MECHANICAL ROOM IDENTIFICATION: PROVIDE ACCESSIBLE SIGNAGE ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR.

6. TOILET ROOM ACCESSORIES: FURNISH AND INSTALL COMPLETE THE ACCESSORIES AS SHOWN ON THE DRAWINGS.

7. FIRE EXTINGUISHERS AND CABINETS. FURNISH AND INSTALL AS SPECIFIED ON THE DRAWINGS.

   A. PUBLIC AREAS.

   FIRE EXTINGUISHERS AND CABINETS 24"H X 9-1/2"W X 6"D (INSIDE DIMENSION) RECESSED CABINETS SERIES SS-2409-R2 OR SERIES SS 2409-RM (SEMI-RECESSED WHERE WALL DEPTH WILL NOT ACCOMMODATE A FULLY RECESSED CABINET, FULL GLASS, STAINLESS STEEL TRIM, AS MANUFACTURED BY LARSENS MANUFACTURING CO., MINNEAPOLIS, MN (1-763-571-1181).

   EACH CABINET TO BE FURNISHED WITH ONE SENTRY MODEL SY0614 6 LB ANSUL FORAY DRY CHEMICAL AS MANUFACTURED BY THE ANSUL COMPANY, MARIONETTE, WI., J. L. RATING 3-A: 20-B:C.

   B. UTILITY AREAS.

   FURNISH AND INSTALL SURFACE MOUNTED BRACKET AND SENTRY SY0614 EXTINGUISHER.

8. BATHROOM ACCESSORIES: SEE DRAWINGS.

END OF SECTION

DIVISION 15 - MECHANICAL
PLUMBING

1. GENERAL CONDITIONS.

   A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

   B. FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND SERVICES FOR THE PLUMBING WORK SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN FOR INSTALLING, TESTING, ADJUSTING AND CONTROLS FOR APPROVED SATISFACTORY OPERATION OF THE SYSTEM.

   C. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR THE PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

   D. WITHOUT ADDITIONAL COST TO THE OWNER, PROVIDE SUCH OTHER LABOR AND MATERIALS AS ARE REQUIRED TO COMPLETE THE WORK OF THIS SECTION IN ACCORDANCE WITH THE REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION, REGARDLESS OF WHETHER SUCH MATERIALS AND ASSOCIATED LABOR ARE CALLED FOR ELSEWHERE IN THESE CONTRACT DOCUMENTS.

   E. PLUMBING DRAWINGS SHALL SERVE AS GENERAL LAYOUTS OF VARIOUS ITEMS OF EQUIPMENT, HOWEVER, DRAWINGS ARE DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED AND NOT NECESSARILY INDICATE EVERY DEVICE, FITTING, SUPPORT, HANGER, ETC. REQUIRED FOR COMPLETE INSTALLATION.

2. PERMITS AND TEMPORARY SERVICE. SEE SUPPLEMENTAL GENERAL CONDITIONS FOR REQUIREMENT.

3. WORK INCLUDED.

   A. LICENSES AND CERTIFICATES OF INSPECTION REQUIRED FOR THIS WORK. PERFORM ALL WORK IN ACCORDANCE WITH LOCAL, STATE, AND NATIONAL CODES AND REGULATIONS.

   B. NEW WASTE, VENT, AND WATER DISTRIBUTION SYSTEMS.

   C. FURNISHING AND INSTALLING PLUMBING FIXTURES.

   D. STORM WATER DRAINAGE.

   E. NEW DOMESTIC WATER SERVICE.

   F. THERMAL INSULATION OF THIS CONTRACTORS PIPING.

   G. DOMESTIC HOT WATER SYSTEM.

   H. ALL OTHER ITEMS OF WORK REQUIRED TO COMPLETE THE WORK INCLUDING CUTTING AND PATCHING, PIPES, VALVES, FITTINGS, OPERATING CONTROLS, DRAINS, CLEANOUTS, FLASHING, VACUUM

BREAKERS, DRAIN CONNECTIONS FOR OTHER TRADES, RIGGING AND EQUIPMENT MOVING, SHOCK ABSORBERS, CONTROLS, SUPPORTS, BASES, HANGERS, SLEEVES, ACCESS PANELS, VIBRATION AND NOISE ELIMINATORS, SET ALL SLEEVES AND HANGER SPECIALTIES DURING CONSTRUCTION SO AS NOT TO DELAY OTHER TRADES.

I. TESTING, BALANCING, CLEANING, DISINFECTING, FLUSHING, ETC., SYSTEMS INSTALLED.

J. EXTEND BUILDING SANITARY SEWERS AND CONNECT TO SITE MANHOLES AS SHOWN ON DRAWINGS.

K. CONNECTION OF EQUIPMENT FURNISHED BY OTHERS.

L. REDUCED PRESSURE BACKFLOW PREVENTER.

M. GAS PIPING.

4. WORK NOT INCLUDED.

A. ALL ELECTRIC WIRING INCLUDING FINAL CONNECTIONS TO ALL MOTORS.(ELECT. CTR.)

B. WATER HEATER FLUE: (MECHANICAL CONTRACTOR)

C. PAINTING.

D. BUILDING HOT WATER HEAT (MECH. CTR.)

5. GUARANTEE/WARRANTY.

SEE SUPPLEMENTAL GENERAL CONDITIONS.

6. TESTS.

A. WATER LINE SHALL BE HYDROSTATICALLY TESTED AT 125 PSI. VALVE OFF LINES TO BE RETESTED AND MAINTAIN PRESSURE CONSTANT FOR 24 HOURS.

B. OPERATIONAL TESTS SHALL BE MADE ON NEW EQUIPMENT, DEVICES AND FIXTURES TO DETERMINE PROPER COMPLIANCE WITH SPECIFICATIONS. ALL EQUIPMENT SHALL FUNCTION QUIETLY AND EFFICIENTLY. ANY UNDUE NOISE OR VIBRATION CAUSED BY MALFUNCTIONING OF PIPING, EQUIPMENT, ETC. SHALL BE PROMPTLY REPAIRED AND/OR CORRECTED BEFORE ACCEPTANCE. ANY PIECE OF APPARATUS, MATERIAL, OR WORK FAILING IN ANY OF THE ABOVE TESTS SHALL BE REMOVED IMMEDIATELY AS SPECIFIED WITHOUT EXPENSE TO OWNER.

C. GAS PIPING SHALL BE SUBJECTED TO 60 PSI AIR TEST, CHECK FOR LEAKS WITH SOAPY WATER. ALL PIPE TO BE BURIED SHALL BE TESTED PRIOR TO BACKFILLING.

7. PIPE INSULATION.

A. AFTER ALL PIPING HAS BEEN TESTED, FURNISH AND INSTALL THERMAL INSULATION ON HOT AND COLD-WATER PIPING. INSULATION SHALL BE CARRIED THROUGH SLEEVES, HANGERS, FITTINGS, VALVES, ETC.

B. COLD AND HOT WATER PIPING SHALL BE COVERED WITH 1/2" THICK 4 LB. NOMINAL DENSITY SECTIONAL MOLDED GLASS FIBER WITH DUAL SERVICE PAPER BARRIER LINER FURNISHED WITH 6 OZ. CANVAS JACKET NEATLY AND SECURELY PASTED ON OR FACTORY APPLIED WHITE FIRE RETARDANT VAPOR BARRIER, JOINTS SEALED WITH MATCHING TAPE. INSULATION SHALL BE OWENS-CORNING, CAREY (PERFECTO), OR APPROVED EQUAL.

8. AIR CUSHIONS. EACH SUPPLY RISER AND FIXTURE SUPPLY, INCLUDING HOT AND COLD WATER, SHALL HAVE A SEPARATE AIR CHAMBER NOT LESS THAN 12" LONG AND THE SAME SIZE AS SUPPLY TO FIXTURE, BUT NOT LESS THAN 1/2".

9. PIPING MATERIALS AND INSTALLATION

A. SANITARY.

(1) WASTE PIPING UNDERGROUND SHALL BE SERVICE WEIGHT CAST IRON SOIL PIPE W/ RUBBER GASKETED JOINTS OR CODE APPROVED SCHEDULE 40 PVC.

(2) WASTE PIPING ABOVE GROUND SHALL BE SERVICE WEIGHT CAST IRON (HUB LESS) COPPER OR CODE APPROVED SCHEDULE 40 PVC.

(3) VENTS SHALL BE STANDARD, GALVANIZED IRON PIPE SCHEDULE 40 ASTM-120, COPPER or CODE APPROVED SCHEDULE 40 PVC.

B. DOMESTIC WATER SERVICE. CLASS 3 DUCTILE IRON ENAMELED MECHANICAL JOINT WATER MAIN, FEDERAL SPECULATED WW-P-421, NOT LESS THAN 150 LBS. WWP.

C. WATER PIPING: TYPE L, HARD TEMPER, SEAMLESS, COPPER TUBING, ASTM B-88 WITH LEAD FREE SOLDER JOINTS PROVIDE DIELECTRIC UNIONS AT CHANGES IN PIPE MATERIALS. PROVIDE GATE VALVES AT EACH MAIN, EACH BRANCH, EACH RISER, EACH EQUIPMENT CONNECTION AND AS REQUIRED BY STATE PLUMBING CODE.

D. HANGERS AND SUPPORTS:

(1) HANGERS AND SUPPORTS SHALL NOT PENETRATE THE ROOF OR FLOOR DECKS. PROVIDE ALL NECESSARY PIPE HANGERS, AS REQUIRED, TO THOROUGHLY AND SUBSTANTIALLY SUPPORT ALL PIPING IN AN APPROVED MANNER, AS SPECIFIED HEREIN. AT EACH AND EVERY PIPE HANGER SUPPORTING INSULATED PIPING, PROVIDE AN APPROVED PIPE COVERING PROTECTION SLEEVE. ALL HORIZONTAL SUSPENDED PIPING SHALL BE SUPPORTED BY MEANS OF FULLY ADJUSTABLE STEEL CLEVIS HANGER AND STEEL ROD. MATERIAL SUPPORTING COPPER PIPING SHALL BE COPPER PLATED. WIRE OF STRAP HANGERS WILL NOT BE APPROVED.

(2) MAXIMUM SPACING OF HANGERS SHALL BE AS FOLLOWS:

PIPE SIZE	MAXIMUM C TO CC		MAX. DISTANCE
	STEEL	COPPER	TO ELBOW, WALL VALVE, EQUIP.
1/2 & 3/4	6'-0"	5'-0"	2'-0"

1"	7'-0"	6'-0"	2'-0"
1-1/2"	9'-0"	6'-0"	3'-0"
2"	10'0"	8'-0"	3'-0"
2-1/2"	11'-0"	10'0"	3'-0"
3"	12'-0"	10'-0"	3'-0"
4" & OVER	14'-0"	10'-0"	3'-0"
5" & OVER	16'-0"	10'-0"	3'-0"

(3) PLASTIC PIPE: HANGERS AND STRAPS SHALL NOT COMPRESS, DISTORT, CUT, OR ABRADE THE PIPING AND SHALL ALLOW FREE MOVEMENT OF THE PIPING. WIRE PIPE HOOKS SHALL NOT BE USED TO SUPPORT ANY PLASTIC PIPING. THE RESTRAINING JOINTS AND EXPANSION JOINTS SHALL BE INSTALLED AS REQUIRED. SUPPORT ALL PIPE AT INTERVALS OF NOT MORE THAN FOUR (4) FEET, AT END OF BRANCHES AND AT CHANGE OF DIRECTION OR ELEVATION. SUPPORTS SHALL ALLOW FREE MOVEMENT. SUPPORT TRAP ARMS IN EXCESS OF THREE (3) FEET AS CLOSE AS POSSIBLE TO THE TRAP. INSTALLATION SHALL BE AS PER APPROPRIATE STANDARDS AND MANUFACTURERS' INSTALLATION INSTRUCTIONS.

(4) HANGER RODS SHALL BE OF HOT DRAWN SOLID CARBON STEEL AND OF THE FOLLOWING SIZES.

PIPE SIZE	ROD DIM.
3/4" TO 2"	3/8"
2-1/2" TO 3"	1/2"
4" TO 5"	5/8"
6" AND ABOVE	3/4"

(5) ALL VERTICAL PIPES SHALL BE SUPPORTED BY HEAVY WROUGHT IRON CLAMPS OR COLLARS ANCHORED TO CONSTRUCTION AT EACH FLOOR.

(6) NO PIPE SHALL MAKE CONTACT WITH THE BUILDING OR REST ON A CEILING OR WALL SO AS TO TRANSMIT VIBRATION. PROVIDE SUPPLEMENTARY STEEL.

E. JOINTS AND CONNECTIONS:

(1) TIGHTNESS: ALL JOINTS AND CONNECTIONS SHALL BE MADE GAS AND WATER TIGHT. ALL EXPOSED THREADS ON FERROUS PIPE SHALL BE GIVEN A COAT OF LUBRICATE OR TAPE.

(2) CAULKED JOINTS: ALL CAULKED JOINTS SHALL BE FIRMLY PACKED WITH OAKUM, HEMP, OR COTTON BRAID AND SHALL BE

SECURED ONLY WITH CAULKING LEAD, NOT LESS THAN ONE INCH DEEP, WELL CAULKED. NO PAINT, VARNISH, OR PUTTY SEAL SHALL BE PERMITTED ON THE JOINTING MATERIAL UNTIL AFTER THE JOINT HAS BEEN TESTED AND APPROVED (IF PERMITTED BY LOCAL CODE, ASTM C-425, CLASS III JOINTS).

(3) SMOOTHLY REAM ALL CUT PIPE; CUT ALL THREADS STRAIGHT AND TRUE; APPLY BEST QUALITY THREAD COMPOUND OR TEFLON TAPE TO ALL MALE PIPE THREADS BUT NOT TO INSIDE THE FITTINGS; USE GRAPHITE ON AL CLEANOUT PLUGS.

(4) JOINTS BETWEEN VITRIFIED TILE PIPE AND CAST IRON PIPE SHALL BE CAULKED WITH OAKUM WITH CEMENT COLLAR.

(5) MAKE ALL JOINTS IN COPPER TUBE WITH LEAD FREE SOLDER APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. TUBING SHALL BE CUT WITH APPROVED CUTTER, AND INSIDE OF CUT EDGE SHALL BE REAMED. JOINTS SHALL BE CLEANED WITH FINE EMERY CLOTH BEFORE SOLDERING.

F. TRAPS:

(1) EVERY TRAP SHALL BE SELF-CLEANING, SHALL BE OF THE SAME NOMINAL SIZE AS THE DRAIN TO WHICH IT IS CONNECTED, AND SHALL CONFORM TO ACCEPTED STANDARD. ONLY "P" TRAPS ARE PERMITTED, EXCEPT TRAP STANDARDS MAY BE USED FOR SERVICE SINKS.

(2) THE MINIMUM SIZE (NOMINAL INSIDE DIAMETER) OF TRAP AND FIXTURE DRAIN FOR A GIVEN FIXTURE SHALL NOT BE LESS THAN SHOWN ON THE FOLLOWING TABLE:

FIXTURE TYPE	SIZE OF TRAP AND FIXTURE DRAIN (INCHES)
FLOOR DRAINS	3 AND/OR 4 AS SHOWN ON DRAWINGS
LAVATORIES	1-1/2

(3) FOR WATER CLOSETS AND OTHER FIXTURES WITH INTEGRAL TRAPS; FIXTURE DRAINS SHALL NOT BE SMALLER THAN FIXTURE TRAP OUTLET. SEE DRAWINGS FOR SIZES.

G. PIPE CLEANOUTS:

(1) CAST IRON WITH BRASS PLUGS OR SCREWED FITTINGS WITH BRASS PLUGS. COMMERCIAL WEIGHT.

(2) CLEANOUTS SHALL BE FULL SIZE OF PIPE FOR PIPE 4" OR SMALLER AND 4" FOR LARGER PIPES.

(3) CLEANOUTS IN FLOORS OR WALLS SHALL BE SET FLUSH IN THE CONSTRUCTION. CLEANOUTS IN WALLS SHALL HAVE CHROME PLATED WALL PLATES.

(4) FLOOR CLEANOUTS SHALL BE HEAVY DUTY, CAST IRON WITH RECESSED BRASS PLUGS. PROVIDE CLEANOUTS AT THE BOTTOM OF EACH SOIL AND WASTE RISER IN EASILY ACCESSIBLE LOCATIONS. CLEANOUTS SHALL BE PROVIDED AT THE END OF HORIZONTAL MAINS AND WHEREVER CHANGES ARE MADE IN THE DIRECTION OF SEWERS.

H. DRAINS AND SPECIALTIES:

(1) THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL DRAIN AND DRAINAGE SPECIALTIES AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED. WHERE THE TYPE OF DRAIN IS NOT SPECIFICALLY SPECIFIED FOR A GIVEN LOCATION, IT SHALL BE THE SAME AS USED ELSEWHERE IN SIMILAR LOCATIONS, ZURN, SMITH, JOSAM, OR WADE. PROVIDE LEAD FLASHING FOR UNITS IN SUPPORTED FLOORS. FLOOR DRAINS, DECK DRAINS, AREA DRAINS, ETC., INSTALLED WHERE THERE IS A WATERPROOF MEMBRANE SHALL HAVE FLASHING CLAMPS AND SHALL BE FLASHED WITH 4LB. SHEET LEAD FLASHING EXTENDING 12" IN ALL DIRECTIONS FROM THE EDGE OF THE DRAIN. REFER TO DRAWINGS FOR SCHEDULES OF DRAINS AND SIZES.

I. FLASHING FOR PIPES:

(1) FLASH AROUND EACH PIPE EXTENDING THROUGH ROOF. PER ROOF MEMBRANE MANUFACTURER SPECIFICATIONS.

(2) OFF SET PIPES AWAY FROM WALLS ENOUGH TO PERMIT FLASHING TO EXTEND 12 INCHES FROM PIPE.

J. SLEEVES AND INSERTS:

(1) PROVIDE PIPE SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, PARTITIONS, FLOORS, CEILINGS OR ROOFS. WHERE REQUIRED PROVIDE LINTELS AND REINFORCING WHERE MECHANICAL ELEMENTS PENETRATE STRUCTURAL ELEMENTS NOT PREVIOUSLY PROVIDED IN STRUCTURAL DOCUMENTS.

(2) SLEEVES SHALL BE 18 GAUGE GALVANIZED SHEET METAL OF SUFFICIENT LENGTH TO FINISH FLUSH WITH FINISHED SURFACES AT BOTH ENDS OF SLEEVES. SLEEVES SHALL BE NOT LESS THAN 1" THAN OUTSIDE DIAMETER OF PIPE. WHERE INSULATED PIPE PASSES THROUGH, SLEEVE SHALL BE OF SUFFICIENT SIZE TO PERMIT THE FULL SPECIFIED THICKNESS OF INSULATION TO PASS THROUGH THE SLEEVE.

(3) FLOOR SLEEVES IN EQUIPMENT ROOM FLOORS OR OTHER LOCATIONS WHERE FLOOR IS LIKELY TO BE WETTED SHALL BE GALVANIZED STEEL PIPE 3" ABOVE FLOOR. SLEEVES THROUGH EQUIPMENT ROOM WALLS AND FLOORS, SHALL HAVE THE NET OPENINGS PACKED WITH GLASS FIBER INSULATION AND BOTH ENDS OF SLEEVE CAULKED WITH WATERPROOF MASTIC TO PREVENT NOISE, DIRT, AIR AND WATER TRANSMISSION.

(4) WHERE PIPE PASS THROUGH FLOORS OR EXTERIOR WALLS, CAULK SLEEVES WITH OAKUM AND LEAD WOOL AT BOTH ENDS TO INSURE WATERPROOFING AROUND PIPE OR CONDUIT. PROVIDE ESCUTCHEON PLATE WHERE SLEEVES PENETRATED FINISHED WALL AND ETC.

(5) ALL SLEEVES SHALL BE SET TRUE TO LINE, LEVEL, PLUMB AND POSITION AND SHALL BE SO MAINTAINED DURING CONSTRUCTION. WHERE SLEEVE IS PROVIDED IN POURED CONCRETE, INSPECT SAME DURING AND AFTER CONCRETE IS POURED TO INSURE PROPER

POSITION AND CORRECT ANY DEVIATION.

(6) SLOTS, CHASES, OPENINGS AND RECESSES THROUGH FLOORS, WALL, CEILINGS AND ROOFS AS SHOWN ON ARCHITECTURAL PLANS WILL BE PROVIDED BY THE VARIOUS TRADES IN THEIR RESPECTIVE MATERIALS, BUT THE TRADE REQUIRING THEM SHALL SEE THAT THEY ARE PROPERLY LOCATED AND SHALL PROVIDE ANY CUTTING AND PATCHING CAUSED BY THE NEGLECT TO DO SO. SLOTS, CHASES., OPENINGS AND RECESSES NOT SHOWN ON ARCHITECTURAL PLANS SHALL BE CUT BY THE TRADE REQUIRING THEM AND PATCHED AND REPAIRED BY THAT TRADE, WITH ALL WORK PERFORMED BY THE PROPER TRADE CLASSIFICATION.

(7) WHERE PIPING, AND EQUIPMENT IS TO BE SUSPENDED FROM POURED CONCRETE CONSTRUCTION, PROVIDE APPROVED SWIVEL TYPE CONCRETE INSERTS IN THE FORM WORK. PHILLIPS, OR APPROVED EQUAL, EXPANSION SHIELDS MAY BE USED ON PRECAST CONCRETE MEMBERS BUT NOT CLOSER THAN 2" FROM EDGE.

(8) ANCHOR BOLTS, SLEEVES, INSERTS AND SUPPORTS THAT MAY BE REQUIRED FOR THE MECHANICAL WORK SHALL BE FURNISHED UNDER THE SAME SECTION OF THE SPECIFICATIONS AS THE RESPECTIVE ITEMS TO BE SUPPORTED, AND THEY SHALL BE INSTALLED, EXCEPT AS OTHERWISE SPECIFIED, BY THE TRADE FURNISHING AND INSTALLING THE MATERIAL IN WHICH THEY ARE TO BE LOCATED.

K. SOIL, WASTE AND VENT LINES:

(1) THE DRAINAGE AND VENT PIPING SHOWN SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. VENTS SHALL EXTEND THROUGH ROOF NOT LESS THAN 8 INCHES. PIPING SHALL BE ASSEMBLED AND INSTALLED WITHOUT UNDUE STRAINS OR STRESSES, AND PROVISIONS SHALL BE MADE FOR EXPANSION, CONTRACTION, AND STRUCTURAL SETTLEMENT.

(2) BRANCH SOIL, WASTE AND VENT CONNECTIONS SHALL BE RUN TO THE SOIL STACK, WASTE STACK, BUILDING DRAIN OR VENT STACK AS SHOWN.

(3) VENT FROM ANY FIXTURES, WHEN CONNECTED TO A VENT LINE SERVING THE OTHER FIXTURES, SHALL BE EXTENDED AT LEAST 6 INCHES ABOVE, THE TOP MOST PLANE OR FIXTURES ON WHICH THE VENT IS TO BE CONNECTED.

(4) INSTALLATION OF PIPING: HORIZONTAL DRAINAGE PIPING SHALL BE RUN ON PRACTICAL ALIGNMENT AND SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING TEN FEET.

(5) CHANGES IN DIRECTION: CHANGES IN DIRECTION OF DRAINAGE PIPING SHALL BE MADE BY THE APPROPRIATE USE OF 45 DEGREE Y'S, QUARTER, SIXTH, EIGHTS, OR SIXTEENTH BENDS, OR BY COMBINATION OF THESE FITTING OR BY USE OF EQUIVALENT FITTINGS, OR THEIR COMBINATIONS; EXCEPT THAT SANITARY TEES MAY BE USED IN VERTICAL SECTIONS OF DRAINS OR STACKS WHERE THE CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. TEES AND CROSSES MAY BE USED IN

VENT PIPES. NO CHANGE IN DIRECTION GREATER THAN 90 DEGREES IN A SINGLE TURN SHALL BE MADE IN DRAINAGE PIPES.

(6) PROHIBITED FITTINGS: NO DOUBLE HUB, OR DOUBLE TEE BRANCH SHALL BE USED ON SOIL OR WASTE LINES. THE DRILLING AND TAPPING OF BUILDING DRAINS, SOIL, WASTE, OR VENT PIPES, AND THE USE OF SADDLE HUBS OR BENDS ARE PROHIBITED.

L. PROHIBITED CONNECTIONS:

(1) NO FIXTURE, DEVICE OR CONSTRUCTION SHALL BE INSTALLED WHICH WILL PROVIDE A BACKFLOW CONNECTION BETWEEN A DISTRIBUTION SYSTEM OF WATER FOR DRINKING AND DOMESTIC PURPOSES AND A DRAINAGE SYSTEM, SOIL OR WASTE PIPE SO AS TO PERMIT OR MAKE POSSIBLE THE BACKFLOW OF SEWAGE OR WASTE INTO WATER SUPPLY SYSTEM.

10. SANITARY FIXTURES AND EQUIPMENT.

A. SUBMIT MANUFACTURER'S "CUTS" SHOWING ROUGH-IN DATA, COLOR, AND APPEARANCE OF FIXTURES AND FITTINGS FOR ARCHITECT'S APPROVAL BEFORE ORDERING. (SEE SUPPLEMENTAL GENERAL CONDITIONS)

B. FURNISH AND INSTALL NEW PLUMBING FIXTURES, HOT WATER HEATER, FLOOR DRAINS, HOSE BIBBS, AND FITTINGS AS SHOWN ON THE PLUMBING DRAWINGS AND AS SPECIFIED THEREIN.

C. PROVIDE LOOSE KEY ANGLE STOPS ON ALL FIXTURES. ALL EXPOSED PIPING TO BE CHROME PLATED.

D. PLUMBING FIXTURES SHALL BE COMPLETE WITH REQUIRED TRIM, FAUCETS, AND WASTE PLUGS, ALSO TRAPS AND SUPPLIES, STOP VALVES, ESCUTCHEONS, FREE FROM WARP, CRACKS, CHECKS, DISCOLORATION OR OTHER IMPERFECTIONS. SEE FIXTURE SCHEDULE ON DRAWINGS FOR MANUFACTURER'S SETTING THE SPECIFIED LEVEL OF QUALITY. ALTERNATE MANUFACTURER AND THEIR TYPES WILL BE CONSIDERED FOR APPROVAL BY ARCHITECT. (SEE SUPPLEMENTAL GENERAL CONDITIONS).

E. ALL FLOOR DRAINS ARE TO HAVE CONNECTION TO AUTOMATIC TRAP PRIMER FROM THE NEAREST SINK.

11. WATER DISTRIBUTION SYSTEMS:

A. ALL HOT AND COLD-WATER DISTRIBUTION PIPING INSIDE OF THE BUILDING IS INCLUDED AS PART OF THE WORK OF THIS SECTION.

B. MAKE PROVISIONS FOR EXPANSION OF ALL HOT WATER PIPING.

C. MAKE FINAL POTABLE OR DOMESTIC HOT AND COLD WATER CONNECTIONS TO EACH PLUMBING FIXTURE, WATER HEATER, HOSE BIB NON-FREEZE HYDRANT OR ANY OTHER EQUIPMENT REQUIRING POTABLE WATER.

D. VALVES SHALL BE INSTALLED IN ALL RISER CONNECTIONS FROM THE HOT AND COLD-WATER MAINS AND IN ALL MAIN HORIZONTAL BRANCH LINES AT CEILINGS WHERE THEY SERVE FIXTURE GROUPS. EACH FIXTURE SHALL BE PROVIDED WITH LOCAL STOPS.

E. THE SIZE OF COLD WATER AND HOT WATER CONNECTIONS TO EACH FIXTURE SHALL BE AS FOLLOWS:

FIXTURE TYPE	COLD WATER (MINIMUM)	HOT WATER
LAVATORIES	1/2"	1/2"
SHOWER	1/2"	1/2 "
WATER CLOSETS (TANK TYPE)	1/2"	NONE
KITCHEN SINKS	1/2"	1/2"
MOP BASIN	3/4"	3/4"
URINALS	1"	NONE
ELECTRIC WATER COOLER	1/2"	NONE

NO HOT OR COLD-WATER BRANCH SUPPLY PIPING TO FIXTURE SHALL BE LESS THAN 1/2" SIZE.

F. ALL WATER PIPING SHALL PITCH TO DRAIN AND VENT WITH A 3/4" DRAIN VALVE OR BRASS PLUG AT EVERY LOW POINT. INSTALL UNIONS IN ALL CONNECTIONS TO APPARATUS AND ADJACENT TO SCREWED AND SOLDERED VALVES. NO UNION SHALL BE INSTALLED IN AN INACCESSIBLE LOCATION.

G. HOSE BIBBS: INTERIOR HOSE BIBBS SHALL BE 3/4" COMPLETE WITH VACUUM BREAKER.

H. VALVES: ALL VALVES SHALL BE CONSTRUCTED FOR NOT LESS THAN 125 PSI STEAM WORKING PRESSURE. VALVES LARGER THAN 2" SHALL BE IRON BODY, BRONZE MOUNTED. VALVES 2" AND SMALLER SHALL BE BRONZE. ALL VALVES SHALL HAVE RISING STEMS. VALVES SHALL BE POWELL, LUNKENHEIMER, CRANE OR STOCKHAM, EQUIVALENT TO FOLLOWING POWELL NUMBER, EXCEPT AS OTHERWISE SPECIFIED.

(1) GATE VALVES: POWELL NO 2700 UNION BONNET, DOUBLE WEDGE THROUGH 2" NO. 1793 CAST IRON, BRONZE TRIM, RENEWABLE SEAT, SOLID WEDGE OVER 2" (CRANE NO. 418UB AND 465 1/2 OR LUNKENHEIMER NO. 3123 AND 1430). SEE NOTE BELOW ON BALL VALVES.

(2) GATE VALVES: POWELL NO 150 AND 241 SERIES AS APPLICABLE (CRANE NO. 7 AND 531 OR LUNKENHEIMER NO. 123 AND 1123).

(3) CONVENTIONAL CHECK VALUES: POWELL NO. 559 AND 560 AS APPLICABLE (CRABE NO. 373 AND 36 OR LUNKENHEIMER NO. 1790 AND 554).

(4) APPROVED FOR USE ON VARIOUS SERVICES ARE FOLLOWING ALTERNATIVE VALVES:

a. BUTTERFLY 2" AND SMALLER: MILWAUKEE #BB-1.

b. BALL VALVES 2" AND SMALLER: CRANE #2180, OR NIBCO #P-580ABR-20.

12. EXISTING UNDERGROUND SERVICES.

FIELD VERIFY AND EXTEND THE UNDERGROUND SERVICE FROM POINTS INDICATED ON ENGINEERING DRAWINGS. FURNISH ALL NECESSARY VALVES, FITTINGS, AND CONNECTIONS REQUIRED FOR SAME. PRIOR TO STARTING CONSTRUCTION, COORDINATE WITH SITE UTILITIES CONTRACTOR EXACT LOCATION AND EXTENT OF EXISTING SERVICE MAINS.

13. VALVE TAGS:

A. PROVIDE VALVE NUMBER TAGS ON ALL VALVES, BRASS OR ALUMINUM WITH STAMPED NUMERALS INLAID WITH BLACK. TAGS 1-1/4" DIAMETER WITH 3/4" HIGH BOLD LETTERS. BRASS LINKS ON TAGS FOR ATTACHING TO VALVES. RANGE OF NUMBERS TO BE AS DIRECTED IN ORDER TO AVOID CONFUSION WITH TAGS FOR OTHER TRADES.

B. PROVIDE TWO (2) TYPE VALVE DIRECTORIES UNDER GLASS IN WOOD FRAME ANCHORED TO WALL WHERE DIRECTED. FUNCTION AND LOCATION OF EACH VALVE SHALL BE ADEQUATELY DESCRIBED. PROVIDE ADDITIONAL DIRECTORIES AS PART OF AS-BUILT DRAWINGS SUBMITTED.

14. EXCAVATION AND BACKFILLING: THIS CONTRACTOR TO EXCAVATE FOR HIS WORK REMOVING CUT MATERIAL FROM BUILDING, BACKFILL TRENCHES IN BUILDING WITH SAND, PLACED AND COMPACTED IN MAXIMUM 8" LIFTS.

15. EXECUTION

A. PLUMBING SYSTEM LAYOUT

(1) GENERAL:

LAY OUT THE PLUMBING SYSTEM IN CAREFUL COORDINATION WITH THE BUILDING STRUCTURE AND SHOP DRAWINGS, DETERMINING PROPER ELEVATIONS FOR ALL COMPONENTS OF THE SYSTEM USING ONLY THE MINIMUM NUMBER OF BENDS TO PRODUCE A SATISFACTORILY FUNCTIONING SYSTEM.

FOLLOW THE GENERAL LAYOUT SHOWN ON THE APPROVED SHOP DRAWINGS IN ALL CASES, EXCEPT WHERE OTHER WORK MAY INTERFERE

(2) ENCLOSURE OF PIPES:

EXCEPT WHERE SPECIFICALLY PERMITTED BY THE ARCHITECT, LAY OUT ALL PIPES TO FALL WITHIN PARTITION, CEILING OR ROOF CAVITIES AND TO NOT REQUIRE FURRING OTHER THEN THAT SHOWN ON THE APPROVED SHOP DRAWINGS. RECEIVE ARCHITECT'S DIRECTION WHERE REQUIRED.

B. INSTALLATION OF PIPING AND EQUIPMENT

(1) INSTALL ALL PIPING PROMPTLY, CAPPING OR PLUGGING ALL OPEN ENDS AND MAKING PIPE GENERALLY LEVEL AND PLUMB, FREE FROM TRAPS, AND IN A MANNER TO CONSERVE SPACE FOR OTHER WORK.

(2) PROVIDE UNIFORM PITCH OF AT LEAST 1/8" PER FOOT FOR ALL HORIZONTAL WASTE AND SOIL PIPING WITHIN THE BUILDING; PITCH ALL VENTS FOR PROPER DRAINAGE; INSTALL VENT PIPING WITH EACH BEND 45 DEGREES MINIMUM FROM THE HORIZONTAL WHEREVER STRUCTURAL CONDITIONS WILL PERMIT.

(3) CUSHION ALL TRAPS AND BEARINGS TO MINIMIZE TRANSFER OF SOUND; FIRMLY ANCHOR ALL PIPES IN POSITION; PROVIDE COMPLETE ISOLATION OF DISSIMILAR METALS; PROVIDE AIR CHAMBER AT ALL FIXTURES WITH ALL CHAMBERS 12" MINIMUM LENGTH AND SAME DIAMETER AS THE BRANCH.

(4) INSPECT EACH PIECE OR PIPE, TUBING, FITTINGS, AND EQUIPMENT FOR DEFECTS AND OBSTRUCTIONS; PROMPTLY REMOVE ALL DEFECTIVE MATERIAL FROM THE JOB SITE.

(5) INSTALL PIPES TO CLEAR ALL BEAMS AND OBSTRUCTIONS; DO NOT CUT INTO OR REDUCE THE SIZE OF LOAD CARRYING STRUCTURAL MEMBERS WITHOUT THE APPROVAL OF THE ARCHITECT/ENGINEER.

C. STERILIZATION OF PIPES

(1) GENERAL: AFTER PRELIMINARY PURGING OF THE SYSTEM, CHLORINATE THE ENTIRE POTABLE WATER SYSTEM IN ACCORDANCE WITH THE CURRENT RECOMMENDATIONS OF THE AMERICAN WATER WORK ASSOCIATION, ALL PERTINENT CODES AND REGULATIONS, AND THE LOCAL WATER DEPARTMENT.

CHLORINATE ONLY WHEN SCHEDULED AND COORDINATED WITH THE ARCHITECT.

(2) FLUSHING: UPON COMPLETION OF THE STERILIZATION, THOROUGHLY FLUSH THE ENTIRE POTABLE WATER SYSTEM AND ARRANGE WITH PERTINENT AGENCIES FOR ALL REQUIRED TESTS ON MAINS AND SYSTEMS.

THE DISINFECTING AND FLUSHING PROCEDURE SHALL BE REPEATED AS DIRECTED UNTIL A LABORATORY BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES INDICATES THAT THE SYSTEM IS FREE FROM CONTAMINATION, AS APPROVED BY THE LOCAL WATER AUTHORITIES.

D. CLOSING IN UNINSPECTED WORK

(1) GENERAL: DO NOT COVER UP OR ENCLOSE WORK UNTIL IT HAS BEEN PROPERLY AND COMPLETELY INSPECTED AND APPROVED BY LOCAL GOVERNING AGENCIES, ARCHITECT AND OWNER REPRESENTATIVE.

(2) NONCOMPLIANCE: SHOULD ANY WORK BE COVERED UP OR ENCLOSED

PRIOR TO ALL REQUIRED INSPECTIONS AND APPROVALS, UNCOVER THE WORK AS REQUIRED AND, AFTER IT HAS BEEN COMPLETELY INSPECTED AND APPROVED, MAKE ALL REPAIRS AND REPLACEMENTS WITH SUCH MATERIALS AS ARE NECESSARY TO THE APPROVAL OF THE ARCHITECT AND AT NO ADDITIONAL COST TO THE OWNER.

E. TESTS

(1) THE VARIOUS PIPING SYSTEMS SHALL BE TESTED AS SPECIFIED IN THE PRESENCE OF THE ARCHITECT OR OWNER'S REP.

(2) ALL SOIL, WASTE AND VENT PIPING SHALL BE TESTED BY FILLING WITH WATER UNDER A MINIMUM HEAD OF 20 FEET.

(3) ALL WATER PIPING ABOVE GROUND SHALL BE TESTED WATER AND PROVEN TIGHT UNDER A PRESSURE OF 100 PSI BEFORE INSULATION IS APPLIED.

(4) ANY OTHER TESTS REQUIRED BY LOCAL AUTHORITIES SHALL BE PERFORMED BY THIS CONTRACTOR.

(5) COMPRESSED AIR MAY BE USED FOR PRESSURE TESTS ON WATER PIPING IF SPECIAL PERMISSION IS OBTAINED: IN WHICH CASE, LEAKS SHALL BE DETERMINED BY BRUSHING JOINTS WITH SOAP SUDS.

(6) FURNISH ALL REQUIRED PERSONNEL AND EQUIPMENT AND MAKE ALL TESTS REQUIRED TO RECEIVE THE APPROVAL OF THE ARCHITECT AND ALL AGENCIES HAVING JURISDICTION.

F. CLEANING UP AND PROTECTION OF WORK

(1) PRIOR TO ACCEPTANCE OF THE BUILDINGS, THOROUGHLY CLEAN ALL EXPOSED PORTIONS OF THE PLUMBING INSTALLATION, REMOVING ALL LABELS AND ALL TRACES OF FOREIGN SUBSTANCE, USING ONLY A CLEANING SOLUTION APPROVED BY THE MANUFACTURER OF THE PLUMBING ITEM AND BEING CAREFUL TO AVOID ALL DAMAGE TO FINISHED SURFACES.

(2) THIS CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER PROTECTION OF ALL PLUMBING FIXTURES AND PIPING FROM DAMAGE OR INJURY DURING THE CONSTRUCTION PERIOD. PROTECTIVE COVERING SHALL BE PROVIDED FOR THIS PURPOSE WHERE NECESSARY.

(3) BEFORE ANY FIXTURES OR TRIM ARE INSTALLED, ALL WATER PIPING SHALL BE THOROUGHLY FLUSHED OUT WITH WATER TO REMOVE ALL DIRT, OIL, CHIPS OR OTHER FOREIGN MATTER.

(4) UPON COMPLETION OF THE JOB, THIS CONTRACTOR SHALL REMOVE ALL PROTECTIVE COVERING FROM FIXTURES AND THOROUGHLY CLEAN AND POLISH ALL FIXTURES AND CHROME TRIM.

END OF SECTION

DIVISION 15 - MECHANICAL
HEATING, VENTILATING, & AIR CONDITIONING SYSTEM

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. WORK INCLUDED: PROVIDE ALL LABOR, MATERIAL, EQUIPMENT AND TRANSPORTATION NECESSARY FOR HEATING, VENTILATING, AIR CONDITIONING, AND EXHAUST SYSTEMS WHERE SHOWN ON THE DRAWINGS, AS SPECIFIED HEREIN, AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION INCLUDING, BUT NOT NECESSARILY LIMITED TO:

(1) HEATING AND VENTILATION SYSTEMS, DAMPERS, DAMPER OPERATORS, MOUNTING FRAME, OPERATING, AND SAFETY CONTROLS, BLOWERS, MOTORS, FILTERS, AND RELATED ITEMS;

(2) SUPPLY AND RETURN DUCTWORK SYSTEM WITH GRILLES, DIFFUSERS, AND REGISTERS;

(3) EXHAUST SYSTEMS INCLUDING, BUT NOT NECESSARILY LIMITED TO, TOILET ROOMS WITH FANS, MOTORS, DUCTWORK, GRILLES, REGISTERS, CONTROLS, AND RELATED ITEMS;

(4) TEMPERATURE CONTROL SYSTEM INCLUDING AIR FLOW CONTROL SYSTEMS; NEW CONTROL AIR COMPRESSOR AND SMOKE EVACUATION.

(5) MOTORS AS REQUIRED INCLUDING STARTER AND DISCONNECT UNLESS NOTED OTHERWISE.

(6) ACOUSTICAL AND THERMAL INSULATION OF DUCTS, PIPING, AND EQUIPMENT.

(7) COORDINATION OF NEW SYSTEMS WITH EXISTING STRUCTURAL ITEMS AND LIGHTING LAYOUT. EXISTING SYSTEMS TO REMAIN AND WORK OF OTHER TRADES.

(8) START UP TESTING, BALANCING AND ONE YEAR WARRANTY.

C. RELATED WORK DESCRIBED ELSEWHERE:

(1) DOCUMENTS AFFECTING WORK OF THIS SECTION INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, GENERAL CONDITIONS, AND SUPPLE-MENTAL GENERAL CONDITIONS.

(2) ALL ELECTRIC WIRING BETWEEN POWER CENTERS, MOTORS AND THEIR STARTERS WILL BE PROVIDED UNDER THE ELECTRICAL WORK SECTIONS. THE MOTOR STARTERS WILL BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

2. QUALITY ASSURANCE:

A. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY

CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

B. WITHOUT ADDITIONAL COST TO THE OWNER, PROVIDED SUCH OTHER LABOR AND MATERIALS AS ARE REQUIRED TO COMPLETE THE WORK OF THIS SECTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE GOVERNMENTAL AGENCIES HAVING JURISDICTION, REGARDLESS OF WHETHER SUCH MATERIALS AND ASSOCIATED LABOR ARE CALLED FOR ELSEWHERE IN THESE CONTRACT DOCUMENTS.

3. SUBMITTALS SHOP DRAWINGS:

A. GENERAL: COMPLY WITH PROVISIONS OF THE SUPPLEMENTAL GENERAL CONDITIONS.

CONTRACTOR SHALL OBTAIN ARCHITECT'S APPROVAL ON ALL THE WORK BEFORE ANY EQUIPMENT IS PURCHASED, OR ANY WORK IS FABRICATED OR INSTALLED.

4. RECORD DRAWINGS:

A. COMPLY WITH PERTINENT PROVISIONS OF THE SUPPLEMENTAL GENERAL CONDITIONS.

5. PRODUCT HANDLING:

A. COMPLY WITH PERTINENT PROVISIONS OF THE GENERAL AND SUPPLEMENTAL GENERAL CONDITIONS.

6. MOTORS:

A. THE ELECTRICAL CURRENT CHARACTERISTICS, UNLESS OTHERWISE SPECIFIED, ARE 120 VOLT, SINGLE PHASE, 60 HERTZ; 208 VOLT, 3 PHASE, 60 HERTZ.

B. CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED MOTORS FOR ALL EQUIPMENT INCLUDED UNDER THIS SECTION OF THE WORK. UNLESS OTHERWISE SPECIFIED OR MODIFIED, ALL MOTORS SHALL BE IN ACCORDANCE WITH THE FOLLOWING - AS MANUFACTURED BY:

--GENERAL ELECTRIC

--ALLIS-CHALMERS

--LOUIS-ALLIS

--WESTINGHOUSE

C. ALL MOTORS SHALL BE NEMA STANDARD, DESIGNED OF AMPLE SIZE TO OPERATE AT THEIR PROPER LOAD AT FULL SPEED, CONTINUOUSLY, WITHOUT CAUSING NOISE OR VIBRATION OR TEMPERATURE RISE IN EXCESS OF THEIR RATING.

D. MOTORS LESS THAN 1/2 H.P. SHALL BE WOUND FOR 115 VOLTS, SINGLE PHASE, 60 HERTZ OPERATION AND SHALL BE OF THE CAPACITOR, OPEN DRIP-PROOF TYPE AND SHALL BE EQUIPPED

WITH OIL LUBRICATED BALL BEARINGS.

E. ALL MOTORS 1/2 H.P. AND LARGER, UNLESS OTHERWISE SPECIFIED, SHALL BE WOUND FOR 208, 240, 3 PHASE, 60 HERTZ AND SHALL BE SQUIRREL CAGE TYPE NEMA DESIGN B, NORMAL CURRENT INRUSH AND NORMAL STARTING TORQUE, OPEN DRIP-PROOF TYPE, QUIET OPERATING, AND SHALL BE EQUIPPED WITH BALL BEARINGS, UNLESS NOTED OTHERWISE.

F. MOTORS OF WINDINGS FOR VOLTAGES OTHER THAN SPECIFIED BUT WITH NAMEPLATE RATINGS CORRESPONDING TO SPECIFICATION REQUIREMENTS ARE NOT ACCEPTABLE.

(1) NO MOTOR SPEED SHALL EXCEED 1750 RPM UNLESS OTHERWISE SPECIFIED.

(2) PROVIDE BELTED MOTORS WITH SLIDE RAILS, ADJUSTING SCREW, PIPE SLEEVES, ANCHOR BOLTS AND CAST IRON BED PLATES.

(3) ALL MOTORS SHALL BE ESPECIALLY CONSTRUCTED WITH INSULATED HOUSING AND HEAVY-DUTY BEARINGS TO COMPLY WITH STANDARDS OF QUIET OPERATION. MOTOR CASING AND END BELLS SHALL BE OF CAST IRON.

7. PIPING:

A. HEATING PIPE - STEEL: SCHEDULE 40 STANDARD WEIGHT BLACK - A-120 BUTT WELD.

B. HEATING FITTINGS - STEEL: BLACKMALLEABLE STANDARD 150 POUND SCREWED FOR PIPING UP AND INCLUDING 2 INCHES. ALL UNIONS TO BE 250 POUND. ALL PIPING 2-1/2 AND ABOVE TO BE WELDED STANDARD 150 POUND WELDING FITTINGS.

C. HEATING PIPING: TYPE L COPPER; HARD DRAWN LENGTHS WITH 95-5 SOLDER JOINTS; CAST OR WROUGHT FITTINGS.

8. VALVES:

GATE - 0-2" - CRANE 424 SCREWED.

2-1/2-6" - CRANE 465-1/2 FLANGED.

GLOBE - 0-2" - CRANE 88 SCREWED.

CHECK - 0-2" - CRANE 37 SCREWED.

COCKS - 0-2" - CRANE 80E WITH WRENCH.

2-1/2-4" - CRANE 325 WITH WRENCH.

BUTTERFLY - DURCO BX2L LUGGED BODY LEVER HANDLE

BALL - APPOLO SERIES 70

SOLDER JOINT-GATE - CRANE 1320.

-GLOBE- CRANE 1310.

SPECIALTY HEATING - BELL & GOSSET CIRCUIT SETTER.

THERMOMETERS - TRERICE BX91403-1/2.

PRESSURE GAUGES - MARSH 4-1/2" DIAL.

9. INSULATION:

A. THE WORK INCLUDED UNDER THIS HEADING INCLUDES THE FURNISHING OF ALL LABOR, MATERIALS PROTECTION, ETC., FOR A COMPLETE INSULATION JOB, INCLUDING EXTERNAL DUCT COVERING, INTERNAL DUCT LINING, PIPE COVERING, REFRIGERATION AND CONDENSATE COVERING.

B. DUCTWORK:

1. EXHAUST DUCT: UNINSULATED.

2. CASINGS: LINE ALL CASINGS WITH 1 INCH 4 POUND DUCT LINER WITH VINYL FACE. PIN DUCT LINER 12 INCHES CENTERS.

10. AIR OUTLETS:

A. CEILING LAY-IN SUPPLY DIFFUSERS: PLAQUE TYPE WITH OPPOSED BLADE DAMPER AND 4-WAY PATTERN.

B. RETURN GRILLES & REGISTERS: METALAIRE SERIES 7000 WITH OPPOSED BLADE DAMPERS.

11. HEATING, VENTILATION, AND AIR CONDITIONING UNITS: (

A. VENTILATING UNITS: (SEE DRAWINGS)

12. FABRICATION VENTILATION AND SHEET METAL:

A. THE SHEET METAL CONSTRUCTION WORK REQUIRED WILL BE PERFORMED IN STRICT ACCORDANCE WITH S.M.A.C.N.A. HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE LATEST EDITION. COPIES OF THE STANDARDS MAY BE OBTAINED FROM THE SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION; 8224 OLD COURT HOUSE ROAD, TYSONS CORNER, VIENNA, VA 22180. ALL ROUND DUCT SHALL BE SPIRAL DUCT WITH FITTINGS MANUFACTURED BY THE SPIRAL CONTRACTOR. UNITED AND SIMCO ARE APPROVED CONTRACTORS.

13. ALIGNMENT OF ROTATING EQUIPMENT:

A. ALL PUMPS OR SIMILAR EQUIPMENT DIRECTLY CONNECTED TO MOTORS BY MEANS OF FLEXIBLE COUPLINGS MUST BE PERFECTLY ALIGNED AFTER INSTALLATION BY THE USE OF A DIAL INDICATOR, AND THE WORK OF ALIGNMENT MUST BE PERFORMED BY A CRAFTSMAN SKILLED IN THE WORK. THE MANUFACTURER OF THE EQUIPMENT SHALL PROVIDE THE SERVICES OF A FACTORY TRAINED

WORKMAN TO SUPERVISE ALIGNING AND START-UP AND SHALL NOTIFY THE ARCHITECT BY LETTER WHEN THIS HAS BEEN ACCOMPLISHED.

B. BEFORE ANY ROTATING EQUIPMENT IS PUT IN OPERATION FOR TESTING PURPOSES, IT SHALL BE PROPERLY LUBRICATED WITH LUBRICANTS ONLY AS RECOMMENDED BY THE MANUFACTURER. THEY SHALL BE FURTHER LUBRICATED BEFORE EQUIPMENT IS TURNED OVER TO THE OWNER. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE SCHEDULE OF LUBRICATION OF ALL ROTATING EQUIPMENT HE INSTALLS.

14. DUCT WORK CLEANING:

A. CONTRACTOR SHALL THOROUGHLY CLEAN ALL DUCTWORK CHAMBERS, FANS, ETC., MANUALLY. AFTER THIS IS DONE, BLOW OUT THE SYSTEMS WITH A BUILT-UP VELOCITY SO AS TO PROPERLY CLEAN THE INTERIOR OF ALL DUCTWORK, LEAVING SAME FREE OF ALL FOREIGN MATTER. THE CLEANING WORK SHALL BE DONE BEFORE ANY PAINTING IS DONE AND BEFORE CEILINGS ARE INSTALLED.

15. OPERATING INSTRUCTIONS, RECORD DRAWINGS, EQUIPMENT MANUALS ETC. (SEE SUPPLEMENTAL GENERAL CONDITIONS.)

16. CLEANING - GENERAL: SEE SUPPLEMENTAL GENERAL CONDITIONS.

17. GUARANTEES: SEE SUPPLEMENTAL CONDITIONS.

18. PROJECT CERTIFICATION: SEE SUPPLEMENTAL GENERAL CONDITIONS.

END OF SECTION

DIVISION 15 – FIRE PROTECTION
FIRE PROTECTION DRY

1. SCOPE OF WORK.

A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

B. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES FOR THE FIRE PROTECTION SYSTEM IN FULL CONFORMITY WITH THE REQUIREMENTS OF LOCAL CODES AND INSURING AGENCY, WHOSE APPROVAL OF THE ENTIRE INSTALLATION AND ITS COMPONENTS SHALL BE A CONDITION PRECEDENT TO THE FINAL ACCEPTANCE OF THE WORK.

3. PERMITS. SEE SUPPLEMENTAL GENERAL CONDITIONS FOR REQUIREMENT.

4. WORK INCLUDED. THE WORK SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING PRINCIPAL ITEMS.

A. REMODELING OF EXISTING DRY PIPE SPRINKLER SYSTEMS THROUGHOUT BUILDING'S OCCUPIED SPACE AS INDICATED ON THE DRAWINGS AND EXTENSION OF THE EXISTING SYSTEM.

B. CUTTING AND PATCHING HOLES IN STRUCTURE.

C. INSTALLATION CERTIFICATE.

D. DRY PIPE VALVE AND OS&Y.

5. WORK NOT INCLUDED.

A. INCOMING WATER SUPPLY LINE (SITE UTILITY CONTRACTOR).

B. ELECTRICAL CONNECTION OF ALARM BELLS AND FLOW SWITCH. (ELECTRICIAN)

6. CODES AND CERTIFICATION.

A. WORK SHALL BE INSTALLED IN CONFORMANCE WITH LATEST APPLICABLE CODES OF NFPA PAMPHLET 13, (INSTALLATION OF SPRINKLER SYSTEM) AND IN ACCORD WITH THE REQUIREMENTS OF FACTORY MUTUAL. SUBMIT WRITTEN ACKNOWLEDGMENT TO ARCHITECT.

B. PROVIDE COPIES OF PRESSURE TEST CERTIFICATE ON COMPLETION OF SYSTEM.

C. PREPARE DETAILED SHOP DRAWINGS OF THE PROPOSED SYSTEM. SUBMIT THESE DRAWINGS TO AND OBTAIN APPROVAL FROM FIRE MARSHAL, GOVERNING FIRE DEPARTMENT AND ANY OTHER GOVERNING AGENCY HAVING JURISDICTION.

D. MECHANICAL CONTRACTOR'S DUCTS TO HAVE PRIORITY OF LOCATION. VERIFY CEILING HEIGHTS/CLEARANCES.

7. TESTS. MAKE THE SPECIFIED PRESSURE TESTS ON ALL PIPING INCLUDED

UNDER THIS DIVISION OF THE SPECIFICATIONS. ALL TESTS SHALL BY MADE BEFORE PIPING IS COVERED OR CONCEALED. HYDROSTATICALLY TEST ALL PIPE AT 200 PSI FOR 2 HOURS AND ASSURE NO LEAKS, OR AS REQUIRED BY LOCAL CODE.

8. MATERIALS.

A. PIPING.

(1) PIPE SCHEDULE 40, ASTM-12 STEEL CONFORMING TO ASA-B-36.10, BLACK FOR INTERIOR USE.

(2) FITTINGS SHALL BE CAST IRON, BLACK UL PATTERN SCREW 175 LBS.

(3) FITTINGS 6" AND LARGER MAY BE FLANGED, CAST IRON 175 LBS.MINIMUM WP.

(4) COMPANION FLANGES AND FLANGE FITTINGS SHALL BE UL APPROVED FOR 175 LBS. HYDROSTATIC WORKING PRESSURE.

(5) GASKETS SHALL BE 1/16" MINIMUM THICK RED RUBBER SHEETING.

B. SPRINKLER HEADS.

(1) WHITE CEILING PLATE CONCEALED (ALL FINISHED AREAS) STANDARD DRY PENDANT, UPRIGHT, OR SIDEWALL WITH PROPER TEMPERATURE RATING AS REQUIRED AND AS INDICATED ON PLANS.

C. SPRINKLER HEAD GUARDS SHALL BE INSTALLED ON ALL SPRINKLER HEADS WHERE DAMAGE TO THE HEAD MAY OCCUR, SUCH AS UNDER STAIRS AND STORAGE ROOMS ETC., EXPOSED AREAS TO THE PUBLIC.

D. SIGNS: PROVIDE PERMANENTLY ATTACHED IDENTIFICATION SIGNS (METAL TAG) AT ALL CONTROL VALVES, LOW POINT DRAINS, INSPECTOR TEST CONNECTIONS, ETC.

E. FURNISH AND INSTALL ONE (1) METAL CABINET WITH FOUR (4) EXTRA AUTOMATIC SPRINKLER HEADS INCLUDING EACH TYPE AND TEMPERATURE RANGE INSTALLED IN NEW WORK, AND ONE SPRINKLER WRENCH.

F. SIAMESE FIRE DEPARTMENT CONNECTION.

9. HYDRAULIC DESIGN. PIPING PORTRAYED ON THE DRAWINGS IF SHOWN HAS BEEN SIZED USING NFPA PAMPHLET 13, PIPE SCHEDULES FOR ORDINARY HAZARD OCCUPANCY. CONTRACTOR AT HIS OPTION MAY HYDRAULICALLY CALCULATE SYSTEM AND ALTER PIPE SIZE ACCORDINGLY. SUBMIT CALCULATIONS AND DRAWINGS TO FACTORY MUTUAL, ARCHITECT, AND ALL GOVERNING BODIES FOR APPROVAL AND BE RESPONSIBLE FOR OBTAINING SAME. IF HYDRAULIC DESIGN IS NOT ACCEPTED BY AUTHORITIES, CONTRACTOR WILL BE OBLIGATED TO INSTALL SYSTEM IN ACCORDANCE WITH NFPA PAMPHLET NO. 13 AT NO ADDITIONAL COST TO OWNER.

END OF SECTION

DIVISION 16 - ELECTRICAL
ELECTRICAL

1. SCOPE OF WORK.

   A. THE 2017 AIA GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS ARE A PART OF THIS SPECIFICATION.

   B. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES FOR THE ELECTRICAL POWER AND LIGHTING WORK AS INDICATED ON THE DRAWINGS OR HEREIN SPECIFIED.

   C. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR WITH THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR THE PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

   D. WITHOUT ADDITIONAL COST TO THE OWNER, PROVIDE SUCH OTHER LABOR AND MATERIALS AS ARE REQUIRED TO COMPLETE THE WORK OF THIS SECTION IN ACCORDANCE WITH THE REQUIREMENTS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION, REGARDLESS OF WHETHER SUCH MATERIALS AND ASSOCIATED LABOR ARE CALLED FOR ELSEWHERE IN THESE CONTRACT DOCUMENTS.

   E. ELECTRICAL DRAWINGS SHALL SERVE AS GENERAL LAYOUTS OF VARIOUS ITEMS OF EQUIPMENT, HOWEVER, DRAWINGS ARE DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED AND NOT NECESSARILY INDICATE EVERY FITTING, SUPPORT, HANGER, ETC. REQUIRED FOR COMPLETE INSTALLATION.

2. PERMITS AND TEMPORARY POWER. SEE SUPPLEMENTAL GENERAL CONDITIONS FOR REQUIREMENTS.

3. WORK INCLUDED.

   A. LICENSES AND CERTIFICATES OF INSPECTION REQUIRED FOR THIS WORK. PERFORM ALL WORK IN ACCORDANCE WITH LOCAL, STATE, AND NATIONAL CODES AND REGULATIONS, INCLUDING NATIONAL ELECTRICAL CODE, NATIONAL BOARD OF FIRE UNDERWRITERS, AND TO BEAR THE LABEL OF UNDERWRITERS LABORATORIES, INC.

   B. INSTALLATION OF EQUIPMENT (MOTORS, STARTERS, CONTROLS, ETC.) FURNISHED BY OTHER TRADES/OWNER.

   C. ALL MISCELLANEOUS ITEMS OF WORK REQUIRED TO COMPLETE THE WORK, INCLUDING MOVING AND RIGGING OF MATERIAL AND EQUIPMENT, HANGERS, SUPPORTS, ANCHORS, COUNTER FLASHING, CAULKING, AND ALL OTHER WORK AND MATERIALS FALLING WITHIN THIS TRADE'S JURISDICTION.

   D. DISTRIBUTION-LIGHTING PANEL BOARDS, AND DISCONNECT SWITCHES.

   E. FEEDER SYSTEM IN CONDUIT TO BRANCH CIRCUIT PANELS.

   F. FURNISHING AND INSTALLING LIGHT FIXTURES INCLUDING LAMPS.

   G. SYMBOLS AND OUTLET LOCATIONS. SYMBOLS APPEARING ON DRAWINGS SHOW APPROXIMATE LOCATIONS ONLY, AND CARE SHALL BE USED TO LOCATE

ALL FIXTURE OUTLETS ON CENTER OF SPACES DESIGNATED AND IN ACCORDANCE WITH FIXTURE PLANS. IF EXACT LOCATIONS ARE NOT SPECIFIED ON SCHEDULE OF SYMBOLS ON DRAWINGS, CONSULT WITH ARCHITECT.

H. BRANCH CIRCUIT WIRING, IN CONDUIT, FOR LIGHTING, RECEPTACLES, JUNCTION BOXES, AND MOTORS.

I. TELEPHONE AND COMPUTER CONDUIT ROUGH-IN.

J. WIRING SYSTEM, IN CONDUIT, FOR EQUIPMENT AND CONTROLS PROVIDED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS INCLUDING BUT NOT NECESSARILY LIMITED TO, PLUMBING, FIRE PROTECTION AND HVAC, SECTIONS.

K. TEMPORARY POWER FOR CONSTRUCTION USE. (SEE SUPPLEMENTAL GENERAL CONDITIONS.

L. CONNECTION OF OWNER FURNISHED ELECTRIFIED OFFICE PARTITION SYSTEM.

M. FURNISHING AND INSTALLING CONTACTORS TO CONTROL LIGHTING CIRCUITS.

N. PRIMARY DISTRIBUTION SYSTEM & MAIN SERVICE TRANSFORMER.

4. WORK NOT INCLUDED.
A. ELECTRICAL MOTORS, CONTROLLERS, STARTERS, ETC. FURNISHED UNDER PLUMBING, HEATING AND VENTILATING CONTRACTS. MOTORS AND CONTROLLERS FURNISHED BY OTHERS AT THE JOB SITE SHALL BE SET AND CONNECTED BY THIS CONTRACTOR.

B. TELEPHONE SYSTEM BY OWNER (EXCEPT FOR EMPTY CONDUIT).

C. TEMPERATURE CONTROLS (MECHANICAL CONTRACTOR).

D. SECURE AND PROTECT EQUIPMENT FURNISHED BY OTHERS.

5. WORKMANSHIP. WHERE HOLES OR RECESSES MUST BE CUT IN WALLS, FLOORS, CEILINGS OR ANY PART OF THE BUILDING TO ADMIT APPARATUS, CONDUIT OR OTHER WORK OF THIS CONTRACTOR, HE MUST RETAIN CONTRACTORS TRAINED IN HIS PHASE OF CONSTRUCTION AND PROVIDE EXPLICIT DIRECTIONS AS TO LOCATION AND EXTENT OF CUTTING. THIS CONTRACTOR SHALL PROVIDE FOR ALL CUTTING AND PATCHING AS PER SUPPLEMENTAL GENERAL CONDITIONS.

6. SHOP DRAWINGS & RECORD DOCUMENTS. SEE SUPPLEMENTAL GENERAL CONDITIONS.

7. TESTING.

A. AFTER THE WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUNDS. ALL HOT WIRES, IF SHORTED OR GROUNDED, SHALL BE REMOVED AND REPLACED IF TROUBLE IS WITHIN CIRCUIT.

B. VOLTAGE TESTS SHALL BE MADE AT THE LAST OUTLET ON ONE

CIRCUIT FOR EACH PANEL (THE CIRCUIT HAVING THE LONGEST RUN). IF DROP IN POTENTIAL IS IN EXCESS OF 2%, CONTRACTOR WILL BE REQUIRED TO CORRECT THE CONDITION BY LOCATING PARTLY GROUNDED CONDUCTOR ON HIGH RESISTANCE SPLICE. ALL GROUND SHORTS AND HIGH RESISTANCE SPLICES SHALL BE RECTIFIED AS DIRECTED.

C. ANY WIRING, WIRING DEVICE, APPARATUS, OR LIGHTING FIXTURE FURNISHED UNDER THIS CONTRACT, IF GROUNDED OR SHORTED, SHALL BE REMOVED AND THE TROUBLE RECTIFIED BY REPLACING ALL DEFECTIVE PARTS OF MATERIALS AS DIRECTED.

D. ALL METERS, CABLES, CONNECTORS, EQUIPMENT OR APPARATUS NECESSARY FOR MAKING ALL TESTS SHALL BE FURNISHED BY THIS CONTRACTOR AT HIS EXPENSE.

8. GUARANTEE & WARRANTY: SEE SUPPLEMENTAL GENERAL CONDITIONS.

9. MATERIALS: PROVIDE ONLY MATERIALS THAT ARE NEW, OF THE TYPE AND QUALITY SPECIFIED. WHERE UNDERWRITERS LABORATORIES, INC. HAVE ESTABLISHED STANDARDS FOR SUCH MATERIALS, PROVIDE ONLY MATERIALS BEARING THE "UL" LABEL.

A. CONDUIT.

(1) GALVANIZED, MILD DRAWN, RIGID STEEL NIKOH, OR EQUAL, FOR CONDUIT IN GROUND FLOOR SLAB AND EXTERIOR WALLS. EMT GALVANIZED CONDUIT FOR ALL OTHER WORK.

(2) STEEL CONDUIT SHALL BE RIGID STEEL GALVANIZED LACQUER FINISH WHEN USED UNDER GROUND TO LIGHT STANDARDS, REMOTE JUNCTION BOXES, AND/OR EXPOSED TO WEATHER SUCH AS ROOFED AREAS.

(3) DIRECT BURIAL CABLE WILL NOT BE ALLOWED.

(4) FLEXIBLE CONDUIT SHALL BE GREENFIELD USED IN INTERIOR PARTITIONS, AND AS SHORT LENGTH CONNECTIONS TO MOTORS AND EQUIPMENT. IN DAMP LOCATIONS, PROVIDE NEOPRENE JACKETED (SEALITE).

(5) ROMEX IS NOT ALLOWED.

(6) ALL CONDUIT IS TO BE CONCEALED BEHIND FINISHED SURFACES AND SECURED TO BUILDING STRUCTURE (NO SECONDARY SUPPORT ALLOWED).

(7) CONDUIT SHALL BE CONTINUOUS FROM OUTLET TO PANEL JUNCTIONS
OR PULL BOXES. TERMINALS OF ALL CONDUIT SHALL BE FURNISHED WITH LOCKNUT AND BUSHINGS. PLUG ENDS OF CONDUIT DURING CONSTRUCTION. SYSTEMS TO BE COMPLETE FOR INSTALLING CONDUCTORS.

(8) ALL WIRING, UNLESS OTHERWISE NOTED, SHALL BE RUN IN CONDUIT. REAM ALL CONDUIT & BENDS TO REMOVE ALL BURRS AND OBSTRUCTIONS, RUN WITH LONG BENDS, FASTEN SECURELY.

PROVIDE NECESSARY PULL BOXES. 3/4" MINIMUM HOME RUNS ON LIGHTING CIRCUITS.

(9) WHERE ELECTRIC METALLIC TUBING IS USED, COMPLY WITH PERTINENT REQUIREMENTS OF THE NATIONAL ELECTRIC CODE.

(10) PVC CONDUIT MAY NOT BE USED WITHOUT SPECIFIC WRITTEN APPROVAL OF THE GOVERNING AGENCY & THE ARCHITECT.

B. BOXES AND FITTINGS.

(1) FLUSH OUTLET, JUNCTION AND PULL BOXES SHALL BE PRESSED STEEL, GALVANIZED AND OF SIZE AND SHAPE REQUIRED FOR THE USE OF CONDUIT TERMINALS.

(2) OUTLET BOXES SHALL BE SECURELY FASTENED. ALL FIXTURE OUTLET BOXES SHALL BE SET FLUSH WITH CEILING. THERE SHALL BE NO MORE KNOCKOUTS OPENED IN ANY OUTLET BOX THAN ARE ACTUALLY REQUIRED.

(3) PULL BOXES SHALL BE INSTALLED WHERE REQUIRED FOR OFFSETS AND BENDS OR TO FACILITATE INSTALLATION OR CONDUCTORS. BOXES SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED SHEET STEEL AND HAVE SCREW ON COVER PLATES.

(4) PULL BOXES BURIED IN GRADE FOR SITE LIGHTING SHALL BE CODE APPROVED PVC.

(5) PROVIDE DEEP BOXES FOR 1" & LARGER CONDUIT.

(6) FOR LIGHTING OUTLETS PROVIDE STANDARD 4" OCTAGON OR SQUARE UNITS, w/ 3/8" MALLEABLE IRON FIXTURE STUDS AND BOX HANGERS WHERE REQUIRED.

(7) FOR SWITCHES AND RECEPTACLES, PROVIDE STANDARD GANG SWITCH BOXES w/ STAINLESS STEEL COVER PLATES; EXCEPT FOR EXPOSED WORK PROVIDE PRESSED STEEL BOXES WITH GALVANIZED OR CADMIUM PLATED STEEL COVERS.

PROVIDE BOXES 4" SQUARE BY 1-1/2" DEEP, EXCEPT FOR BOXES AT ENDS OF RUN WHERE CONTAINING A SINGLE DEVICE, THESE MAY BE #180 HANDY BOXES IF PERMITTED

(8) FOR TELEPHONE & COMPUTER OUTLETS, PROVIDE 4" SQUARE BOXES WITH **CAT-5E** TELE/DATA WIRING TERMINATE WITH (2) COMPUTER AND (2) TELEPHONE CONNECTIONS IN A WHITE TRIM ENCLOSURE AND LABELED.

C. WIRING DEVICES AND PLATES.

(1) FURNISH, INSTALL AND CONNECT ALL WIRING DEVICES (SWITCHES, RECEPTACLES, PILOT LIGHTS, ETC.) TOGETHER WITH THE PROPER PLATES, INCLUDING BLANK AND TELEPHONE PLATES, 302 STAINLESS STEEL.

(2) ALL SWITCHES AND RECEPTACLES SHALL BE PLASTIC TYPE WITH COLOR TO MATCH WALL FINISH. ALL WALL SWITCHES SHALL BE OF

SIZE REQUIRED TO FACILITATE SWITCHING OF CIRCUITS NOTED. ALL TRIM TO BE STAINLESS STEEL OR COLOR TO MATCH WALL FINISH.

(3) RECEPTACLES.

(a) CONVENIENCE OUTLETS: DUPLEX 15 AMP., 125 VOLT, P & S 5290-I, OR HUBBELL 5242, GROUNDING TYPE. DUPLEX 20 AMP 125 VOLT P&S #5890-I

(b) RECEPTACLES: 16" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.

(c) COVER PLATES SHALL BE STAINLESS STEEL.

(d) GFIC RECEPTACLES: PASS & SEYMOUR #1591-FI.

(e) DUST & MOISTURE RESISTANT (GASKETED) WET AREAS: PASS & SEYMOUR #6307.

(4) WALL SWITCHES.

(a) ALL SWITCHES SHALL BE IVORY TYPE. SWITCHES SHALL BE AS FOLLOWS, OR APPROVED EQUAL.

(b) WHERE 15 AMPERE SWITCHES ARE REQUIRED. THEY SHALL BE AS FOLLOWS:

	GENERAL ELEC.	HUBBELL	BRYANT	P&S
1 POLE	5431	1201	4801	15AC1-I
3 WAY	5433	1203	4803	15AC3-I

(c) WHERE 20 AMPERE SWITCHES ARE REQUIRED, THEY SHALL BE AS FOLLOWS:

	GENERAL ELEC.	HUBBELL	BRYANT	P&S
1 POLE	5451	1221	4901	20AC1-I
3 WAY	5453	1223	4903	20AC3-I

(d) WHERE SWITCHES WITH PILOT LIGHT IS REQUIRED P&S #151CPL-I OR 153CPL-I.

(e) COVER PLATES SHALL BE STAINLESS STEEL.

D. CONDUCTORS.

(1) INSTALL A COMPLETE SYSTEM OF NEW WIRE AND CABLE COMPRISED OF COPPER CONDUCTORS - NO ALUMINUM ALLOWED.

(2) ALL WIRE FOR FEEDERS, UNLESS OTHERWISE NOTED ON PLANS OR HEREIN SPECIFIED SHALL BE TYPE "THHN" NEW CODE FLAME RESISTANT, INSULATED WIRE, (THWN IN WET AREAS). WIRE NO. 12 AND SMALLER SHALL BE SOLID; NO. 10 AND LARGER SHALL BE STRANDED DOUBLE BRAIDED.

(3) ALL FEEDERS SHALL BE RUN CONTINUOUS, SPLICE JOINTS SHALL BE MADE MECHANICALLY AND ELECTRICALLY SECURE AND THEN SOLDERED. JOINTS SHALL BE COVERED WITH INSULATION EQUAL TO OR BETTER THAN THE CONDUCTORS.

(4) ALL CONDUCTORS SHALL BE JOINED WITH ELECTRIC SPRING CONNECTORS WITH VINYL INSULATING CAP. (SCOTCH LOCK OR APPROVED EQUAL). CONDUCTORS LARGER THAN NO. 8 AWG SHALL BE JOINED BY COMPRESSION TYPE CONNECTORS, BERNDY, OR APPROVED

EQUAL.

(5) INSTALL CONDUIT AND WIRE AS INDICATED. NO WIRE SMALLER THAN NO. 12 AND NO. 10 FOR RUNS OVER 75 FEET.

E. DISCONNECT SWITCHES.

(1) PROVIDE SAFETY SWITCHES OF HEAVY-DUTY TYPE HORSEPOWER RATED, QUICK-MAKE AND QUICK-BREAK DESIGN, EXTERNALLY OPERATED WITH PROVISION FOR PADLOCKING, FUSIBLE OR NON-FUSIBLE AS SHOWN ON THE DRAWINGS.

(2) PROVIDE ENCLOSURES CLEARLY MARKED FOR MAXIMUM VOLTAGE, CURRENT AND HORSEPOWER RATING AND:

1. INDOOR: NEMA TYPE 1
2. OUTDOOR: NEMA TYPE 3R, RAINTIGHT

(3) FOR SWITCHES HAVING DUAL RATINGS (HIGHER RATING WHEN USED WITH DUAL-ELEMENT FUSES), PROVIDE RATINGS INDICATED ON A METAL PLATE RIVETED OR OTHERWISE PERMANENTLY FASTENED TO THE ENCLOSURE.

10. PANELBOARD.

A. BRANCH CIRCUIT AND PANELBOARD SHALL BE ARRANGED AND CONNECTED WITH ADJACENT BREAKERS AND SPACED EVEN FROM LEFT TO RIGHT, TOP TO BOTTOM.

B. CHARACTERISTICS OF MAINS AND BRANCH CIRCUITS, THE RATINGS, NUMBER PULLED AND SEQUENCE OF ASSEMBLY SHALL BE AS NOTED ON THE DRAWINGS, UNLESS APPROVED BY THE ARCHITECT.

C. PANELBOARD SHALL BE PROVIDED WITH DOORS, COMPLETE WITH CONCEALED HINGES AND SPRING CATCHES AND LOCKING DEVICES.

D. PROVIDE AND INSTALL A DIRECTORY OF CIRCUITS FOR EACH PANELBOARD (NEW AND EXISTING). DIRECTORY SHALL BE MOUNTED ON THE INSIDE OF CABINET DOOR AND TYPEWRITTEN OR NEATLY PRINTED. ENGRAVED MICARTA NAME PLATES INDICATING VOLTAGE CHARACTERISTICS AND PANEL IDENTIFICATION NUMBER SHALL BE MOUNTED ON TOP OF EACH PANELBOARD ON THE EXTERIOR FACE (NEW AND EXISTING).

E. BUSS BARS SHALL BE SILVER PLATED COPPER WITH A DENSITY OF NOT OVER 1,000 AMPS PER SQUARE INCH - NO ALUMINUM WILL BE ACCEPTED.

F. BRANCH CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON TYPE WITH THERMAL MAGNETIC TRIPS IN PROPER SIZE AND RATING FOR EQUIPMENT.

11. GROUNDING.

A. CONDUIT SYSTEM SHALL BE GROUNDED FROM EQUIPMENT SERVED BACK TO DISTRIBUTION EQUIPMENT. PROVIDE ONE NO. 12 GREEN GROUND WIRE BETWEEN EQUIPMENT SERVED AND EMT, WHENEVER FLEXIBLE CONDUIT IS USED. PROVIDE ALL NEW CONTINUITY OF GROUNDING SYSTEMS AT COMPLETION OF JOB AND MAKE GOOD ALL ITEMS AND CONNECTION.

B. MAIN SERVICE EQUIPMENT SHALL BE GROUNDED FROM EQUIPMENT GROUND BOX TO CITY SIDE OF WATER METER, IN ACCORDANCE WITH CODE, FIELD VERIFY EXISTING CONDITION.

C. ALL CIRCUITS SERVING SINGLE AND THREE PHASE EQUIPMENT SHALL BE GROUNDED WITH A GREEN GROUND WIRE.

D. GROUND ALL EQUIPMENT, INCLUDING SWITCHBOARDS, TRANSFORMERS, CONDUIT SYSTEMS, MOTORS AND OTHER APPARATUS, BY CONDUIT OR CONDUCTOR TO COLD WATER MAIN OR TO INDEPENDENT GROUNDING ELECTRODE AS SHOWN ON THE DRAWINGS OR REQUIRED BY CODE USING GROUND CLAMPS MANUFACTURED BY BURNDY OR T & B, AND APPROVED BY THE ARCHITECT.

E. USE GROUND RODS AND WATER MAIN GROUNDING.

(1) LOCATE GROUND RODS IN PLANTERS OR SIMILAR AREAS WHICH WILL RECEIVE WATER REGULARLY, AND DRIVE TO A DEPTH OF AT LEAST 8'-0". PROVIDE BONDED JUMPER TO METALLIC WATER SERVICE AND JUMPER ACROSS TO STREET SIDE OF WATER METER.

(2) MAKE MEG GROUND TESTS TO MEASURE GROUND RESISTANCE, AND PROVIDE NOT MORE THAN 5 OHMS RESISTANCE, ADDING GROUNDS AS REQUIRED TO ACHIEVE THAT LEVEL.

(3) MAKE GROUNDS ACCESSIBLE FOR INSPECTION.

(4) PROVIDE "UFER" GROUND IF SO REQUIRED BY GOVERNMENTAL AGENCIES HAVING JURISDICTION.

12. FUSES. FURNISH AND INSTALL ALL FUSES AS INDICATED ON THE PLANS OR REQUIRED BY CODE. FUSES SHALL BE FUSETRON TAMPER-PROOF TYPE.

13. LIGHTING FIXTURES.

A. FURNISH ALL LIGHTING FIXTURES. RECEIVE, UNPACK, ASSEMBLE, WIRE, INSTALL AND CONNECT AT THE PROPER LOCATIONS. SUPPLY ALL LAMPS, BULBS, TUBES, AND LEAVE EQUIPMENT IN GOOD OPERATING ORDER.

B. EXPOSED SURFACES OF SUSPENDED TYPE FIXTURES SHALL HAVE NO KNOCKOUT INDENTATIONS.

C. FIXTURES SHALL HAVE UL LABEL AFFIXED.

D. LIGHTING FIXTURE TYPES SHALL BE AS SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE AS NOTED ON THE DRAWINGS.

E. BALLASTS FOR FLUORESCENT FIXTURES SHALL BE RAPIDSTART, HIGH POWER FACTOR ETL OR CBM APPROVED, ENERGY SAVING TYPE. 120 VOLT AS REQUIRED WITH INTERNAL FUSING.

ALL BALLASTS FOR FLUORESCENT LAMPS FOR WHICH CBM SPECIFICATIONS HAVE BEEN ISSUED AND WHICH HAVE BEEN SO APPROVED SHALL CARRY THE CBM LABEL. WHERE FLUORESCENT LAMPS ARE SPECIFIED FOR WHICH NO BALLAST MANUFACTURER HAS A CBM APPROVED BALLAST, A HIGH POWER FACTOR LOW DB
LEVEL BALLAST SHALL BE USED.

ALL BALLASTS FOR SURFACE MOUNTED FLUORESCENT FIXTURES SHALL CARRY THE CMB LABEL AND SHALL BE SPECIFICALLY DESIGNED FOR CAPACITOR TEMPERATURES.

F. ALL LIGHT FIXTURES SHALL BE SECURED TO CEILING GRID OR HAVE INDIVIDUAL SUPPORTS AS REQUIRED BY LOCAL CODE. PROVIDE ALL SUPPORTS AND DRILL AND TAP HOLES AND FURNISH ALL NECESSARY BOLTS, WASHERS, ETC. FOR MOUNTING OF ITEMS FURNISHED UNDER THIS CONTRACT.

14. ENTRANCE AND SWITCHBOARD:

A. MAIN SERVICE ENTRY EQUIPMENT:

(1) PROVIDE FACTORY ASSEMBLED, DEAD FRONT, BRACED AS SHOWN ON THE DRAWINGS, WITH EQUIPMENT BUSING CONNECTION CURRENT-LIMITING FUSES, FUSED SWITCHES, AND SIMILAR COMPONENTS AS SHOWN ON THE DRAWINGS OR REQUIRED FOR PROPER COMPLETION.

(2) MAIN SERVICE ENTRY EQUIPMENT SHALL BE FURNISHED BY THIS CONTRACTOR AND CONSIST OF A DISTRIBUTION SWITCHBOARD 120/208V., 3 PHASE, 4 WIRE, INCOMING SERVICE, CURRENT TRANSFORMER SECTION PER CECO REQUIREMENTS.

(3) EQUIPMENT SHALL BE HOUSED IN A NEMA CLASS 3R ENCLOSURE WITH SILVER PLATED COPPER BUSS OF 1,000 AMPERES PER SQ. IN., BRACED FOR 100,000 SYMMETRICAL AMPERES, SHORT CIRCUITS.

GROUND BUSS BARS ARE TO BE EXTENDED FULL LENGTH OF SWITCHBOARD AND ARE TO BE FURNISHED WITH LUGS FOR GROUNDING STRUCTURE AND ALL NON-CURRENT CARRYING METAL PARTS. MAIN BUSS BARS SHALL BE RATED AS INDICATED ON THE DRAWINGS.

(4) FURNISH PLASTIC ENGRAVED NAMEPLATES FOR EACH SWITCH TO INDICATE EQUIPMENT SERVED.

(5) DISTRIBUTION FOR THE 120/208V., 3 PHASE, 4 WIRE, SERVICE SHALL CONSIST OF BOLTED PRESSURE FUSIBLE SWITCHES FOR THE MISCELLANEOUS POWER w/ LOCKING FEATURE.

(6) THE ELECTRICAL CONTRACTOR SHALL RECEIVE THE SWITCH BOARD, UNCRATE, SET IN PLACE, AND CONNECT AS NOTED ON THE DRAWINGS, REQUIRED BY THE MANUFACTURER AND IN A CODE-APPROVED MANNER.

B. SWITCHES:

(1) PROVIDE BOLTED PRESSURE SWITCHES, FUSED TYPE, RATED 240 V. AC FOR 120/208 V. SYSTEM.

C. PROVIDE CURRENT-LIMITING FUSES:

(1) FOR ABOVE 600 AMPS, PROVIDE CLASS L "HI-CAP" MANUFACTURED BY BUSMAN, OR EQUAL MANUFACTURED BY CHASE-SHAWMUT.

(2) FOR BELOW 600 AMPS, AS SHOWN FOR SHORT CIRCUIT DUTY PROVIDE CLASS K-1 "LIMITRON" OR CLASS K-5 "LOW PEAK", OR

CLASS K-9 "FUSETRON" MANUFACTURED BY BUSSMAN, OR EQUAL MANUFACTURED BY CHASE-SHAMUT.

D. AT ALL SECTIONS, PROVIDE A MICARTA NAMEPLATE WITH WHITE LETTERING ON A RED BACKGROUND, READING "WARNING - REPLACE ONLY WITH CURRENT-LIMITING FUSES AS ORIGINALLY INSTALLED."

E. PROVIDE SILVER PLATED COPPER BUSING FULL HEIGHT. NO ALUMINUM ALLOWED.

15. MOTOR CONTROL CENTERS AND STARTERS.

A. FURNISH AND INSTALL A NEMA CLASS 1 COMBINATION FUSIBLE STARTER/DISCONNECT AS INDICATED. DETAILED STARTERS BY ELECTRICIAN, INTEGRAL STARTERS BY MECHANICAL CONTRACTOR.

B. FURNISH AND INSTALL POWER AND CONTROL WIRING FOR FANS, PUMPS, MOTORS, OWNER'S EQUIPMENT ETC. AND THEIR ASSOCIATED CONTROL EQUIPMENT FURNISHED BY OTHERS. REVIEW MECHANICAL PLANS FOR LOCATIONS. FINAL CONNECTIONS TO ALL MOTORS TO BE MADE WITH FLEXIBLE METALLIC CONDUIT AND STRANDED BRAIDED CONDUCTORS.

16. FIRE STAT. FURNISHED AND INSTALLED BY HVAC CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.

17. CONDUCTOR IDENTIFICATION.

ALL WIRES TO BE PULLED BETWEEN CONTROL PANELS AND THE CONNECTED DEVICES ARE TO BE LABELED AT EACH END OF EACH SEGMENT. IDENTIFY EACH WIRE. USE VINYL TAPE OR OTHER PERMANENT-TYPE LABELING SYSTEM. ALL WIRES SHALL BE TERMINATED IN A NEAT ORDERLY FASHION IN ALL TERMINAL BLOCKS AND AT ALL DEVICES AND PANELS.

18. FIRE DETECTION AND ALARM SYSTEM.

A. SCOPE. THE WORK COVERED BY THIS PARAGRAPH OF THE SPECIFICATIONS INCLUDES THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIALS AND PERFORMING ALL OPERATIONS IN CONNECTION WITH THE INSTALLATION OF THE FIRE DETECTION AND ALARM SYSTEM AS HEREINAFTER SPECIFIED, AND AS DIRECTED BY THE ARCHITECT.

B. RELATED DOCUMENTS. GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS AND ADDENDUM APPLY TO THE WORK SPECIFIED IN THIS SECTION.

C. DESCRIPTION. NEW FIRE ALARM SYSTEM SHALL BE WIRED IN ORDER TO FURNISH A ZONED, NON-CODED, CONTINUOUS SOUNDING, U.L. LISTED, ELECTRICALLY SUPERVISED D.C. FIRE ALARM SYSTEM, FULLY INSTALLED AND TESTED.

CONTRACTOR SHALL FURNISH AND INSTALL ALL NEW FIRE ALARM DEVICES AS REQUIRED. NEW DEVICES SHALL BE WIRED AS PER MANUFACTURER'S INSTRUCTIONS AND NECESSARY CONDUIT, WIRE, OUTLET OR JUNCTION BOXES SHALL BE FURNISHED AND INSTALLED. ANY NEW SURFACE MOUNTED RACEWAYS SHALL BE ROUTED AS DIRECTED BY THE ARCHITECT IN THE FIELD.

CONTRACTOR SHALL PREPARE AND SUBMIT TO OWNER/ARCHITECT AND AUTHORITY HAVING JURISDICTION A COMPLETE SET OF INSTALLATION DRAWINGS INDICATING NEW EQUIPMENT AND ITS INSTALLATION.

D. QUALITY ASSURANCE.

1. REQUIREMENTS OF REGULATORY AGENCIES:

a. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
1. NFPA-70 NATIONAL ELECTRICAL CODE (NEC).
2. NFPA-101 LIFE SAFETY CODE.
b. LOCAL CODES AND ORDINANCES.
c. UNDERWRITERS LABORATORIES, INC. (UL).

2. REFERENCE STANDARDS:

a. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

1. NFPA-72. FIRE ALARM CODE.

b. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).

3. ALL EQUIPMENT SHALL BE SUPPLIED FROM THE SPECIFIED EQUIPMENT MANUFACTURER OR IF APPLICABLE AN ACCEPTABLE SUBSTITUTE MANUFACTURER, AS LISTED IN SPECIFICATION. ANY EQUIPMENT SUPPLIED THROUGH A SUPPLY HOUSE OR DISTRIBUTOR WILL NOT BE ACCEPTABLE.

4. ALL EQUIPMENT SPECIFIED SHALL BE U.L. LISTED AND CROSS LISTED FOR USE WITH THE MAIN FIRE ALARM CONTROL PANEL. ALL CONTROL EQUIPMENT SHALL BE LISTED UNDER U.L. CATEGORY U0JZ AS A SINGLE CONTROL UNIT AND ALSO UL LISTED FOR POWER LIMITED APPLICATIONS PER NEC 760.

5. EQUIPMENT MUST BE MANUFACTURED BY A FIRM WHO HAS BEEN ACTIVELY MANUFACTURING FIRE ALARM SYSTEMS FOR A MINIMUM OF TEN (10) YEARS.

6. MANUFACTURER'S SERVICES: THE FOLLOWING SUPERVISION OF INSTALLATION SHALL BE PROVIDED BY A TRAINED SERVICE TECHNICIAN WHO IS EMPLOYED BY THE MANUFACTURER OF THE FIRE ALARM EQUIPMENT. THE TECHNICIAN SHALL BE U.L. CERTIFIED AND HAVE HAD A MINIMUM OF TWO (2) YEARS OF SERVICE EXPERIENCE IN THE FIRE ALARM INDUSTRY. THE TECHNICIAN'S NAME SHALL APPEAR ON EQUIPMENT SUBMITTALS AND A LETTER OF CERTIFICATION FROM THE FIRE ALARM MANUFACTURER SHALL BE SENT TO THE PROJECT ENGINEER. THE MANUFACTURER'S SERVICE TECHNICIAN SHALL BE RESPONSIBLE FOR THE FOLLOWING ITEMS.

a. PRE-INSTALLATION VISIT TO THE JOB SITE TO REVIEW EQUIPMENT SUBMITTALS AND VERIFY METHOD BY WHICH THE SYSTEM SHOULD BE WIRED.

b. DURING JOB PROGRESS, MAKE PERIODIC JOB SITE VISITS TO VERIFY INSTALLATION AND WIRING OF SYSTEM.

c. UPON COMPLETION OF WIRING, FINAL CONNECTIONS SHALL BE MADE UNDER THE SUPERVISION OF THIS TECHNICIAN, AND

FINAL CHECKOUT AND CERTIFICATION OF THE SYSTEM.

d. AT THE TIME OF FINAL CHECKOUT, TECHNICIAN SHALL GIVE OPERATIONAL INSTRUCTIONS TO THE OWNER AND/OR HIS REPRESENTATIVE ON THE SYSTEM.

7. ALL JOB SITE VISITS SHALL BE DATED AND DOCUMENTED IN WRITING AND SIGNED BY THE ELECTRICAL CONTRACTOR. ANY DISCREPANCY WILL BE NOTED ON THIS DOCUMENT AND A COPY KEPT IN THE SYSTEM JOB FOLDER WHICH WILL BE TURNED OVER TO THE PROJECT ENGINEER ANY TIME DURING THE PROJECT.

E. SUBMITTALS. SUBMIT IN ACCORDANCE WITH THE GENERAL CONDITIONS.

1. PRODUCT DATA SHEETS AND EQUIPMENT DESCRIPTION.

2. BILL OF MATERIALS LISTING ALL COMPONENTS AND DEVICES.

3. COMPONENT WIRING DIAGRAMS AND INSTALLATION DRAWINGS FOR SUBMITTAL TO FIRE DEPARTMENT.

4. SYSTEM WIRING AND INTERCONNECTION DIAGRAMS.

5. OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS DETAILING COMPONENT AND GENERAL SYSTEM OPERATING DESCRIPTION.

F. PRODUCT DELIVERY, STORAGE AND HANDLING.

1. RECEIVE EQUIPMENT AT JOB SITE. VERIFY APPLICABLE COMPONENTS AND QUANTITY DELIVERED.

2. HANDLE EQUIPMENT TO PREVENT INTERNAL COMPONENTS' DAMAGE AND BREAKAGE, AS WELL AS DENTING AND SCORING OF ENCLOSURE FINISH.

3. DO NOT INSTALL DAMAGED EQUIPMENT.

4. STORE EQUIPMENT IN A CLEAN, DRY SPACE AND PROTECT FROM DIRT, FUMES, WATER, CONSTRUCTION DEBRIS AND PHYSICAL DAMAGE.

5. AFTER INSTALLATION, PROTECT EQUIPMENT FROM DAMAGE BY WORK OF OTHER TRADES.

G. WARRANTY. THE ELECTRICAL CONTRACTOR SHALL WARRANTY ALL WIRING AND TERMINAL EQUIPMENT TO BE FREE FROM INHERENT AND MECHANICAL DEFECTS DUE TO WORKMANSHIP AND MATERIALS USED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTED INSTALLATION.

THE FIRE ALARM MANUFACTURER SPECIFIED, AND NOT A DISTRIBUTOR OR ELECTRICAL CONTRACTOR, SHALL FURNISH IN WRITING A ONE (1) YEAR WARRANTY.
WARRANTY SHALL LIST ALL EQUIPMENT IN THE SYSTEM AND STATE THAT EQUIPMENT
TO BE FREE FROM INHERENT AND MECHANICAL DEFECTS DUE TO WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF START UP AND BENEFICIAL USE OF THE SYSTEM.

WARRANTY SERVICE FOR THE EQUIPMENT SHALL BE PROVIDED BY THE SYSTEM

SUPPLIER'S FACTORY TRAINED REPRESENTATIVE DURING NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY, EXCLUDING HOLIDAYS. EMERGENCY SERVICE PROVIDED AT TIMES OTHER THAN AS STIPULATED ABOVE SHALL BE AVAILABLE FROM THE SAME SOURCE AT ADDITIONAL COST TO THE OWNER.

H. PRODUCTS. FIRE ALARM SYSTEM SPECIFIED IS MANUFACTURED BY THE SIMPLEX TIME RECORDER CO. CATALOG AND MODEL NUMBERS ARE INTENDED TO ESTABLISH THE TYPE AND QUALITY OF EQUIPMENT AND SYSTEM DESIGN AS WELL AS EXACT OPERATING FEATURES REQUIRED. THE MANUFACTURER'S SPECIFICATION SHEETS OF EACH ITEM SO LISTED SHALL BE CONSIDERED TO BE PART OF THE SPECIFICATION AND BINDING THEREIN. THE EXISTING SYSTEM IS OF FIRE LITE MANUFACTURER AND SHOULD BE CONSIDERED AS BASE BID, OTHER MANUFACTURERS WILL BE CONSIDERED BY OWNER AFTER REVIEW OF REQUEST BY ARCHITECT

I. SYSTEM OPERATION. THE MAIN FIRE ALARM CONTROL PANEL SHALL CONTINUOUSLY SCAN EACH ZONE WITHIN THE CONTROL PANEL FOR ANY STATUS CHANGES.

J. SIGNAL INITIATING DEVICES. FURNISH AND INSTALL, WHERE REQUIRED BY CODE, THE FOLLOWING SIGNAL INITIATING DEVICES:

1. STATIONS: FURNISH AND INSTALL TYPE 2099-9201 SINGLE ACTION MANUAL PULL STATIONS WITH RAISED WHITE LETTERING AND A SMOOTH HIGH GLOSS FINISH. THE BREAK-GLASS STATION SHALL HAVE A HINGED FRONT WITH KEY LOCK. STATIONS WHICH UTILIZE SCREWDRIVERS, ALLEN WRENCHES, OR OTHER COMMONLY AVAILABLE TOOLS SHALL NOT BE ACCEPTED. STATIONS SHALL BE KEYED ALIKE WITH THE FIRE ALARM CONTROL PANEL. WHEN THE STATION IS OPERATED, THE HANDLE SHALL LOCK IN A PROTRUDING MANNER TO FACILITATE QUICK VISUAL IDENTIFICATION OF THE ACTIVATED STATION.

2. THERMODETECTORS: FURNISH AND INSTALL WHITE, LOW-PROFILE, TYPE 2098-9439 THERMODETERCTORS RATED AT 135 DEGREE RATE OF RISE AND FIXED TEMPERATURE IN ALL AREAS EXCEPT WHERE NOTED ON THE DRAWINGS, WHICH SHALL BE RATED AT 200 DEGREES TEMPERATURE.

3. SMOKE DETECTORS: FURNISH AND INSTALL TYPE 2098-9201, CEILING MOUNTED, PHOTOELECTRIC SMOKE DETECTORS. DETECTOR SHALL HAVE A COMPLETELY CLOSED BACK TO RESTRICT ENTRY OF DUSTS AND AIR TURBULENCE AND 30 MESH INSECT SCREEN. ELECTRONICS OF UNIT SHALL BE SHIELDED TO PROTECT AGAINST FALSE ALARMS FROM E.M.I. AND R.F.I. UNIT SHALL CONTAIN A RED LED WHICH SHALL PULSE TO INDICATE POWER ON AND WHICH SHALL GLOW CONTINUOUSLY TO INDICATE POWER ON AND WHICH SHALL GLOW CONTINUOUSLY TO INDICATE ALARM. DETECTOR SHALL HAVE A MAGNETICALLY OPERATED FUNCTIONAL TEST SWITCH AND BE CAPABLE OF BEING SUPPLIED WITH A REMOTE ALARM LED INDICATOR. UNIT SHALL HAVE A SEPARATE MOUNTING BASE WITH TERMINAL STRIP FOR EASE OF WIRING, CHANGING AND CLEANING.

K. ALARM INDICATING DEVICES: FURNISH AND INSTALL, WHERE REQUIRED BY CODE THE FOLLOWING AUDIBLE OR AUDIBLE/VISUAL DEVICES:

1. AUDIO/VISUAL DEVICE: FURNISH AND INSTALL TYPE 4903-9101 AUDIO/VISUAL UNITS. A COMMON ENCLOSURE SHALL CONTAIN THE 2901-9806 HORN AND HIGH INTENSITY XENON STROBE FLASHING LIGHT. THE SIDE VIEWING WHITE TRANSLUCENT LENS SHALL HAVE THE WORD "FIRE" IN RED IMPRINTED ON IT. FLASH RATE SHALL BE 1 TO 3

FLASHES PER SECOND WITH AN 8000 CANDLE POWER FLASH INTENSITY. BOTH AUDIO AND VISUAL UNITS SHALL BE ON THE SAME SUPERVISED CIRCUIT OR CIRCUITS.

L. INSPECTION: EXAMINE AREAS AND CONDITIONS UNDER WHICH FIRE ALARM SYSTEM IS TO BE INSTALLED AND NOTIFY ARCHITECT IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER AND TIMELY COMPLETION OF WORK.

DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

M. INSTALLATION:

1. POWER REQUIREMENTS:

a. PROVIDE SYSTEM POWER WITH 120 VOLT, 1 PH, 2 WIRE, 60 HZ ON SEPARATE FUSE WITH LOCK-OUT.

2. INSTALL WIRING AS SPECIFIED.

a. ALL WIRING SHALL BE COLOR CODED AS FOLLOWS AND ANY WIRING CARRYING 32 VAC, 50/60 HZ OR GREATER MUST BE IN CONDUITS SEPARATE FROM THOSE CONTAINING STATIONS, DETECTORS OR SIGNAL CIRCUITS.

b. CIRCUITS FOR FAN SHUT DOWN SHALL BE RUN IN CONDUITS SEPARATE FROM THOSE CONTAINING INITIATING OR INDICATING DEVICE CIRCUITS.

1. FIRE ALARM CONTROL PANEL - 120V. 2-#12 ONE (1) BLACK, ONE (1) WHITE, ONE (1) GREEN.

2. ALARM INITIATING DEVICES - 2 #14 AWG PER ZONE, ONE (1) BROWN, ONE (1) VIOLET.

3. AUDIBLE DEVICES - 2 #14 PER CIRCUIT, ONE (1) RED, ONE (1) BLACK.

4. VISUAL DEVICES - ON SAME CIRCUIT AS HORN DEVICES.

5. SLAVE FAN RELAY - 2 #14 AWG BLUE FROM FIRE ALARM CONTROL PANEL TO FAN RELAY.

3. INSTALL CONDUIT AND WIRING TO TELEPHONE TERMINAL CABINET FOR CENTRAL STATION OR MUNICIPAL CONNECTION, AND COORDINATE HOOKUP WITH SUPPLIER OF CENTRAL STATION NETWORK SYSTEM.

4. ALL FIRE ALARM TERMINAL AND JUNCTION LOCATIONS SHALL BE IDENTIFIED IN ACCORDANCE WITH NFPA 70, SECTION 760-3 AND THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE. ALL JUNCTION AND TERMINAL BOXES SHALL BE PAINTED RED AND STENCILED "FIRE ALARM". THIS REQUIREMENT IS TO PREVENT UNINTENTIONAL INTERFACE WITH THE SIGNALING CIRCUITS DURING TESTING, SERVICING AND ADDITIONAL MODIFICATIONS TO THE SYSTEM.

N. ADJUSTMENT AND CLEANING. CLEAN SYSTEM AND ENCLOSURES OF DIRT AND

DEBRIS

O. FIELD QUALITY CONTROL. SYSTEM SHALL TEST FREE FROM GROUNDS, OPENS AND SHORT CIRCUITS.

UPON COMPLETION OF INSTALLATION OF FIRE ALARM EQUIPMENT, ELECTRICAL CONTRACTOR SHALL PROVIDE TO THE ARCHITECT A SIGNED, WRITTEN STATEMENT SUBSTANTIALLY IN THE FORM AS FOLLOWS:

"THE UNDERSIGNED HAVING BEEN ENGAGED AS THE ELECTRICAL CONTRACTOR ON THE _____BUILDING CONFIRMS THAT THE FIRE ALARM EQUIPMENT WAS INSTALLED IN ACCORDANCE WITH WIRING DIAGRAMS, INSTRUCTIONS AND DIRECTIONS PROVIDED TO US BY THE MANUFACTURER.

END OF SECTION

SUMMARY OF GEOTECHNICAL INVESTIGATIONS (BORINGS)
LAKEWOOD FOREST PRESERVE SITE DEVELOPMENT

Attachment E: four (4) complete Geotechnical Reports by Soil and Material Consultants, Inc.

	MATERIAL DEPTHS IN INCHES				
BORE	**TOPSOIL**	**HMA**	**AGG BASE**	**TOTAL**	**NOTES**
EXISTING WEST LOOP ROAD (AGGREGATE EXCEPT B-101) Report Dated 3/20/2018					
B-101		7.0	11.0	18.0	Geotextile present
B-102			11.0	11.0	Underlying Topsoil
B-103			14.5	14.5	Underlying Topsoil
B-104			18.0	18.0	Underlying Topsoil
B-105			9.0	9.0	Underlying Topsoil
B-106			11.0	11.0	
B-107			9.0	9.0	Underlying Topsoil
B-108			10.0	10.0	
B-109			7.0	7.0	
B-110			10.0	10.0	
B-111					Area NIC
B-112					Area NIC
EXISTING HMA ROADS AND PARKING (Report Dated 3/20/2018)					
C-1		3.25	6.75	10.0	C-D Lot
C-2		4.0	5.0	9.0	C-D Lot
C-3		3.75	4.0	7.8	C-D Lot
C-4		3.0	6.0	9.0	C-D Lot
C-5		3.75	7.0	10.8	C-D Lot
C-6		3.25	8.75	12.0	Main Parking
C-7		3.0	9.5	12.5	Main Parking
C-8		2.5	7.5	10.0	Main Parking
C-9		3.0	11.0	14.0	Main Parking
C-10		6.0	3.0	9.0	Main Parking
C-11		2.75	11.25	14.0	Main Parking
C-12		4.0	5.0	9.0	Forest Preserve Road
C-13		4.75	4.5	9.25	Forest Preserve Road
C-14		4.0	7.75	11.75	Forest Preserve Road
C-15		5.75	6.75	12.5	Forest Preserve Road
C-16		5.25	6.5	11.75	Forest Preserve Road
C-17		4.75	9.5	14.25	Forest Preserve Road
C-18					Area NIC
C-19					Area NIC
C-20					Area NIC
C-21					Area NIC
C-22					Area NIC
C-23		3.0	4.0	7.0	Archives Drive
C-24		3.75	9.25	13.0	Archives Parking
C-25		3.5	6.25	9.75	A-B Lot
C-26		3.75	6.0	9.75	A-B Lot
C-27		4.25	6.25	10.5	A-B Lot
C-28					Area NIC

Note: No borings have been performed on the entry road leading to the C-D Lot. However, the entry road was constructed at the same time as the C-D Lot (Boring locations C-1 to C-5).

PROPOSED ROADS AND PARKING (Report Dated 9/20/2020)

P-1	18.0				
P-2	18.0				
P-3	12.0				
P-4	18.0				
P-5	12.0				
P-6	15.0				
P-7	18.0				
P-8	15.0				
P-9	15.0				
P-10	12.0				
P-11	0.0				
P-12	15.0				
P-13	12.0				
P-14	N/A	4.5	15.0	19.5	Existing Pavement
P-15	15.0				
P-16	N/A	4.5	5.5	10.0	Existing Pavement
P-17	N/A	5.0	5.0	10.0	Existing Pavement
P-18	N/A	5.0	3.0	8.0	Existing Pavement
P-19	N/A	5.0	11.0	16.0	Existing Pavement
P-20	N/A	4.0	8.0	12.0	Existing Pavement
STRUCTURAL					
S-1					
S-2					
S-3					
S-4	15.0				Taylor Lake Shelter
S-5					
S-6					
S-7					

PROPOSED LOOP TRAIL (Report Dated 9/20/2020)

T-1	15.0				
T-2	12.0				
T-3	12.0				
T-4	12.0				
T-5	13.0				
T-6	15.0				
T-7	18.0				
T-8	18.0				
T-9	6.0				
T-10	0.0				
T-11	15.0				
T-12	10.0				
T-13	18.0				
T-14	15.0				

ADDITIONAL TOPSOIL INVESTIGATION (Original Report 4/16/21, Revised Report 2/24/23)

B-1	12.0				
B-2	8.0				
B-3	10.0				
B-4	9.0				
B-5	12.0				
B-6	14.0				
B-7	12.0				
B-8	9.0				
B-9	12.0				
B-10	7.0				

STRUCTURAL BORING (Report Dated 12/12/2022)

B-1					
B-2					
B-3	14.0				
B-4	6.0				

SOIL AND MATERIAL CONSULTANTS, INC.

Office: 847-870-0544
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us@soilandmaterialconsultants.com
www.soilandmaterialconsultants.com

March 30, 2018
File No. 23831

Ms. Susan Hall
Lake County Forest Preserves
1899 West Winchester Road
Libertyville, IL 60048

Re: Pavement Investigation
Lakewood Forest Preserve
Lake County, Illinois

Dear Ms. Hall:

The following is our report of findings for the pavement investigation completed at Lakewood Forest Preserve in unincorporated Lake County, Illinois.

The investigation was requested to determine existing pavement sections and subgrade soil support conditions for use in a pavement evaluation. The Lake County Forest Preserves is currently in the concept planning phase and evaluating the pavement to understand potential costs associated with potential future treatments. We understand the pavement areas are being considered for potential removal, resurfacing, reconfiguration, and expansion.

SCOPE OF THE INVESTIGATION

The field investigation included visual examination of the pavement surface and adjacent site conditions. A total of 40 test locations were established as shown on the enclosed location sketch. At 28 locations (C-1 to C-28) the pavement section was cored to determine material types and thicknesses. The remaining 12 locations (B-101 to B-112) were drilled to determine the pavement and soil profile to depths of 2.0 feet to 5.0 feet below the surface. Soil samples were obtained beneath the pavement using a split barrel sampler. Additional samples were obtained from the auger flights at the deeper elevations.

Pavement materials and soil samples obtained during the field investigation were returned to our laboratory for review and testing. Soil testing included determination of moisture content. Cohesive soils obtained by split barrel sampling were further tested to determine dry unit weight and unconfined compressive strength. The results of all field and laboratory testing are included in summary with this report.

EXISTING CONDITIONS

The pavement core results are summarized in the table below. Please refer to the individual core logs for more detailed information.

Core	Total HMA (in.)	Granular Base (in.)	Total Pavement (in.)
Northeast Parking Lots			
1	**3.25**	6.75	10.0
2	**4.0**	5.0	9.0
3	3.75	4.0	7.75
4	**3.0**	6.0	9.0
5	3.75	7.0	10.75
6	3.25	8.75	12.0
7	3.0	9.5	12.5
8	2.5	7.5	10.0
9	3.0	11.0	14.0
10 (In Patch)	6.0	3.0	9.0
11	2.75	11.25	14.0
N. Forest Preserve Road			
12	4.0	5.0	9.0
13	**4.75**	4.5	9.25
14	**4.0**	7.75	11.75
15	5.75	6.75	12.5
16	5.25	6.5	11.75
17	4.75	9.5	14.25
Discovery Museum Access Road			
18	4.75	11.25**	16.0
19	2.75	11.25	14.0
Carpenter Shop & Central Supply			
20	4.0 PCC	**6.0 PCC**	10.0
21	3.25	3.75	7.0
22	**1.75**	14.25	16.0
Curt Teich Archives Building			
23	3.0	4.0**	7.0
24	3.75	9.25	13.0
Ivanhoe Road Parking Lot			
25	3.5	6.25	9.75
26	3.75	6.0	9.75
27	4.25	6.25	10.5
24237 W. Ivanhoe Road			
28	4.0	8.0	12.0

BOLD indicates a failure in the pavement layer.
** indicates the granular base was contaminated with clay.

Borings were performed along the access drive west of Forest Preserve Road which leads to the Lakewood Forest Preserve Pavilion, the pavilion parking lot, and on the driveway and parking area at the south side of 24237 W. Ivanhoe Road. The below table summarizes the pavement materials encountered at each boring location.

Boring	Total HMA (in.)	Sand & Gravel (in.)	Total Pavement (in.)
Pavilion Access Road			
101	7.0	11.0*	18.0
102		11.0	11.0
103		14.5	14.5
104		18.0	18.0
105		9.0	9.0
106		11.0	11.0
107		9.0	9.0
108		10.0	10.0
Pavilion Parking Lot			
109		7.0	7.0
110		10.0	10.0
24237 W. Ivanhoe Road			
111		7.0	7.0
112		2.5	2.5

* Denotes the presence of a geotextile fabric

Buried topsoil was encountered underlying the pavement materials at borings 102, 103, 104, 105, 107, and 112. The topsoil is classified at dark brown silt/clay mixtures.

Underlying soil conditions include the presence of cohesive soils. These are classified as tough to hard clay/silt mixtures with lesser portions of sand and gravel. Non-cohesive soils are also present as indicated at borings 102, 105,106, 107, 108, and 111. These include loose to medium dense sand, silt, sand/silt, and silt/clay mixtures. The non-cohesive soils are often in a damp condition. Cobbles and boulders may be present within the soil at any elevation, although none were encountered while drilling.

CONCLUSION

The information within this report is intended to provide initial information concerning subsurface soil and water conditions on the site. Locally varying conditions may be present between test locations.

If you have any questions concerning the findings or recommendations presented in this report, please let me know.

Very truly yours,

SOIL AND MATERIAL CONSULTANTS, INC.

Thomas P. Johnson, P.E.
President

TPJ:ek
Enc.

SMC	SOIL AND MATERIAL CONSULTANTS, INC.	LOCATION SKETCH
Client:	LAKE COUNTY FOREST PRESERVES	
Project:	LAKEWOOD FOREST PRESERVE	
Location:	LAKE COUNTY, ILLINOIS	
File No. 23831	Date: 3-28-18	Scale: NONE

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

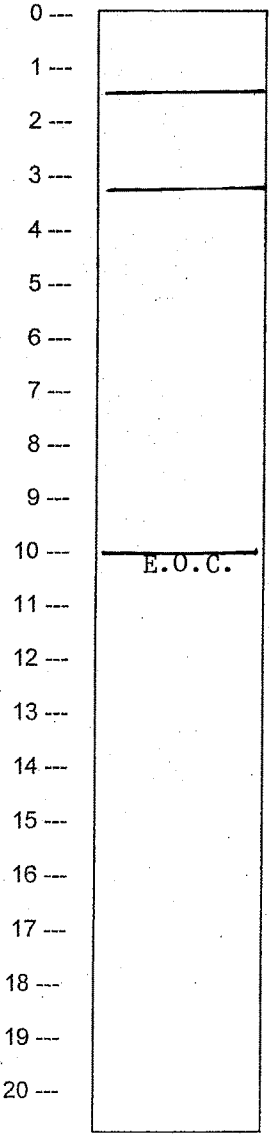
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 1 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface (failed) no bond	Full
1-3/4" Bituminous concrete - binder (failed)	Full
6-3/4" Crushed & uncrushed gravel with fines	Partial
Total 10-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

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Date: 3/21/18

File No.: 23831

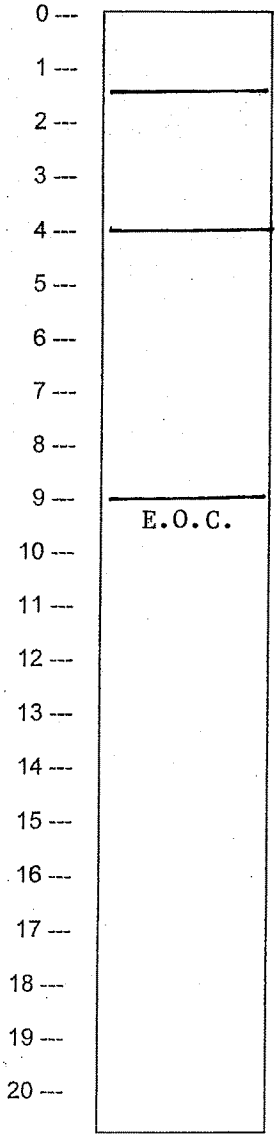
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 2 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface (failed) no bond	Partial
2-1/2" Bituminous concrete - binder (failed)	Partial
5-0" Crushed & uncrushed gravel with fines	Partial
Total 9-0"	

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Date: 3/21/18

File No.: 23831

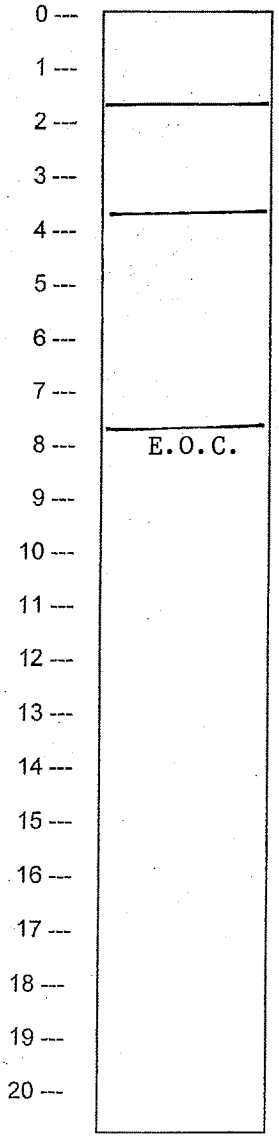
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 3 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



	Type of Material	Recovery
1-3/4"	Bituminous concrete - surface	Full
	no bond	
2-0"	Bituminous concrete - binder	Full
4-0"	Crushed & uncrushed gravel with fines	Partial
Total 7-3/4"		

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Date: 3/21/18

File No.: 23831

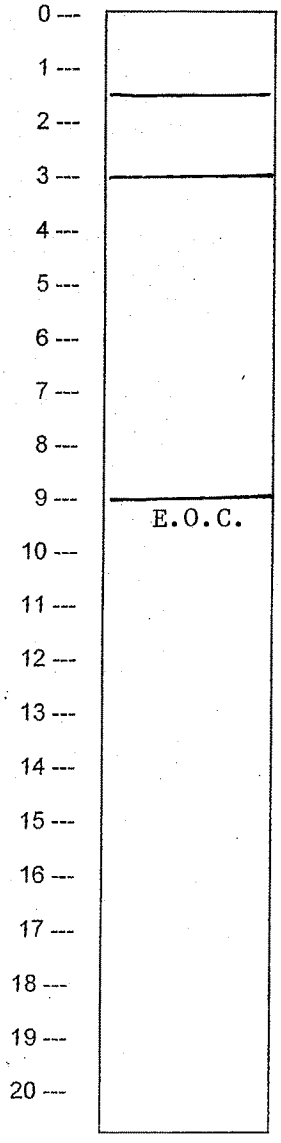
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 4 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface no bond	Full
1-1/2" Bituminous concrete - binder (failed)	Partial
6-0" Crushed & uncrushed gravel with fines	Partial
Total 9-0"	

G-333

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Date: 3/21/18

File No.: 23831

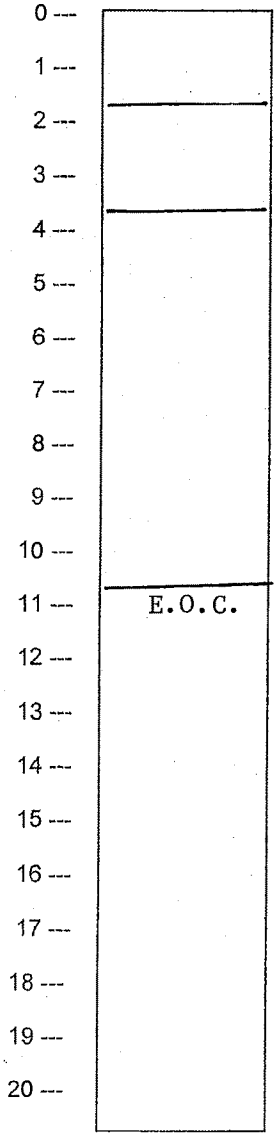
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 5 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material		Recovery
1-3/4"	Bituminous concrete - surface no bond	Full
2-0"	Bituminous concrete - binder	Full
7-0"	Crushed & uncrushed gravel with fines	Partial
Total 10-3/4"		

G-333

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

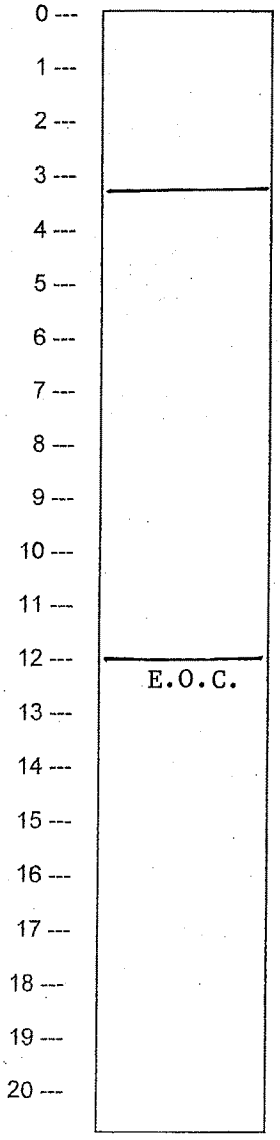
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 6 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
3-1/4" Bituminous concrete - surface	Full
8-3/4" Crushed & uncrushed gravel with fines	Partial
Total 12-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

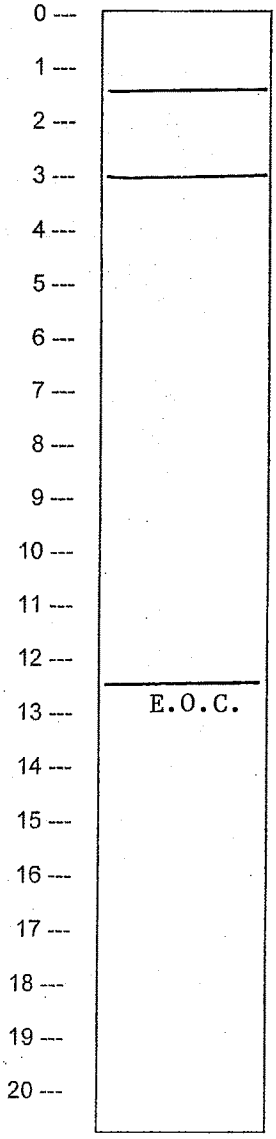
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 7 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface	Full
1-1/2" Bituminous concrete - surface	Full
9-1/2" Crushed & uncrushed gravel with fines	Partial
Total 12-1/2"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

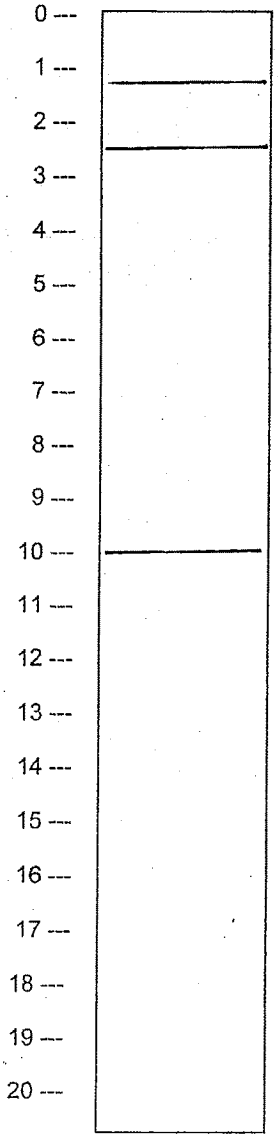
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 8 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/4" Bituminous concrete - surface	Full
1-1/4" Bituminous concrete - surface	Full
7-1/2" Crushed & uncrushed gravel with fines	Partial
Total 10-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

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Date: 3/22/18

File No.: 23831

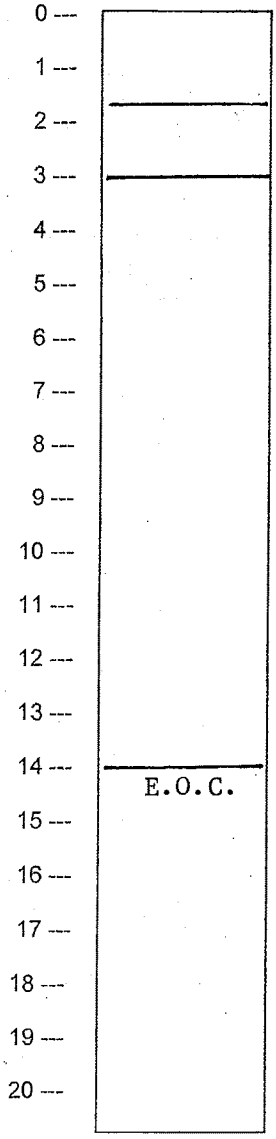
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 9 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface	Full
1-1/4" Bituminous concrete - surface	Full
11-0" Crushed & uncrushed gravel with fines	Partial
Total 14-0"	

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Date: 3/22/18

File No.: 23831

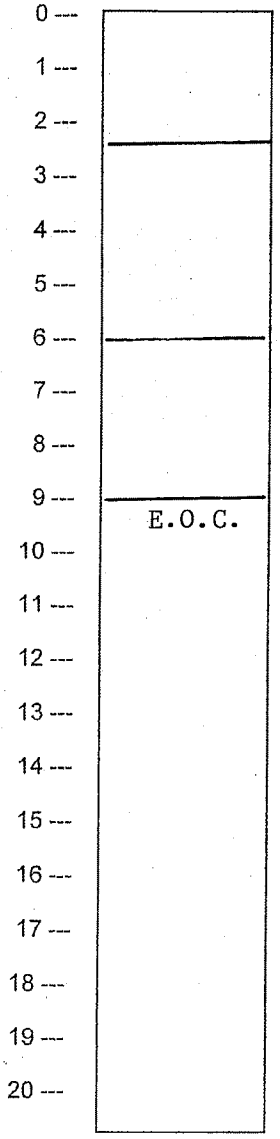
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 10 Work Done By: DB & JL

Location of Core: See Sketch (in patched area)

Comments:



Type of Material	Recovery
2-1/2" Bituminous concrete - surface	Full
3-1/2" Bituminous concrete - binder	Full
3-0" Crushed gravel with fines	Partial
Total 9-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

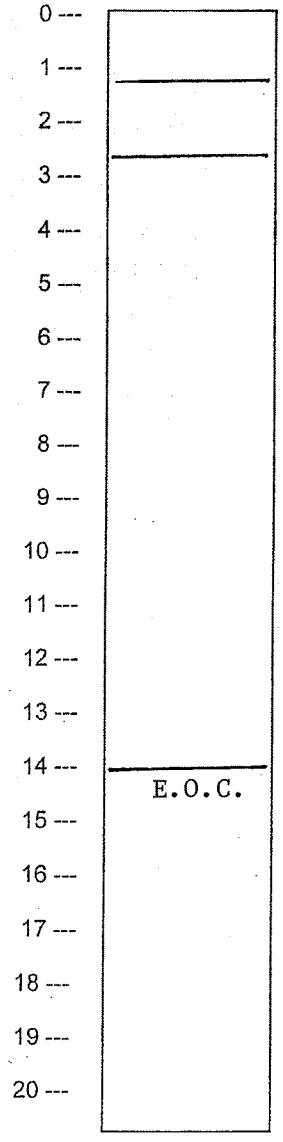
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 11 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/4" Bituminous concrete - surface	Full
1-1/2" Bituminous concrete - binder	Full
11-1/4" Crushed gravel with fines	Partial
Total 14-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

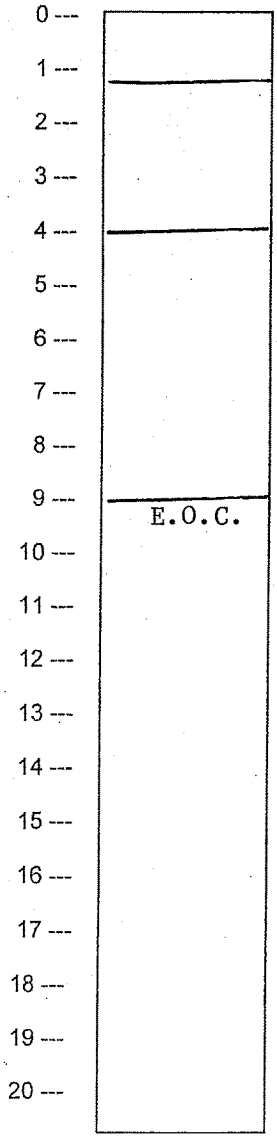
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 12 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 5' E. of CL (See Sketch)

Comments:



Type of Material	Recovery
1-1/4" Bituminous concrete - surface	Full
2-3/4" Bituminous concrete - binder	Full
5-0" Crushed & uncrushed gravel with fines	Partial
Total 9-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

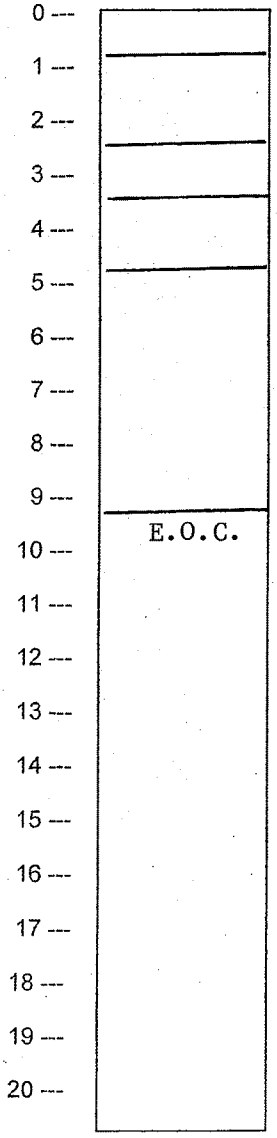
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 13 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 3' W. of CL (See Sketch)

Comments:



Type of Material	Recovery
0-3/4" Bituminous concrete - surface (failed) no bond	Partial
1-3/4" Bituminous concrete - binder	Full
1-0" Bituminous concrete - binder	Full
1-1/4" Bituminous concrete - binder	Full
4-1/2" Crushed & uncrushed gravel with fines	Partial
Total 9-1/4"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

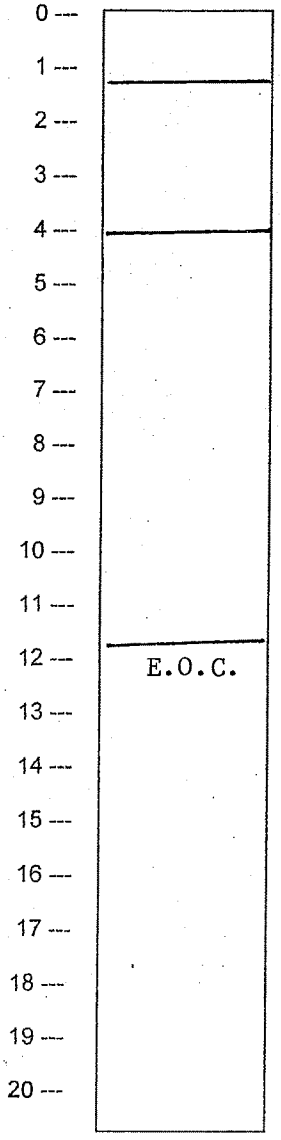
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve; Lake Co., Inc.

Core No: 14 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 6' E. of CL (See Sketch)

Comments:



Type of Material	Recovery
1-1/4" Bituminous concrete - surface (failed) no bond	Partial
2-3/4" Bituminous concrete - binder	Full
7-3/4" Crushed & uncrushed gravel with fines	Partial
Total 11-3/4"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

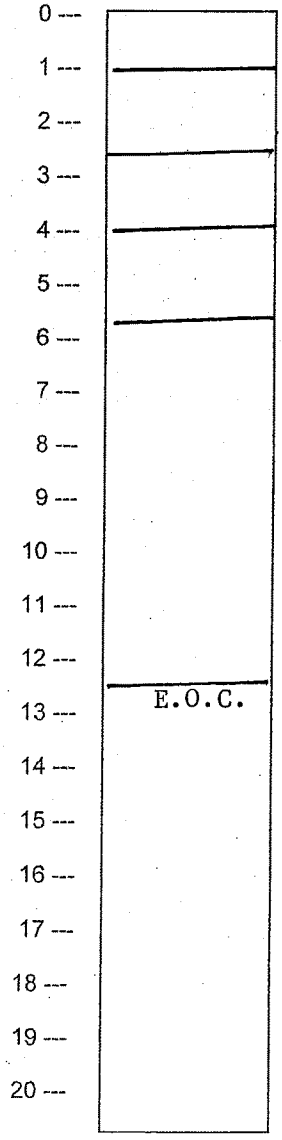
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 15 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 5' W. of CL (See Sketch)

Comments:



	Type of Material	Recovery
1-0"	Bituminous concrete - surface no bond	Full
1-3/4"	Bituminous concrete - binder	Full
1-1/4"	Bituminous concrete - binder	Full
1-3/4"	Bituminous concrete - binder	Full
6-3/4"	Crushed & uncrushed gravel with fines	Partial
Total 12-1/2"		

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

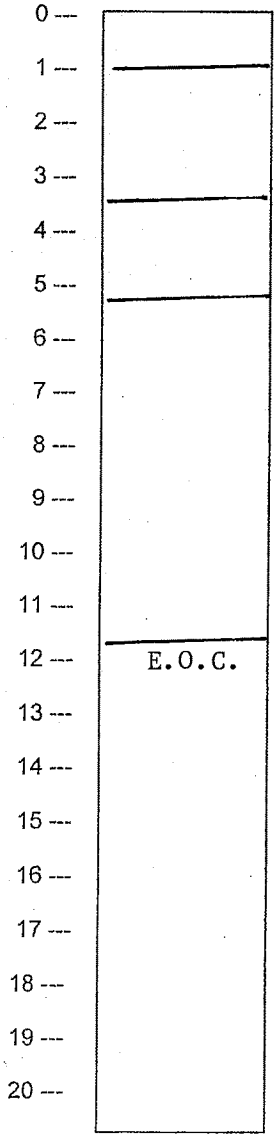
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 16 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 3' E. of CL (See Sketch)

Comments:



	Type of Material		Recovery
1-0"	Bituminous concrete - surface	no bond	Full
2-1/2"	Bituminous concrete - binder	no bond	Full
1-3/4"	Bituminous concrete - binder		Full
6-1/2"	Crushed & uncrushed gravel with fines		Partial
Total 11-3/4"			

G-333

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

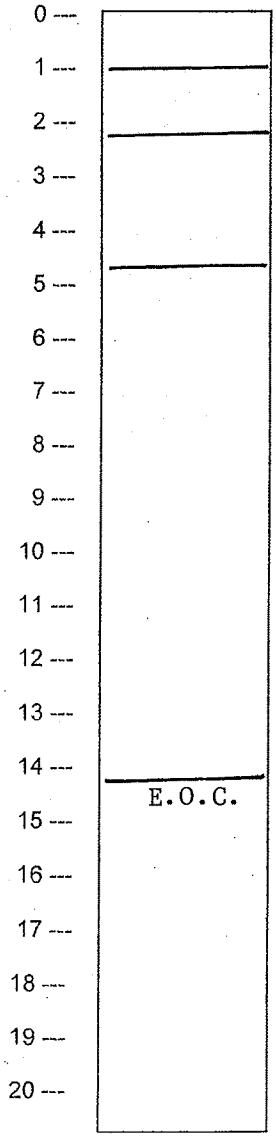
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 17 Work Done By: DB & JL

Location of Core: N. Forest Preserve Road, 3' W. of CL (See Sketch)

Comments:



	Type of Material	Recovery
1-0"	Bituminous concrete - surface no bond	Full
1-1/4"	Bituminous concrete - binder	Full
2-1/2"	Bituminous concrete - binder	Full
9-1/2"	Crushed & uncrushed gravel with fines	Partial
Total 14-1/4"		

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

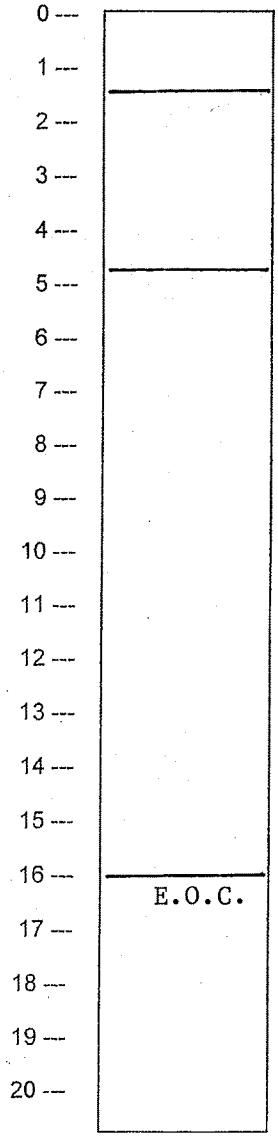
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 18 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface	Full
3-1/4" Bituminous concrete - surface	Full
11-1/4" Crushed & uncrushed gravel with fines slightly contaminated with clay	Partial
Total 16-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

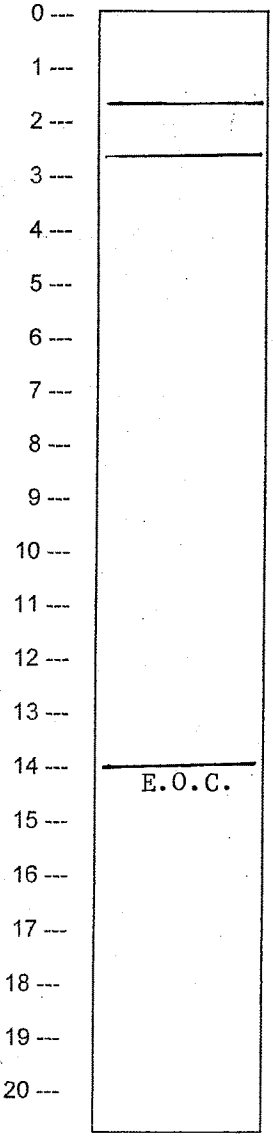
CORE LOG

Client: Lake County Forest Preserve Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 19 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material		Recovery
1-3/4"	Bituminous concrete - surface	Full
1-0"	Bituminous concrete - binder	Full
11-1/4"	Crushed & uncrushed gravel, some large	Partial
Total 14-0"		

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

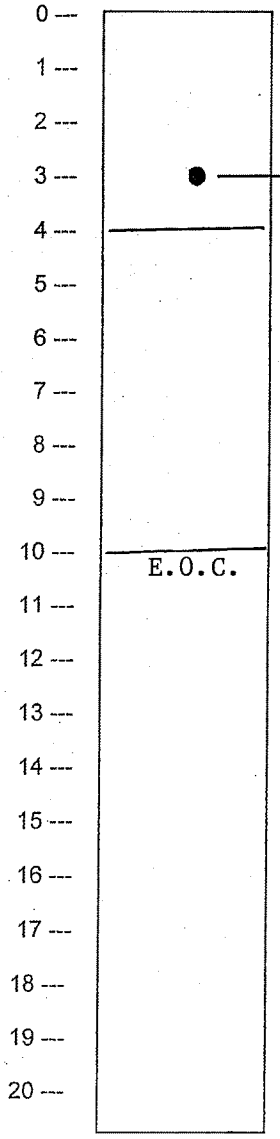
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 20 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
4-0" Concrete	Full
wire mesh at 3-1/4"	
6-0" Concrete (failed)	Partial
Total 10-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

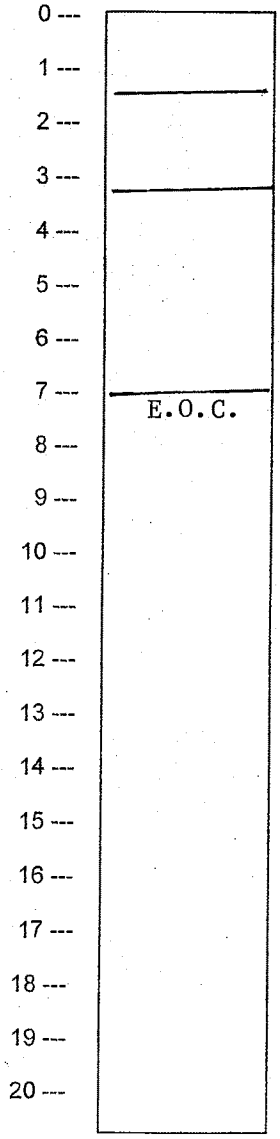
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 21 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/2" Bituminous concrete - surface	Full
1-3/4" Bituminous concrete - binder	Full
3-3/4" Crushed & uncrushed gravel with fines	Partial
Total 7-0"	

G-333

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

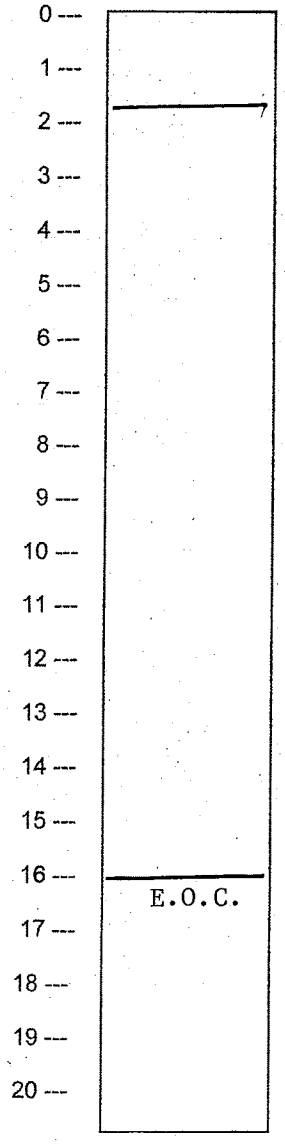
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 22 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface (failed)	Partial
14-1/4" Crushed & uncrushed gravel with fines	Partial
Total 16-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

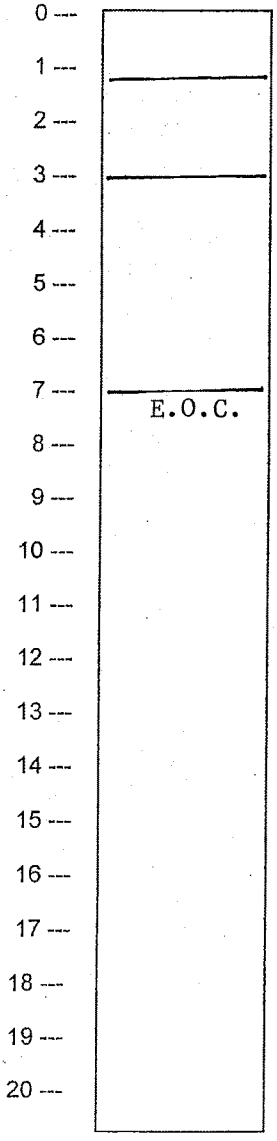
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 23 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-1/4" Bituminous concrete - surface no bond	Full
1-3/4" Bituminous concrete - surface	Full
4-0" Crushed gravel with fines, some large slightly contaminated with clay	Partial
Total 7-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/22/18

File No.: 23831

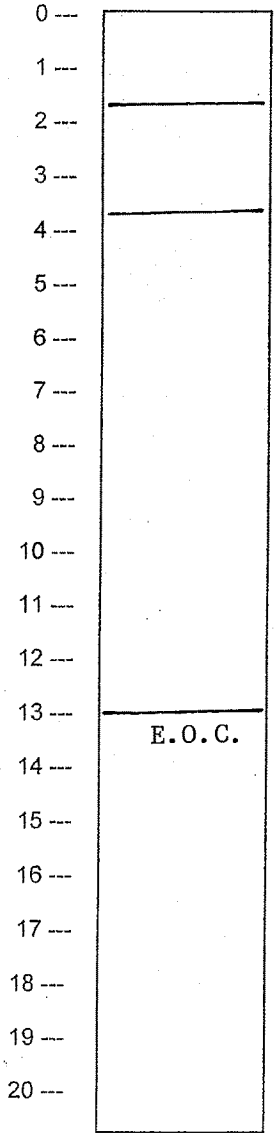
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 24 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface no bond	Full
2-0" Bituminous concrete - surface	Full
9-1/4" Crushed & uncrushed gravel, some large	Partial
Total 13-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

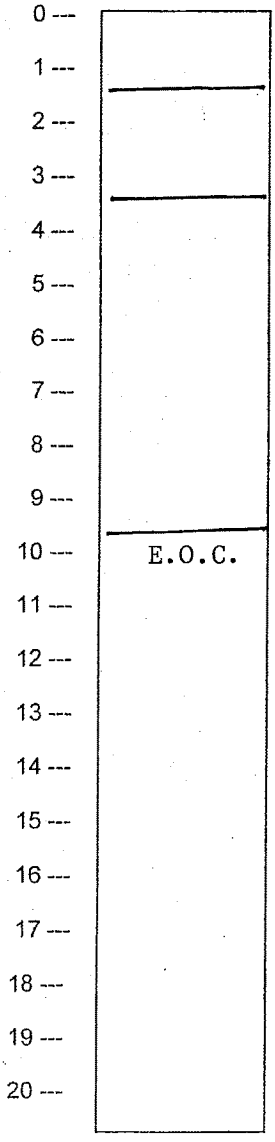
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 25 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material		Recovery
1-1/2"	Bituminous concrete - surface no bond	Full
2-0"	Bituminous concrete - binder	Full
6-1/4"	Crushed gravel with fines	Partial
Total 9-3/4"		

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

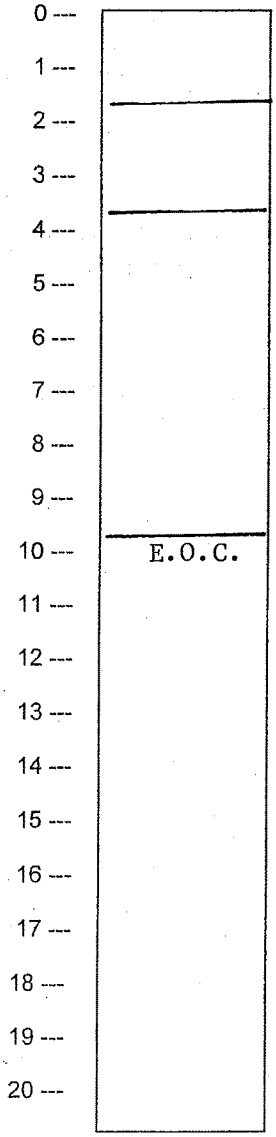
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co,, IL

Core No: 26 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface	Full
2-0" Bituminous concrete - binder	Full
6-0" Crushed gravel with fines	Partial
Total 9-3/4"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

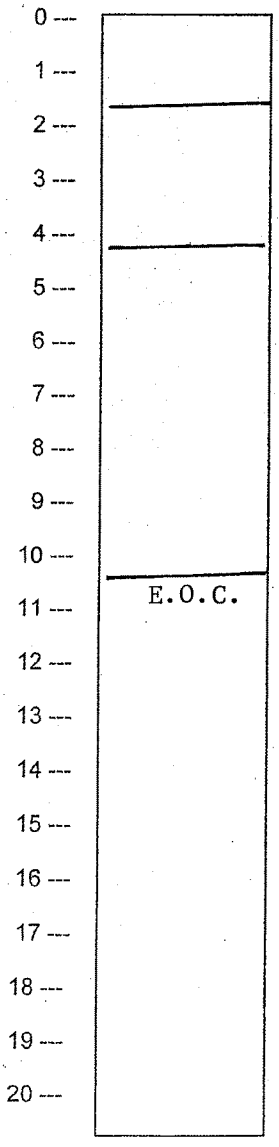
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 27 Work Done By: DB & JL

Location of Core: See Sketch

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface	Full
no bond	
2-1/2" Bituminous concrete - binder	Full
6-1/4" Crushed gravel with fines	Partial
Total 10-1/2"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

Date: 3/21/18

File No.: 23831

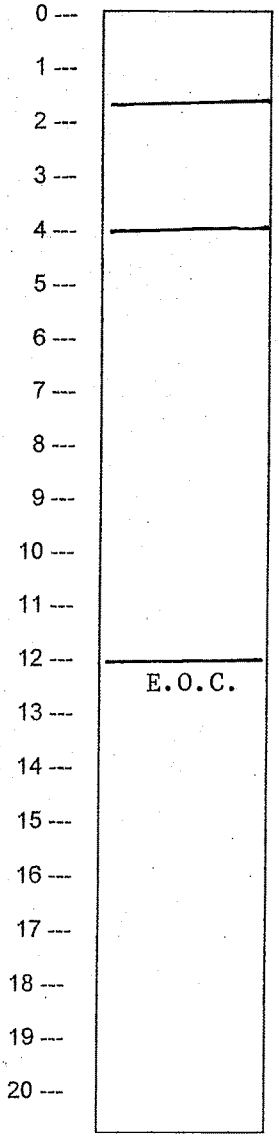
CORE LOG

Client: Lake County Forest Preserves Reference Lakewood Forest Preserve, Lake Co., IL

Core No: 28 Work Done By: DB & JL

Location of Core:

Comments:



Type of Material	Recovery
1-3/4" Bituminous concrete - surface	Full
no bond	
2-1/4" Bituminous concrete - binder	Full
8-0" Crushed gravel with fines	Partial
Total 12-0"	

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 101

Logged By: CS Page: 1 of 1

Client: Lake County Forest Preserves

File No. 23831 Date Drilled: 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

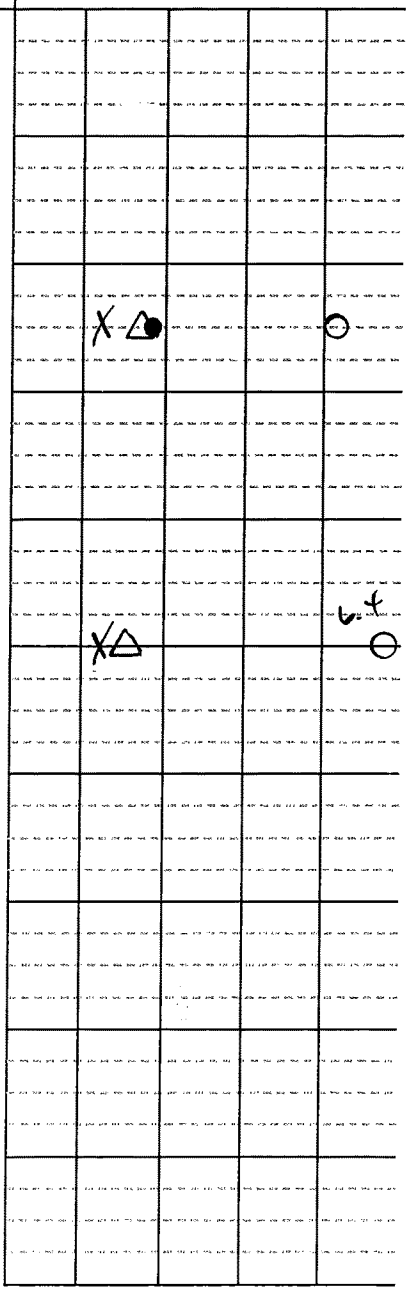
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Bituminous concrete - 7.0"				
1	Dark brown sand & gravel, some crushed concrete, damp (geotextile fabric)				
2	Brown clay, some silt, trace sand & gravel, damp, hard	13	15.6	117.1	4.1
3					
4					
5	End of Boring	13	15.4	120.3	6.4
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 102

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

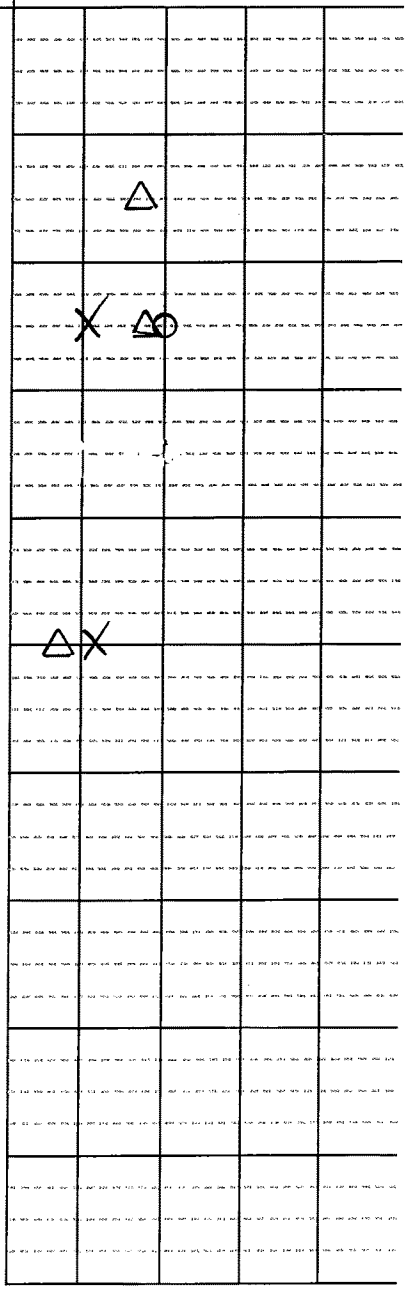
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 11.0"				
1	Dark brown silt,some clay,trace sand, damp,medium dense (topsoil)		15.7		
2	Brown clay,some silt,trace sand & gravel damp,very tough	11	16.9	116.5	2.0
3					
4	Brown medium-fine sand,trace coarse sand & gravel,damp,medium dense				
5		12	6.3		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 103

Logged By: CS Page: 1 of 1

Client: Lake County Forest Preserves

File No. 23831 Date Drilled: 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

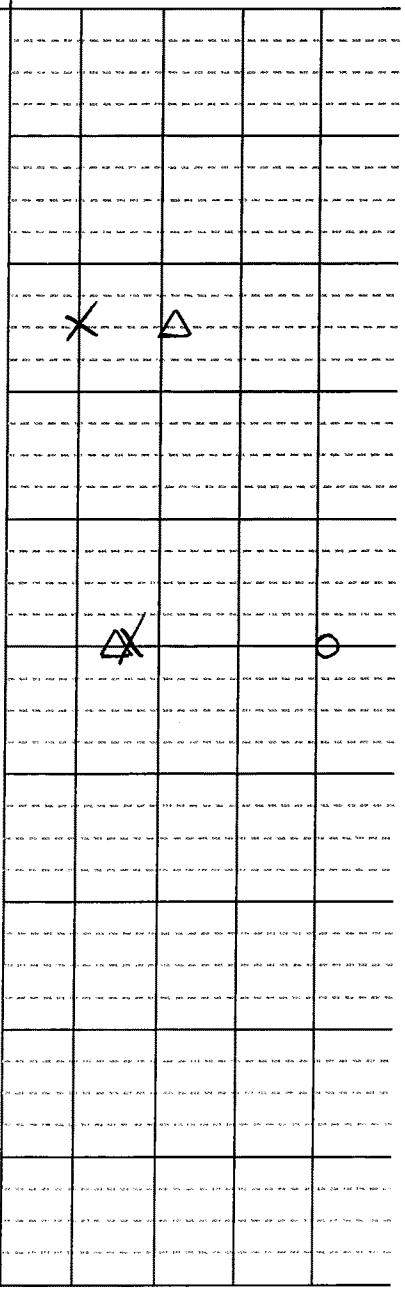
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ϒ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 14.5"				
1					
2	Dark brown silt,some clay,trace sand, damp,medium dense (topsoil)	10	20.5		
3	Brown clay,some silt,trace sand & gravel damp,hard				
4					
5		16	15.0	123.2	4.1
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 104

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

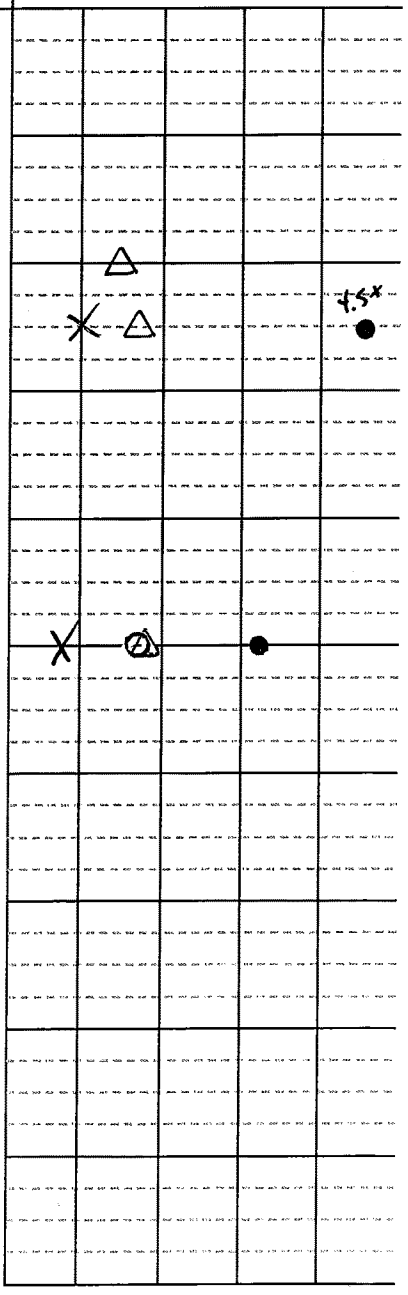
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Brown sand & gravel, damp				
2	Dark brown silt, some clay, trace sand & gravel, damp, medium dense (topsoil)		14.3		
3	Brown clay, some silt, trace sand & gravel, damp, hard	10	16.9		
4	Brown clay, some silt, trace sand & gravel, damp, tough				
5	End of Boring	7	17.7	110.8	1.7
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 105

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

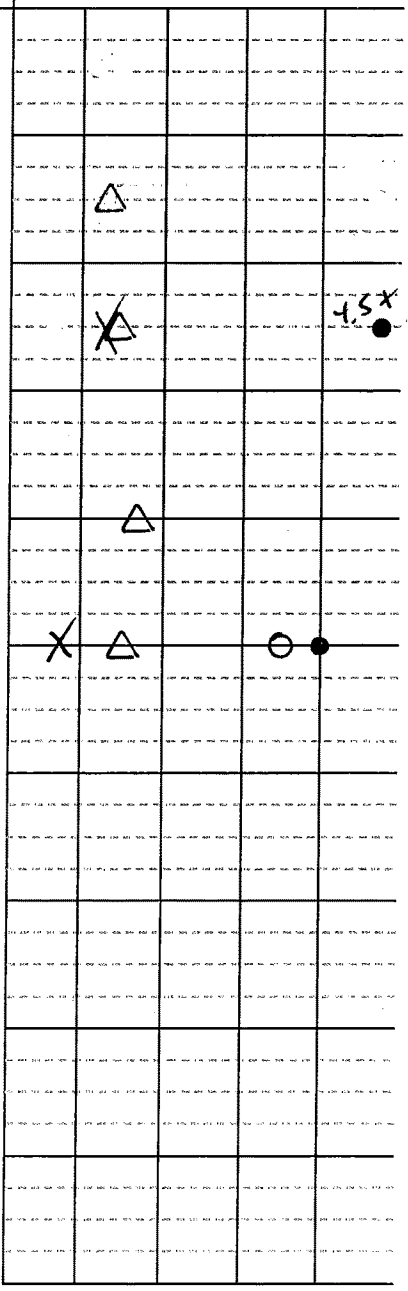
File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ϒ	unconfined compressive strength ○
	Brown sand & gravel,damp - 9.0"				
1	Dark brown silt,some clay,trace sand, damp,medium dense (topsoil)				
			13.3		
2	Brown clay,some silt,trace sand & gravel damp,hard				
		13	14.0		
3	Brown silt,trace clay,sand & gravel, damp,loose				
4			17.0		
	Brown clay,some silt,trace sand & gravel, damp,very tough				
5	End of Boring	7	15.4	118.2	3.6
6					
7					
8					
9					
10					



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

G-303d

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 106

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

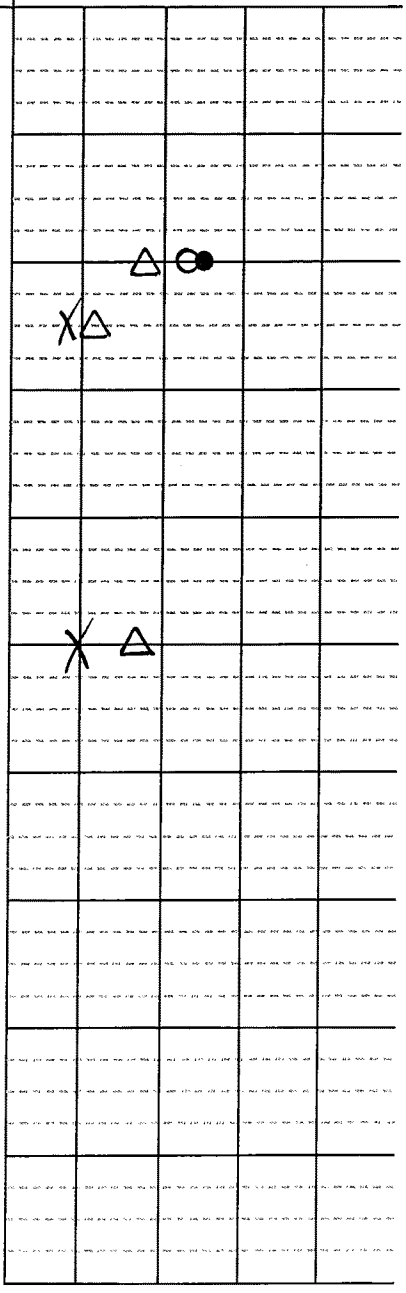
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ϑ	unconfined compressive strength ○
	Brown sand & gravel,damp - 11.0"				
1	Brown clay,some silt,trace sand & gravel, damp,very tough				
2			17.5	107.7	2.3
	Brown sand & silt,trace clay,damp,loose	8	11.4		
3					
	Brown fine sand & silt,trace coarse sand,damp,loose				
4					
5		9	16.6		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 107

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

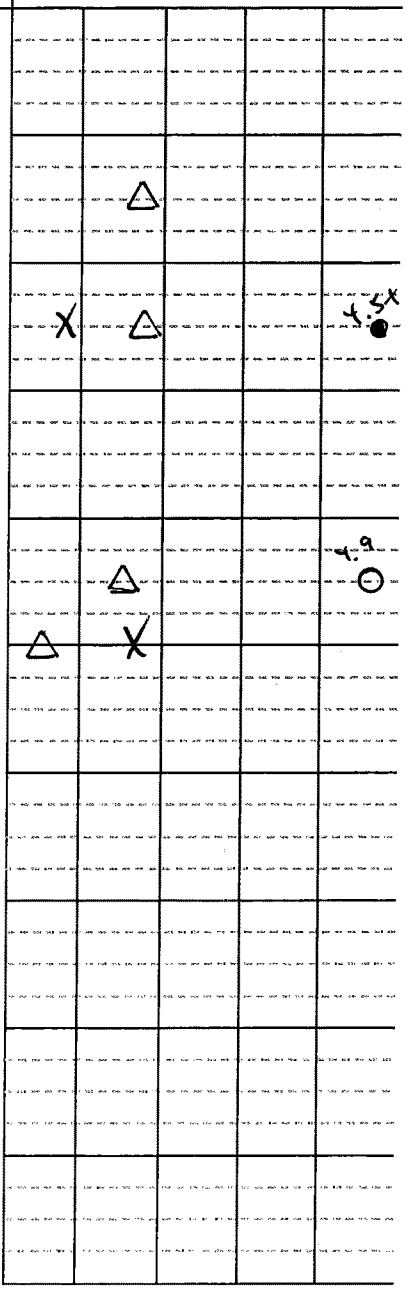
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration X	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength O
	Brown sand & gravel,damp - 9.0"				
1	Dark brown silt,some clay,trace sand & gravel,damp (topsoil)		15.8		
2	Brown clay,some silt,trace sand & gravel damp,hard	8	18.6		
3					
4					
	Brown fine-medium sand,trace coarse sand,damp,medium dense		15.4	117.8	4.9
5		16	4.4		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

G-303d

SOIL AND MATERIAL CONSULTANTS, INC.
8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 108

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

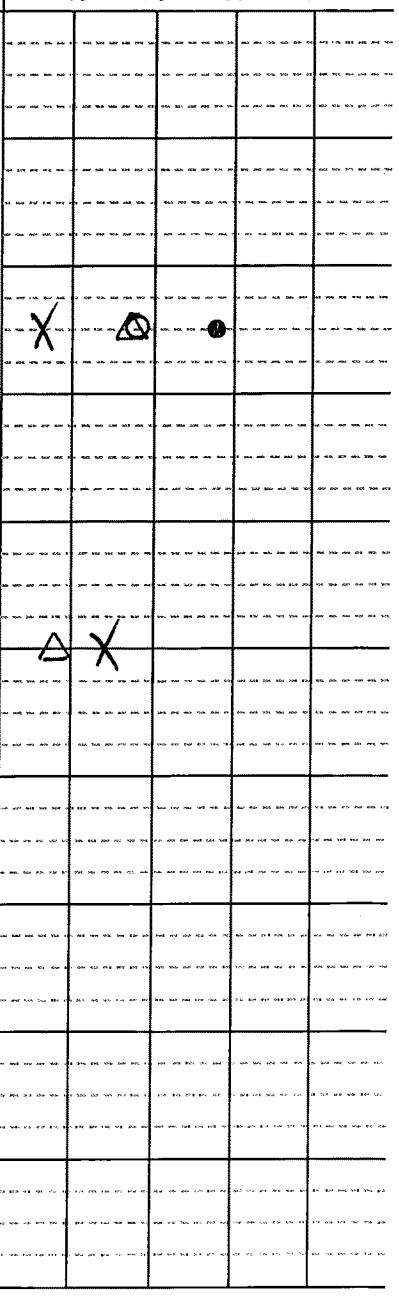
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 10.0"				
1					
	Dark brown-brown clay,some silt,trace sand & gravel,damp,tough				
2					
		6	16.0	113.6	1.8
3					
	Brown fine sand,trace coarse sand & gravel,damp,medium dense				
4					
5		14	8.5		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 109

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

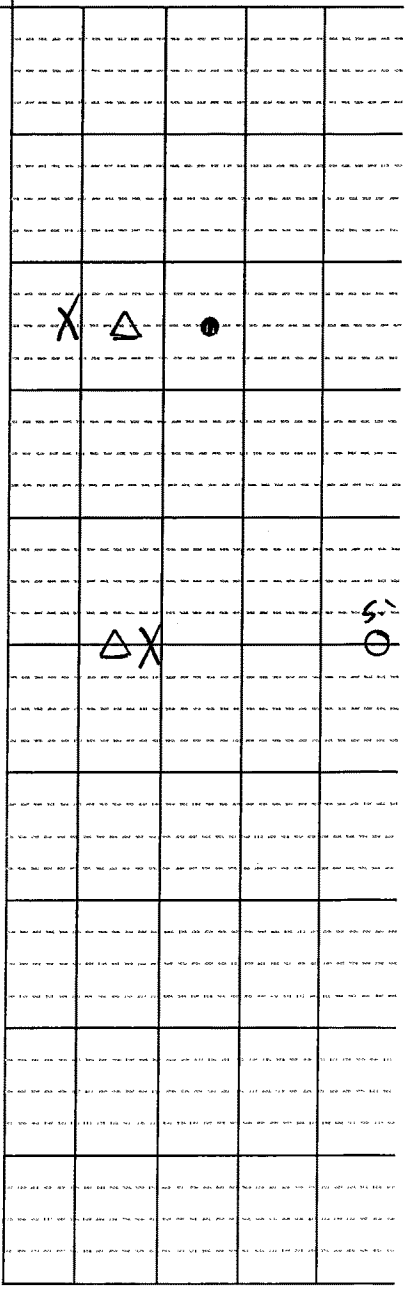
Reference: Lakewood Forest Preserve
Lake County, IL

Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 7.0"				
1	Brown clay,some silt,trace sand & gravel, damp,very tough to hard				
2		8	14.8		
3					
4					
5	End of Boring	18	14.2	118.8	5.1
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0
× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 110

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

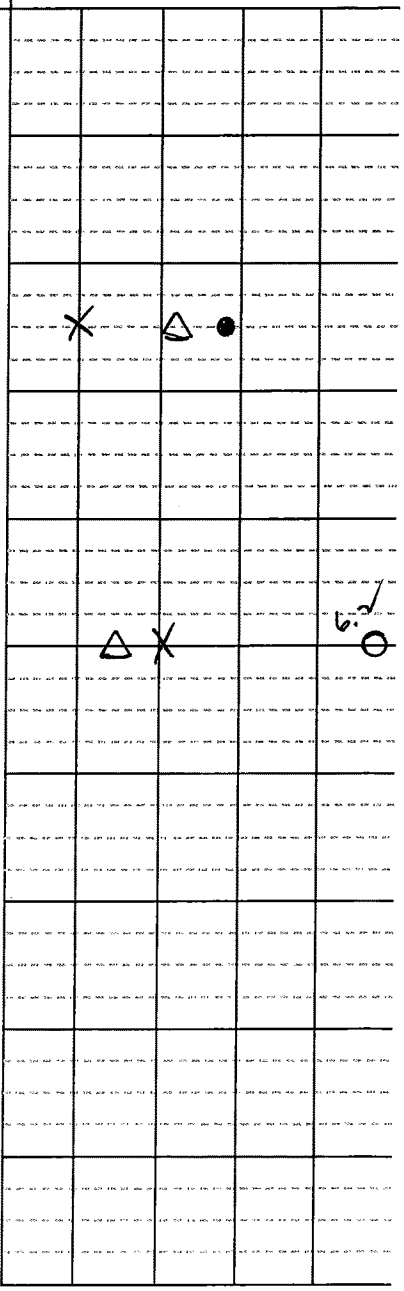
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 10.0"				
1					
	Brown clay,some silt,trace sand & gravel, damp,very tough to hard				
2		10	20.7		
3					
4					
5		21	15.0	114.0	6.2
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

G-303d

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 111

Logged By: CS Page: 1 of 1

Client: Lake County Forest Preserves

File No. 23831 Date Drilled: 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

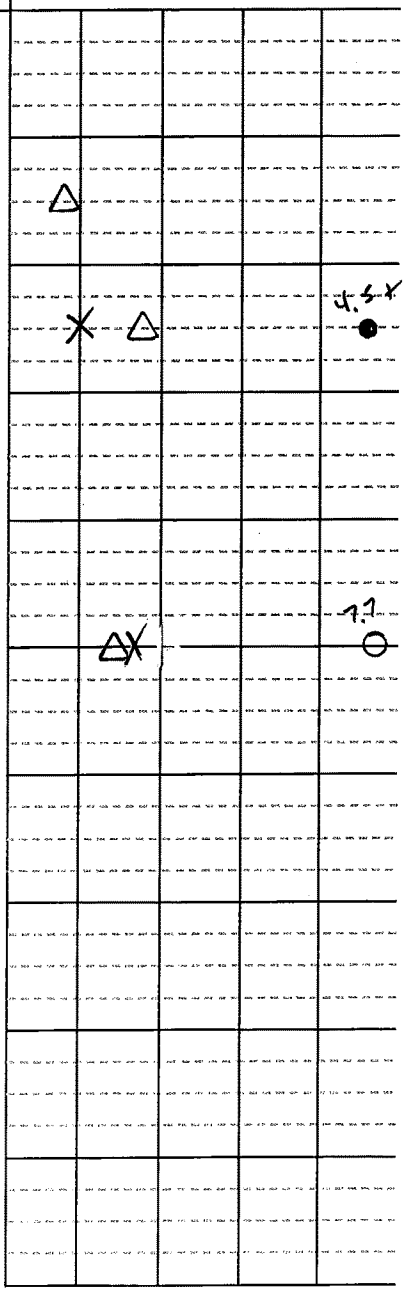
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown sand & gravel,damp - 7.0"				
1	Dark brown silt,some clay,trace sand, damp,medium dense		9.1		
2	Dark brown clay,some silt,trace sand & gravel,damp,hard	10	19.4		
3					
4					
5		16	13.9	121.3	7.7
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG 112

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 23831 **Date Drilled:** 3/28/18

Reference: Lakewood Forest Preserve
Lake County, IL

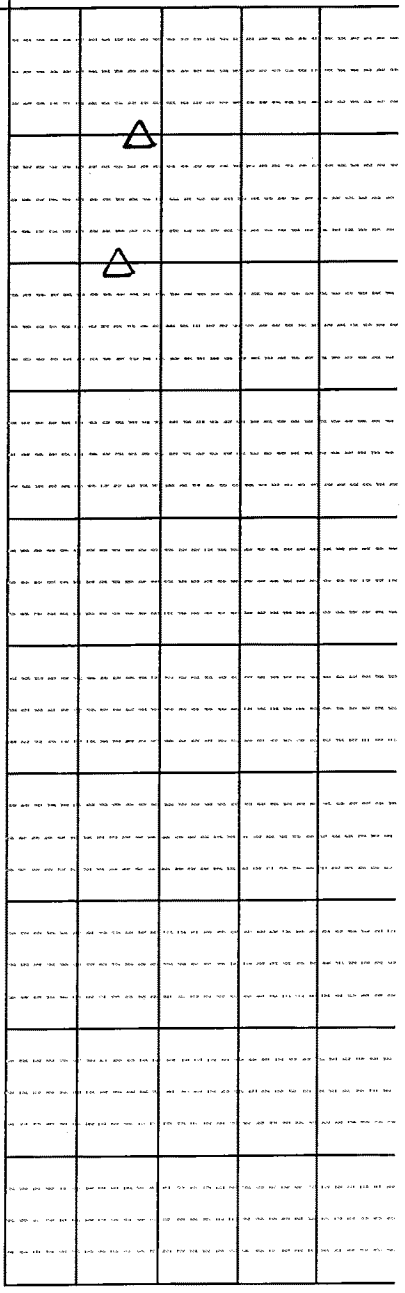
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Brown sand & gravel,damp - 2.5"				
	Dark brown silt,some clay,trace sand, damp,medium dense (topsoil)				
1			17.6		
	Brown clay,some silt,trace sand & gravel damp				
2			14.2		
	End of Boring				
3					
4					
5					
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
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Water recorded at feet hours after completion of drilling operations (A.D.)

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8 W. COLLEGE DR. • ARLINGTON HEIGHTS, IL 60004 • 847-870-0544 • FAX 847-870-0661

GENERAL NOTES

SAMPLE CLASSIFICATION

Soil sample classification is based on the Unified Soil Classification System, the Standard Practice for Description and Identification Soils (Visual-Manual Procedure), ASTM D-2488, the Standard Test Method for Classification of Soils for Engineering Purposes, ASTM D-2487 (when applicable), and the modifiers noted below.

CONSISTENCY OF COHESIVE SOILS

Term	Qu-tons.sq.ft.	N (unreliable)
Very soft	0.00 – 0.25	0 – 2
Soft	0.26 – 0.49	3 – 4
Stiff	0.50 – 0.99	5 – 8
Tough	1.00 – 1.99	9 –15
Very Tough	2.00 – 3.99	16 – 30
Hard	4.00 – 7.99	30 +
Very Hard	8.00 +	

RELATIVE DENSITY OF GRANULAR SOILS

Term	N – blows/foot
Very Loose	0 – 4
Loose	5 – 9
Medium Dense	10 – 29
Dense	30 – 49
Very Dense	50 +

IDENTIFICATION AND TERMINOLOGY

Term	Size Range
Boulder	over 8 in.
Cobble	3 in. to 8 in.
Gravel - coarse	1 in. to 3 in.
- medium	3/8 in. to 1 in.
- fine	#4 sieve to 3/8 in.
Sand - coarse	#10 sieve to #4 sieve
- medium	#40 sieve to #10 sieve
- fine	#200 sieve to #40 sieve
Silt	0.002 mm to #200 sieve
Clay	smaller than 0.002mm

Modifying Term	Percent by Weight
Trace	1 – 10
Little	11 – 20
Some	21 – 35
And	36 – 50

Moisture Content

Dry
Damp
Very Damp
Saturated

DRILLING, SAMPLING & SOIL PROPERY SYMBOLS

- CF - Continuous Flight Auger
- HS - Hollow Stem Auger
- HA - Hand Auger
- RD - Rotary Drilling
- AX - Rock Core, 1-3/16 in. diameter
- BX - Rock Core, 1-5/8 in. diameter
- NX - Rock Core, 2-1/8 in. diameter
- S - Sample Number
- T - Type of Sample
- J - Jar
- AS - Auger Sample
- SS - Split Spoon (2 in. O.D. with 1-3/8 in. I.D.)
- ST - Shelby Tube (2 in. O.D. w/ith1-7/8 in. I. D.)
- R - Recovery Length, in.
- B - Blows/6 in. interval, Standard Penetration Test (SPT)
- N - Blows/foot to drive 2 in. O.D. split-spoon sampler with 140 lb. hammer falling 30 in., (STP)
- Pen. - Pocket Penetrometer readings, tons/sq.ft.
- W - Water Content, % dry weight
- Uw - Dry Unit Weight of soil, lbs./cu.ft.
- Qu - Unconfined Compressive Strength, tons/sq.ft.
- Str - % Strain at Qu.
- WL - Water Level
- WD - While Drilling
- AD - After Drilling
- DCI - Dry Cave-in.
- WCI - Wet Cave-in.
- LL - Liquid Limit, %
- PL - Plastic Limit, %
- PI - Plasticity Index (LL-PL)
- LI - Liquidity Index [(W-PL)/PI]

SOIL AND MATERIAL CONSULTANTS, INC.

Office: 847-870-0544
Fax: 847-870-0661
us@soilandmaterialconsultants.com
www.soilandmaterialconsultants.com

September 30, 2020
File No. 24956

Mr. Jeff Sloot
Lake County Forest Preserves
1899 West Winchester Road
Libertyville, Illinois 60048

Re: Geotechnical Investigation
2019 Lakewood Soil Testing
Lake County, Illinois

Dear Mr. Sloot:

The following is our report of findings for the geotechnical investigation completed at the Lake County Forest Preserve in Lake County, Illinois.

The investigation was requested to determine current subsurface soil and water conditions at select boring locations. The findings of the field investigation and the results of laboratory testing are intended to assist in the planning, design and construction of proposed site improvements.

PROPOSED IMPROVEMENTS

We understand it is proposed to construct restroom buildings, picnic shelter, and a three-seasons building supported on shallow depth foundations. The structures are expected to have at-grade slabs supported on prepared subgrade soils. Additional improvements are expected to include a pond, walking path, pavement areas, sidewalks and related underground improvements.

SCOPE OF THE INVESTIGATION

The field investigation included obtaining 41 borings at the locations requested and as indicated on the enclosed location sketch. The boring locations were established using field taping methods and accuracy.

We auger drilled the 7 structure borings to depths of 15.0 feet below existing surface elevations. Soil samples were obtained using a split barrel sampler advanced utilizing an automatic SPT hammer. The 34 topsoil and pavement area borings were drilled and sampled in a similar manner to depths of 5.0 feet. Soil profiles were determined in the field and soil samples returned to our laboratory for additional testing including determination of moisture content. Cohesive soils obtained by split barrel sampling were tested further to determine dry unit weight and unconfined compressive strength.

The results of all field determinations and laboratory testing are included in summary with this report.

RESULTS OF THE INVESTIGATION

Enclosed are boring logs indicating the soil conditions encountered at each location. Site surface conditions include pavement materials, vegetation, topsoil and fill soil conditions. The topsoil is classified as dark brown to black sand/silt/clay mixtures with traces of roots.

Fill soil conditions were encountered at borings S-3, T-9, T-10 and P-14. Composition of the fill includes the presence of silt/clay/sand, topsoil, and silt/clay mixtures extending to depths of 1.0 feet to 4.0 feet at these boring locations. The limits of fill placement were not determined within the scope of this investigation. Larger debris may also be present within the fill but was not encountered during the investigation.

Underlying soil conditions include the presence of cohesive soils. These are classified as tough to very hard clay/silt mixtures with lesser portions of sand and gravel.

Non-cohesive soils were also encountered as indicated. These include loose to very dense sand, silt/sand/clay, sand/silt, silt/clay and sand/gravel mixtures. Cobbles and boulders may be present within the site soils at any elevation, although none were encountered while drilling.

The following table summarizes depth ranges below existing grade, the magnitude of soil strength within these ranges and other information:

Boring	Depth Range Below Existing Surface (feet)	Soil Strength (lbs./sq.ft.)	Recorded Water Levels, W.D./A.D. (feet)
Restroom Building			
S-1	2.0 to 4.0	2,000	dry/dry
	4.0 to 12.0	4,000	
Picnic Shelter			
S-2	2.0 to 10.5	2,000	dry/dry
	10.5 to 12.0	4,000	
Three Seasons Building			
S-3	0.5 to 4.5	*2,000	dry/dry
	4.5 to 9.0	7,000	
	9.0 to 12.0	8,000	
S-4	2.0 to 5.5	4,000	dry/dry
	5.5 to 12.0	8,000	
Restroom Building			
S-5	2.0 to 3.5	2,000	dry/dry
	3.5 to 8.0	5,000	
	8.0 to 12.0	3,000	
Proposed Pond			
S-6	2.0 to 4.0	3,000	dry/dry
	4.0 to 7.5	4,000	
	7.5 to 12.0	8,000	
S-7	1.5 to 4.0	4,000	dry/dry
	4.0 to 12.0	8,000	

* Not recommended for support of foundations.

It is expected that foundations can be supported on undisturbed natural soils located at any elevation within the depth ranges indicated in the above table, except as noted. Above these depth ranges the soils are not considered able to support foundations, even at reduced design bearing values, due to long-term settlement considerations.

BUILDING PAD

Building pads should be constructed prior to foundation excavation for the proposed structures. This site preparation is necessary to establish adequate support for the foundations and floor slabs. The procedure should include the removal of unsuitable surface conditions including vegetation, topsoil, fill soils, and other deleterious conditions. The above table provides a general indication of the anticipated undercut depths from existing grade. Variations in the depth of removal can be expected due to filled and naturally changing soil conditions. The soil

removal should extend beyond the outside edge of the exterior foundation wall footings to a distance at least equal to the depth of fill that will be present beneath the footings. The exposed subgrade soil should then be proof-rolled in the presence of the Soil Engineer. Proof-rolling may reveal some areas of unstable soil, requiring additional removal.

Structural fill should be placed on the prepared subgrade and in lifts not to exceed 8.0 inches when uncompacted. Each lift should exceed the minimum compaction requirement prior to placement of the next lift. We recommend a minimum of 95% compaction based on the modified proctor test, ASTM D-1557. If high soil moisture content prevents achieving minimum compaction requirements then it will be necessary to disc and aerate the soil. Compaction requirements also apply to backfill placement around foundations and within trench excavations located below subgrade supported improvements.

FOUNDATIONS

Based on the results of this investigation it is our opinion that continuous and isolated footing foundations may be considered for support of new structures. These foundations can be supported on structural fill and/or undisturbed natural soils located below all topsoil, debris, unsuitable fill soils, low strength soils and other unsuitable conditions which may be encountered. Soil strength values and the depths at which they are expected to be encountered at these boring locations are indicated in the above table. A net allowable bearing value of 2,000 lbs./sq.ft. is available for design of the restroom buildings and picnic shelter. A net allowable bearing value of 3,000 lbs./sq.ft. is available for design of the 3-seasons building. These values can be used to size foundations for support of structure dead and live loads.

All exterior building foundations should extend at least 42.0 inches below exposed surface elevations to provide adequate protection against uplift due to freezing of the supporting soils. Foundations for unprotected improvements should extend at least 48.0 inches below exposed surface elevations. We recommend providing adequate reinforcing steel in foundation walls and piers to minimize the effects of long-term differential settlement.

Weak soil conditions may be discovered locally at design foundation elevations and may require extending the foundation to a deeper elevation. Alternately, removal of the weak soil followed by replacement with properly compacted coarse crushed granular fill (CA01) may be feasible. When removal is approved by the Soil Engineer, the removal of the weak soil should also extend beyond the face of footings and/or piers to a distance at least equal to the depth of fill that will be present beneath the footings and/or piers. A capping layer of finer crushed granular fill (CA06) can be utilized to establish a working surface.

FLOOR SLABS

Floor slabs planned for support on the existing soil conditions are expected to undergo some degree of long-term settlement as the soils consolidate under loading and as they shrink due to desiccation. Slabs may be considered for support on suitable natural soils or on properly placed and compacted fill soils. This is feasible when the soils supporting the slabs are prepared in accordance with the recommendations for Subgrade Soil Preparation. These include the removal of topsoil as well as removal or aeration of underlying high moisture content soils.

SUBSURFACE WATER

The boring logs indicate subsurface water was not encountered in the bore holes at the time of the drilling operations and during the period of these readings. It is expected that fluctuations from the water levels recorded will occur over a period of time due to variations in rainfall, temperature, subsurface soil conditions, soil permeability and other factors not evident at the time of the water level measurements.

DEWATERING

Excavations may require dewatering due to subsurface water seepage and/or surface precipitation. This water can be removed to depths of several feet by standard sump and pump operations. Soils exposed at foundation, slab or undercut elevations should not be permitted to become saturated. Loss of bearing strength and stability may occur, requiring additional soil excavation.

Filled soils, organic soils, non-cohesive soils and others can be unstable when saturated. These soils tend to cave or run when submerged or disturbed. The stability of exposed embankments is minimal to non-existent as confining soil pressures are removed. Proper drainage within excavations is necessary at all times, particularly when excavations extend below anticipated water levels and below saturated soils.

The contractor should be made responsible for designing and constructing stable temporary excavations. Also, the contractor should shore, slope, bench or restrain the sides of the excavations as required to maintain stability of both the excavation sides and bottom. In no case, should the slope, slope heights, or excavation depth exceed those in the local, state, and federal safety regulations.

PAVEMENT AREAS AND WALKING PATH

Borings P-1 to P-20 were performed in existing and proposed pavement areas to depths of 5.0 feet. The table below summarizes the depths of topsoil encountered at each location.

Boring	Topsoil Depth (in.)	Boring	Topsoil Depth (in.)
P-1	18.0	P-11	0.0
P-2	18.0	P-12	15.0
P-3	12.0	P-13	12.0
P-4	18.0	P-14	N/A
P-5	12.0	P-15	15.0
P-6	15.0	P-16	N/A
P-7	18.0	P-17	N/A
P-8	15.0	P-18	N/A
P-9	15.0	P-19	N/A
P-10	12.0	P-20	N/A

Note: N/A indicates the borings was located in an existing pavement area.

Borings P-14 and P-16 to P-20 were performed in existing pavement areas. The below table indicates the pavement thicknesses encountered at each location.

Boring	HMA (in.)	Granular Base (in.)	Total Pavement (in.)
P-14	4.5	15.0	19.5
P-16	4.5	5.5	10.0
P-17	5.0	5.0	10.0
P-18	5.0	3.0	8.0
P-19	5.0	11.0	16.0
P-20	4.0	8.0	12.0

Buried topsoil was encountered underlying the existing pavement at locations P-16, P-19 and P-20. Proof-rolling may reveal areas of unstable soil conditions, requiring additional removal.

We understand a new walking path is planned throughout the site. Boings T-1 to T-14 were performed along the proposed path to a depth of 5.0 feet. The table below summarizes the depths of topsoil encountered at each location.

Boring	Topsoil Depth (in.)	Boring	Topsoil Depth (in.)
T-1	15.0	T-8	18.0
T-2	12.0	T-9	**6.0**
T-3	12.0	T-10	**0.0**
T-4	12.0	T-11	15.0
T-5	13.0	T-12	10.0
T-6	15.0	T-13	18.0
T-7	18.0	T-14	15.0

Note: Soil profiles with fill at the surface are shown in **bold.**

Standard subgrade preparation is expected in all new pavement areas. The procedure in all areas of subgrade supported improvements should include the removal of unsuitable surface conditions including vegetation, topsoil, unsuitable fill soils, significant debris, weak or unstable soils, and other deleterious conditions which may be encountered. Above grade areas should be cut to design subgrade elevations. Exposed subgrade soils should be leveled, compacted and proof-rolled in the presence of the Soil Engineer.

Proof-rolling may reveal areas of unstable soil conditions. Discing and aeration of high moisture content soils can be effective to depths of up to 1.0 foot, depending upon the equipment utilized. Removal of unstable soils may be necessary if high moisture content conditions extend to depths greater than the effective depth of discing. If the depth of undercut appears to be significant, it may be economical to limit the depth of undercut to that needed to establish adequate support of slabs and remediate weak soil conditions at foundation elevations at the time of foundation construction.

Soft or unstable soil conditions in pavement areas can often be bridged by use of an effective depth of crushed granular material. The placement of the crushed granular bridging material, possibly in conjunction with the use of an appropriate geotextile fabric, should only proceed after

review of the proof-roll conditions by the Soil Engineer. Long-term settlement of pavement surfaces may occur locally as the bridged soils desiccate.

Structural fill can be placed on soils prepared to the satisfaction of the Soil Engineer. The fill should be placed in lifts not to exceed 8.0 inches when uncompacted. Each lift should exceed minimum compaction requirements prior to placement of the next lift. We recommend a minimum of 95% compaction based on the modified Proctor test, ASTM D-1557, be achieved within building areas. A minimum of 90% compaction should be achieved beneath exterior improvements such as pavements and sidewalks. Compaction requirements also apply to backfill placement around foundations and within trench excavations located below subgrade supported improvements.

FILL SOURCES

The onsite non-organic soils are generally suitable for reuse as fill. Offsite sources may also be used provided they are approved in advance by the Soil Engineer. Aeration may be necessary to reduce soil moisture content prior to compaction. Soil borrowed from near the surface where seasonal fluctuations in soil moisture content occur may require particular attention. The moisture content of fill soils should be within approximately 3.0% of optimum moisture content as determined by the modified Proctor test for the soils to meet or exceed minimum compaction requirements.

CONCLUSION

The information within this report is intended to provide initial information concerning subsurface soil and water conditions on the site. Variations in subsurface conditions are expected to be present between boring locations due to naturally changing and filled soil conditions.

Our understanding of the proposed improvements is based on limited information available to us at the writing of this report. The findings of the investigation and the recommendations presented are not considered applicable to significant changes in the scope of the improvements or applicable to alternate site uses. We recommend that proposed foundation, pavement and grading plans be reviewed by our office to determine if additional considerations are necessary to address anticipated subsurface conditions.

The soils exposed in soil undercut areas should be evaluated for suitability prior to placement of structural fill, as previously indicated in this report. Soils and aggregates placed as structural fill should be tested as the work progresses to verify that minimum compaction requirements have been met. We recommend that soil conditions encountered at foundation elevations be tested to verify the presence of design soil strength prior to concrete placement.

If you have any questions concerning the findings or recommendations presented in this report, please let me know.

Very truly yours,

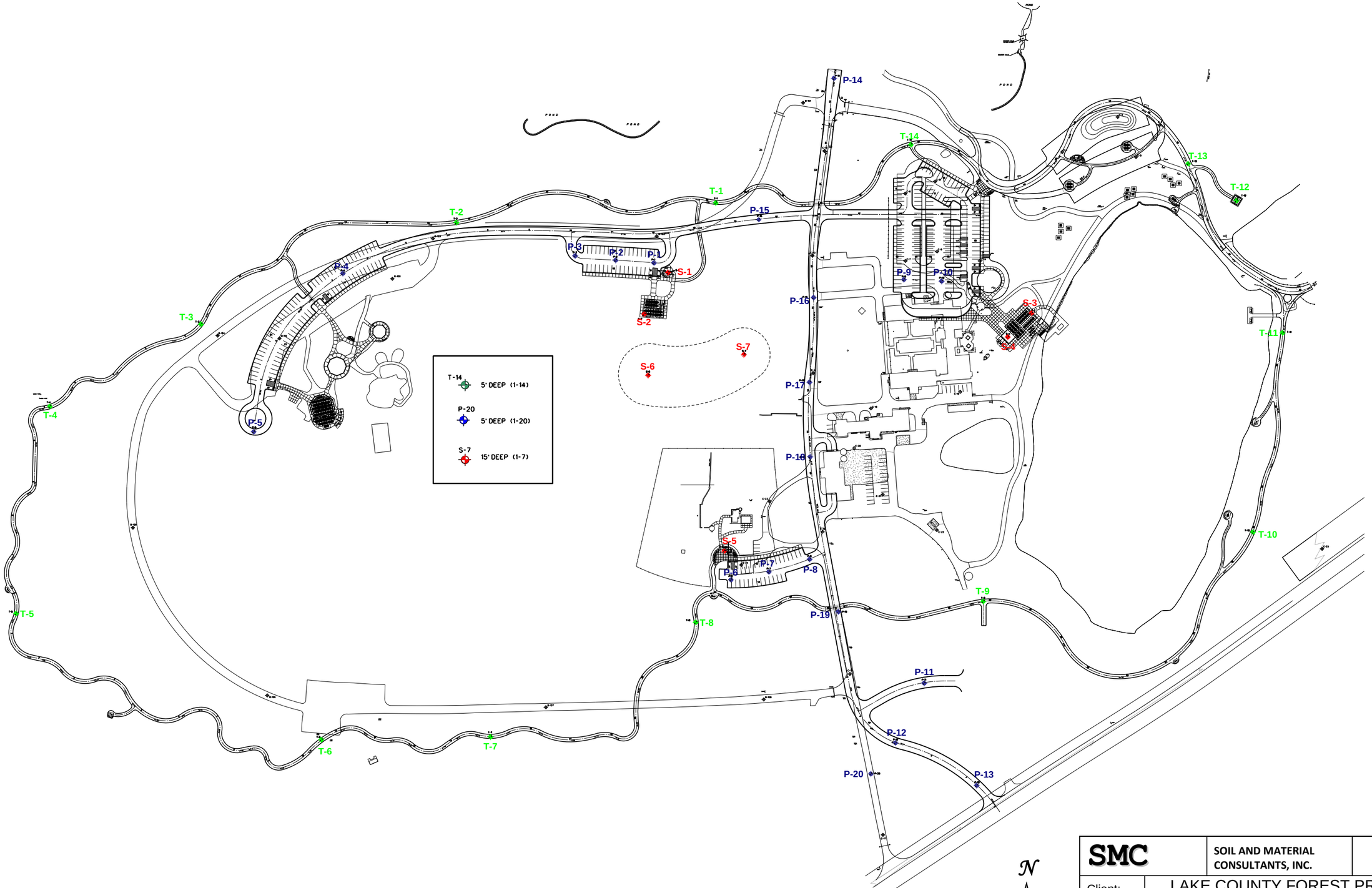
SOIL AND MATERIAL CONSULTANTS, INC.

Justin Seligson, E.I.T.
Project Engineer

Thomas P. Johnson, P.E.
President

JMS:TPJ
Enc.

cc: Mr. Donald S. Henne – Pearson, Brown and Associates, Inc.



SMC	SOIL AND MATERIAL CONSULTANTS, INC.	LOCATION SKETCH
Client:	LAKE COUNTY FOREST PRESERVES	
Project:	2019 LAKEWOOD SOIL TESTING	
Location:	LAKE COUNTY, ILLINOIS	
File No. 24956	Date: 9-23-20	Scale: NONE

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG S-1

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

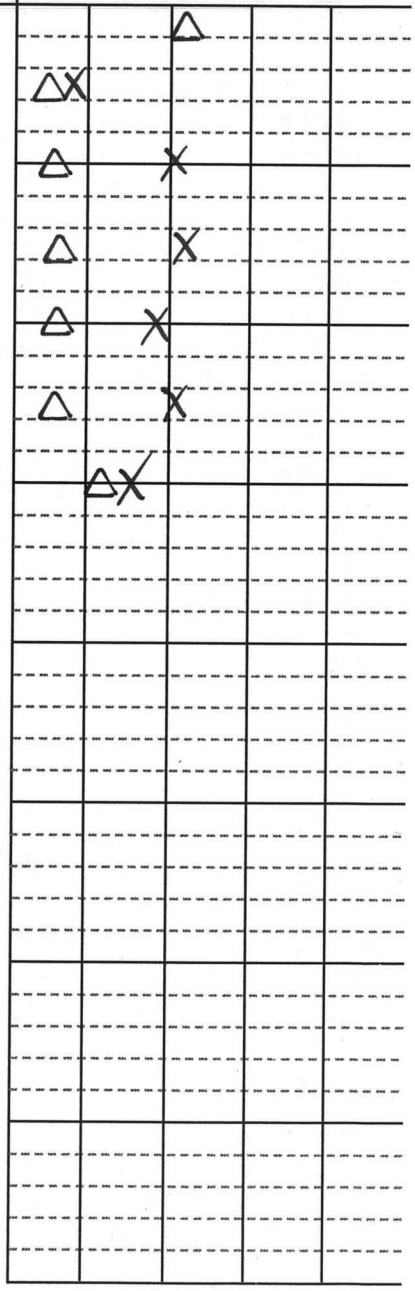
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Dark brown silt,some sand,trace clay & roots,damp (topsoil)		20.7		
	Brown fine sand,some medium-coarse sand, trace gravel,damp,loose to medium dense	8	4.3		
5		21	4.5		
		22	6.5		
10		18	5.4		
	Brown silt,some sand & clay,trace gravel, damp,medium dense	21	4.9		
15		15	12.0		
	End of Boring				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG S-2

Logged By: CS Page: 1 of 1

Client: Lake County Forest Preserves

File No. 24956 Date Drilled: 9/23/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

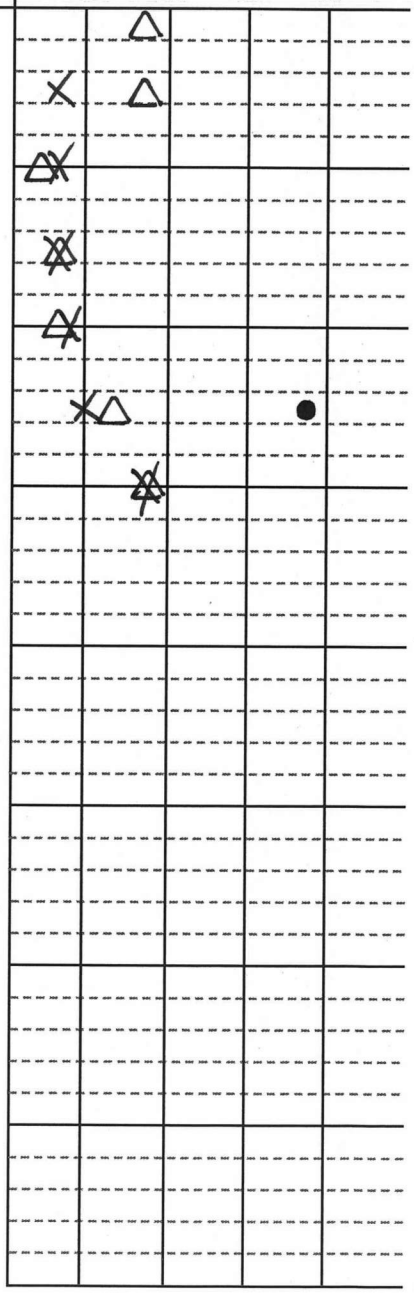
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength O
	Dark brown silt,some clay & sand,trace roots,damp (topsoil)		18.3		
	Brown silt,some sand & clay,damp,loose	6	18.3		
5	Brown fine sand,some medium-coarse sand, trace silt & gravel,dry,loose	6	4.4		
		7	7.0		
10		8	7.4		
	Brown clay & silt,trace sand & gravel, damp,very tough	10	14.1		
	Brown fine sand & silt,very damp,medium dense	17	18.7		
15	End of Boring				
20					
25					
30					
35					
40					

O unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG S-3

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

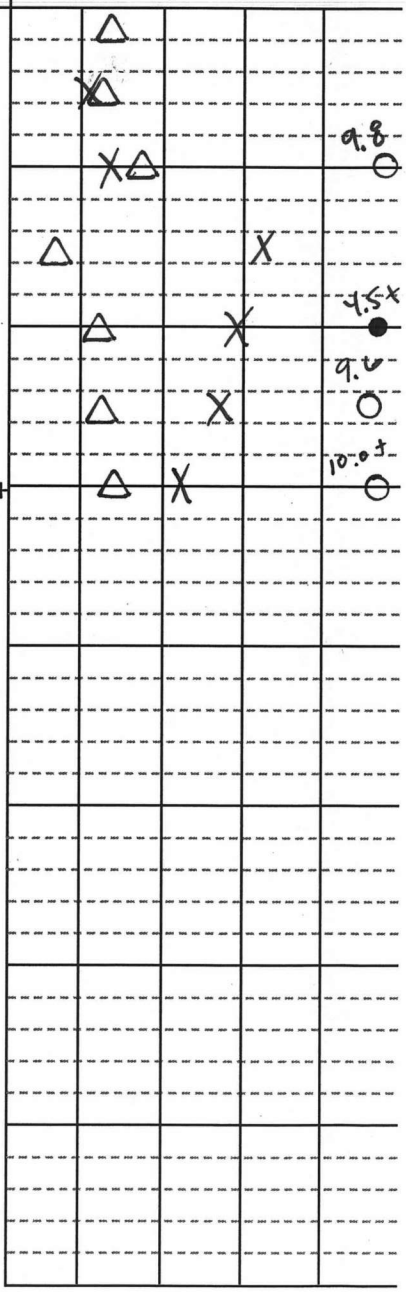
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Brown-dark brown silt,some clay & sand, trace gravel,damp,medium dense - Fill		13.8		
		11	12.6		
5	Brown clay,some silt,trace sand & gravel, damp,very hard	14	17.7	109.7	9.8
	Brown silt,some clay & sand,trace gravel, dry,dense	33	6.8		
10	Brown clay,some silt,trace sand & gravel, dry,hard to very hard	29	11.8		
		27	12.2	118.8	9.6
15		23	13.8	117.1	10.0+
	End of Boring				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG S-4

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

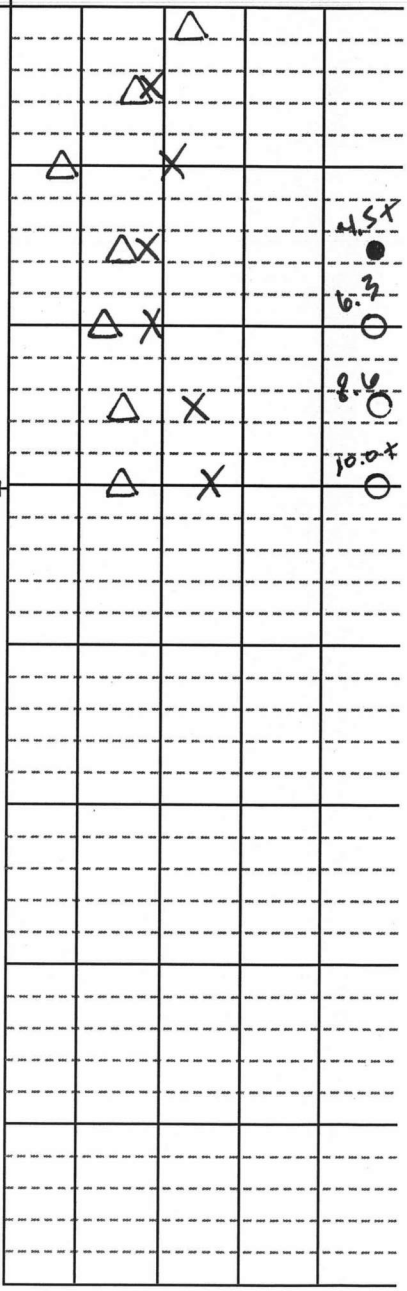
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ϒ	unconfined compressive strengh ○
	(a) see below		23.7		
	Brown silt,some sand & clay,trace gravel, dry,medium dense	18	15.5		
5		21	8.9		
	Brown clay,some silt,trace sand & gravel, dry,hard to very hard	18	14.6		
10		18	14.4	109.2	6.3
		24	15.1	118.3	8.6
15		26	14.8	119.1	10.0+
	End of Boring				
	(a) Black-dark brown silt,some clay, trace sand & roots,damp (topsoil) - 15.0"				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG S-5

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/23/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

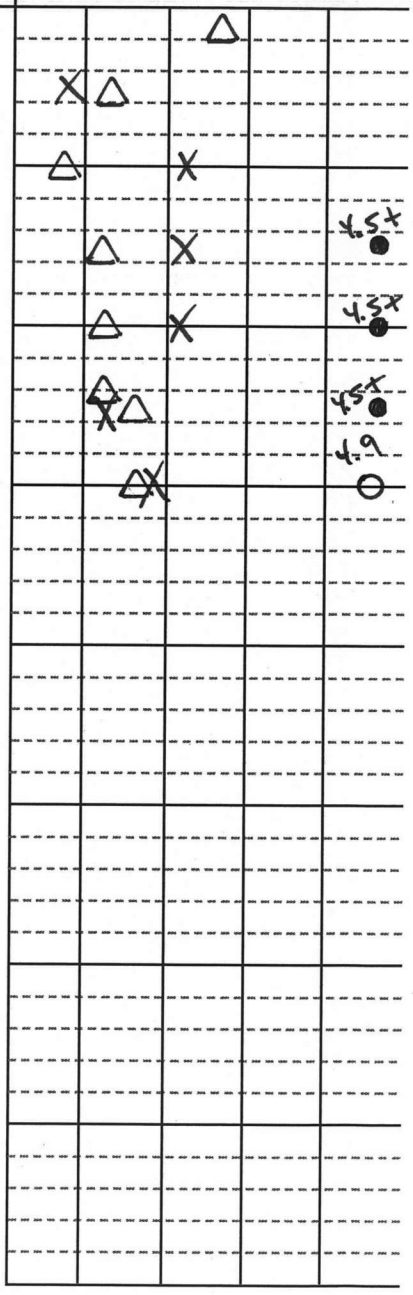
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Black silt,some clay,trace sand & roots, damp (topsoil)		26.8		
	Brown silt,some clay & sand,trace gravel, damp,loose	8	12.7		
5	Brown fine sand & silt,some medium-coarse sand & gravel,damp,medium dense	23	7.8		
	Brown clay & silt,trace sand & gravel, dry,hard	22	10.5		
10		22	11.8		
	(a) see below		12.1		
	Brown clay,some silt,trace sand & gravel, damp,hard	13	16.0		
15		18	15.5	119.5	4.9
	End of Boring				
	(a) Brown silt,some sand,trace clay, damp,medium dense				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG S-6

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Black silt,some clay,trace sand & roots, damp (topsoil)		28.7		
	Brown silt,some sand & clay,damp,medium dense	10	15.1		
5		17	11.8		
			12.0		
	Brown clay,some silt,trace sand & gravel, damp,hard	13	13.5		
10		13	14.5	108.2	5.9
		17	14.4	117.7	7.0
15		21	16.5	113.1	6.2
	End of Boring				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG S-7

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/23/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

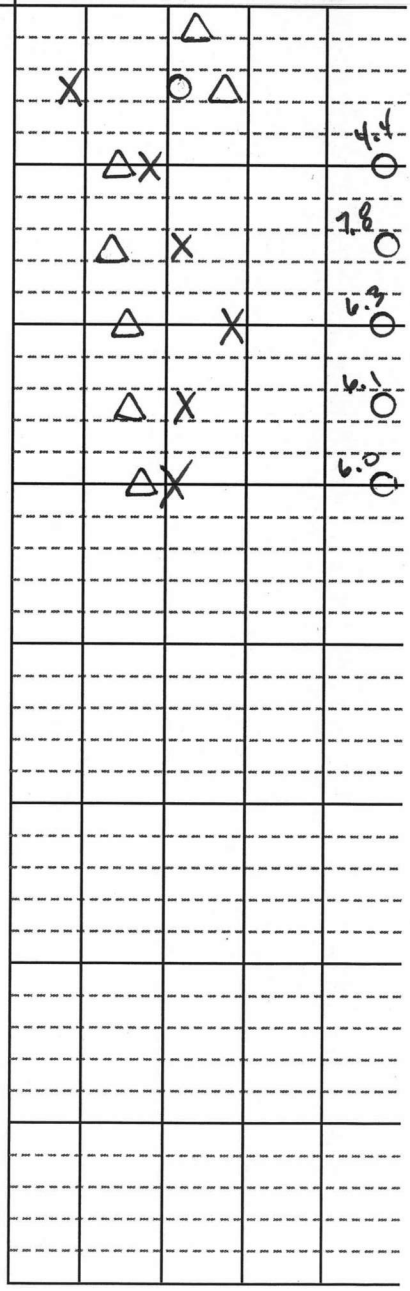
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	(a) see below		23.9		
	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	8	28.1	89.1	2.1
5		18	13.8	110.1	4.4
		22	14.4	112.2	7.8
10		28	14.8	115.5	6.3
		23	15.3	115.5	6.1
15		21	15.8	116.0	6.0
	End of Boring				
	(a) Dark brown silt,some sand & roots, damp (topsoil)				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-1

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

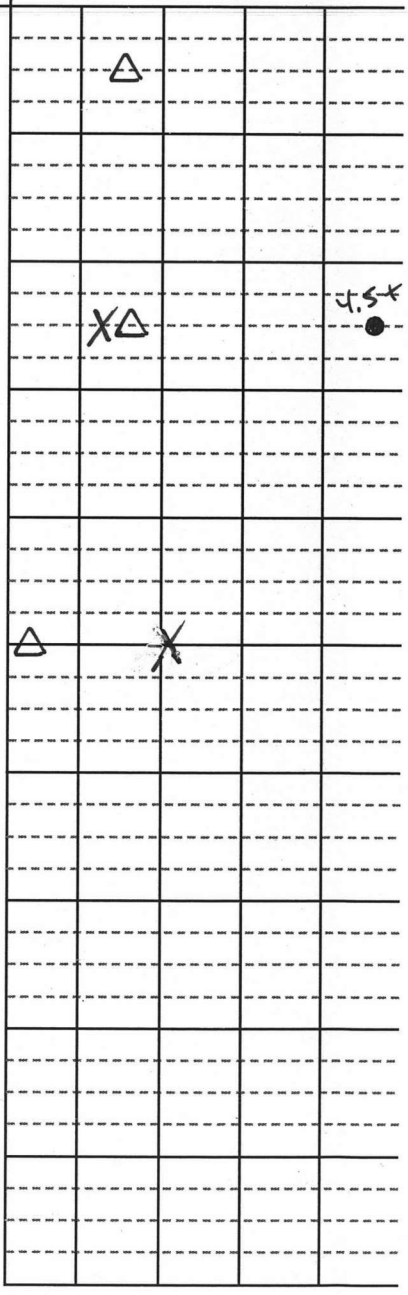
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Dark brown silt,some sand & clay,trace roots,damp (topsoil)		14.8		
2	Brown clay & silt,trace sand & gravel, damp,hard	13	16.0		
3					
4	Brown fine sand,some medium-coarse sand, trace gravel,damp,medium dense				
5	End of Boring	21	2.7		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG P-2

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

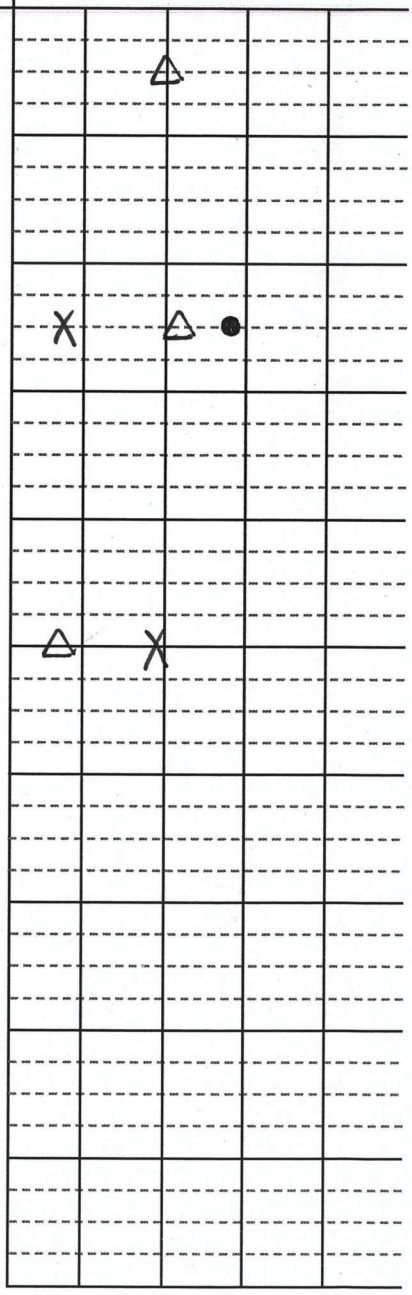
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Dark brown-black silt,some clay & sand, trace roots,damp (topsoil)		20.1		
2	Brown clay & silt,trace sand & gravel, damp,very tough	7	20.6		
3	Brown fine sand,trace medium-coarse sand & gravel,damp,medium dense				
5		19	5.6		
	End of Boring				

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG P-3

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

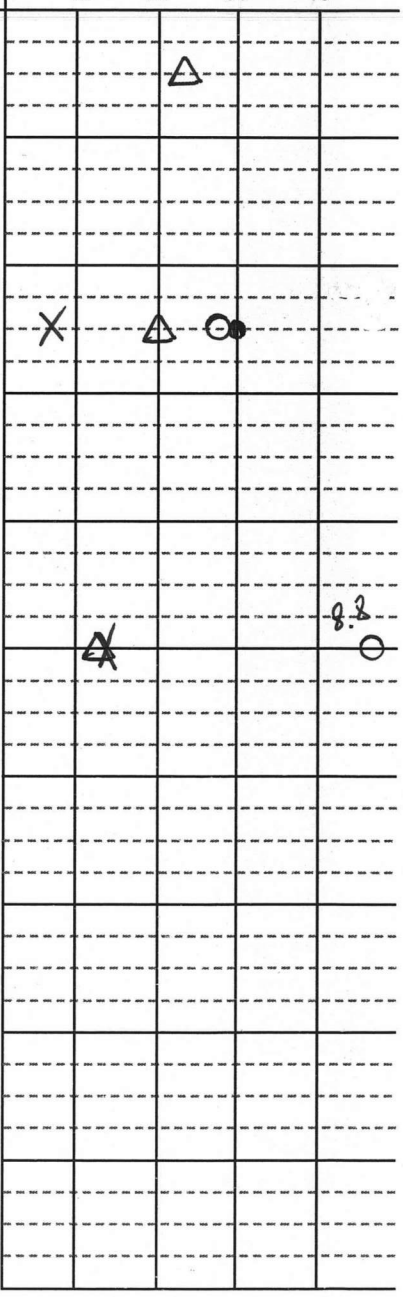
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Dark brown silt,some sand & clay,trace roots,damp (topsoil)		22.5		
2	Brown clay,some silt,trace sand & gravel, damp,very tough to very hard	7	20.4	100.1	2.8
3					
4					
5	End of Boring	19	13.1	120.3	8.8
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-4

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

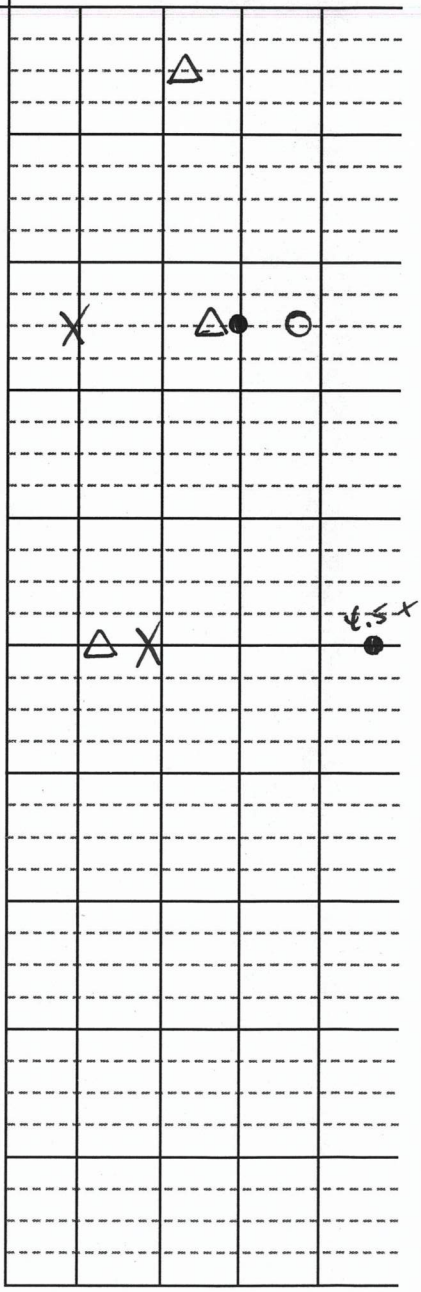
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Dark brown-black silt,some clay,trace sand & roots,damp (topsoil)		21.5		
2	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	9	25.7	91.8	3.8
5	End of Boring	18	12.7		
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG P-5

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

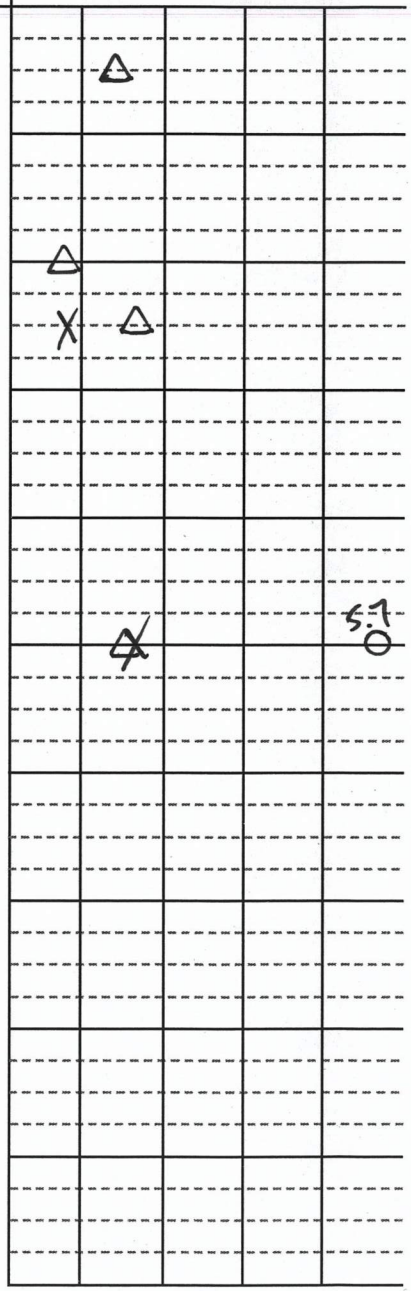
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Dark brown silt,some clay & sand,trace roots,damp (topsoil)		14.1		
1					
	Brown fine sand,some medium-coarse sand, damp,loose		8.8		
2					
	Brown silt,some sand & clay,trace gravel, damp,loose	8	15.5		
3					
	Brown clay,some silt,trace sand & gravel, damp,hard				
4					
5		16	14.6	114.2	5.7
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG P-6

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves **File No.** 24956 **Date Drilled:** 9/23/20

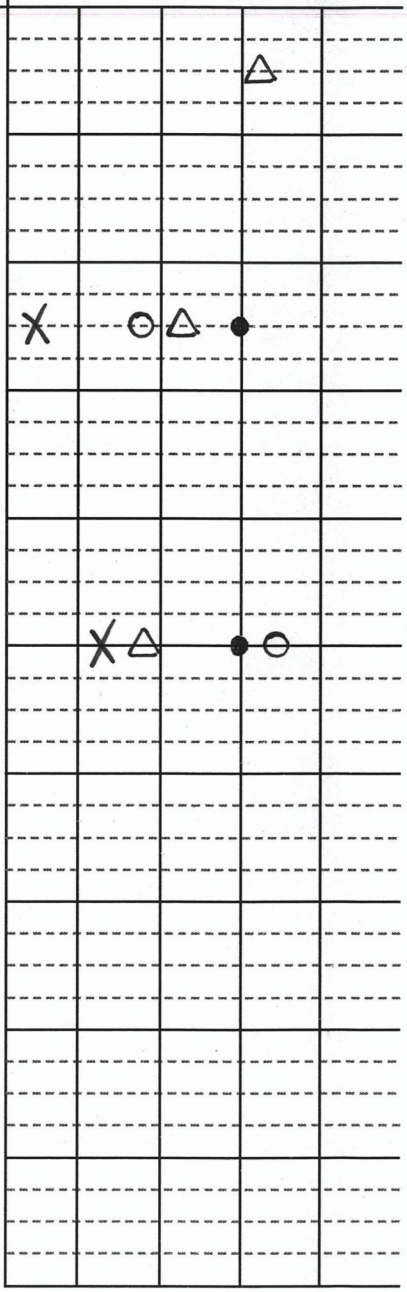
Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black silt,some clay,trace sand & roots, damp (topsoil)		31.5		
2	Brown clay,some silt,trace sand & gravel, damp,tough to very tough	4	23.2	91.6	1.8
5	End of Boring	13	19.1	105.7	3.5

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0
× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG P-7

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

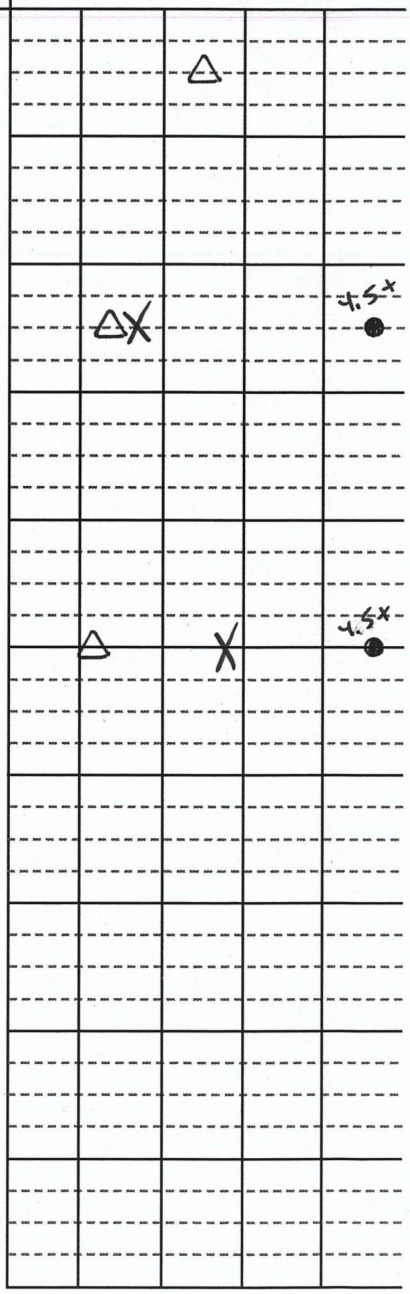
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Black silt,some clay,trace sand & roots, damp (topsoil)		24.5		
2	Brown clay,some silt,trace sand & gravel, dry,hard	16	14.2		
3					
4					
5	End of Boring	27	11.1		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG P-8

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/23/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black silt,some clay,trace sand & roots, damp (topsoil)		28.4		
2	Brown silt,some clay,trace sand & gravel, dry,medium dense	15	8.9		
3					
4					
5		26	9.1		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG P-9

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

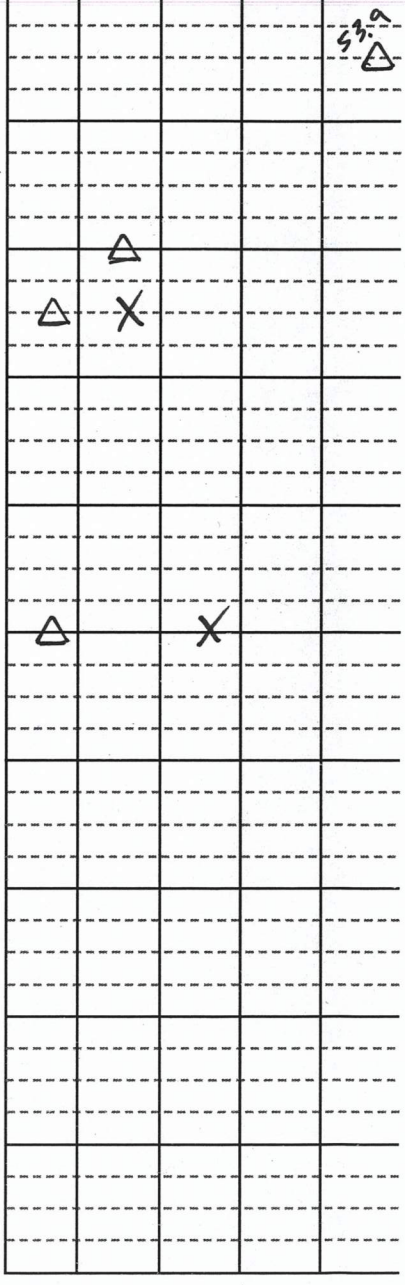
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Black silt & fine sand,trace clay & roots damp (topsoil)		53.9		
2	Brown silt,some clay,trace sand & gravel, damp,medium dense		14.5		
3	Brown fine-medium sand,some coarse sand & gravel,trace silt,damp,medium dense	16	8.1		
5	End of Boring	26	7.0		

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG P-10

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Black silt,some sand & clay,trace roots, damp (topsoil)		22.1		
1					
	Brown silt,some clay & sand,trace gravel, damp,medium dense				
2		13	11.7		
3					
	Brown fine-medium sand,some silt & coarse sand,trace gravel,damp,dense				
4					
5		33	4.0		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-11

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

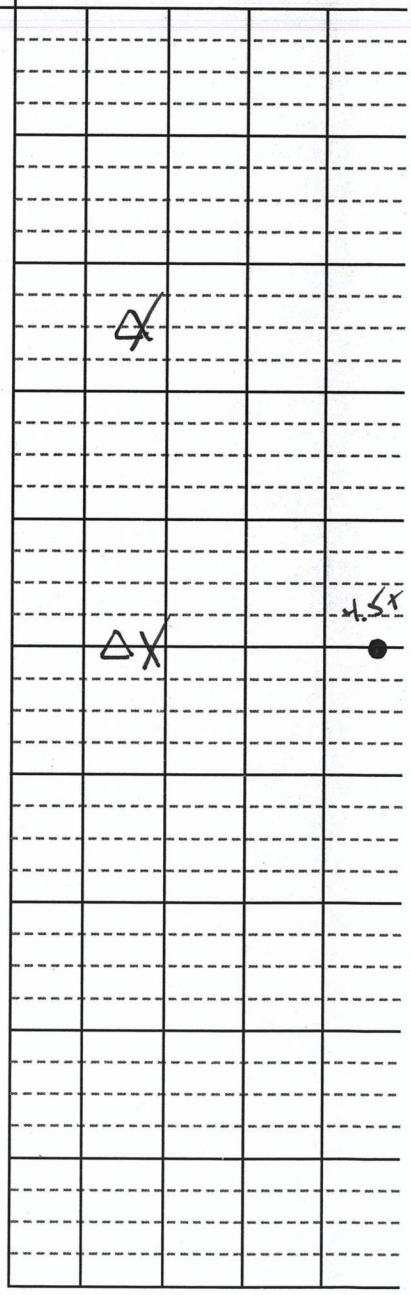
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☑Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Brown silt,some clay & sand,trace gravel, damp,medium dense				
2		16	15.1		
3	Brown clay,some silt,trace sand & gravel, damp,hard				
4					
5	End of Boring	17	13.6		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG P-12

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Dark brown-black silt,some sand & clay, trace roots,damp (topsoil)		21.5		
2	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	10	24.5	96.9	2.8
5	End of Boring	32	11.3		

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

4.5

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG P-13

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

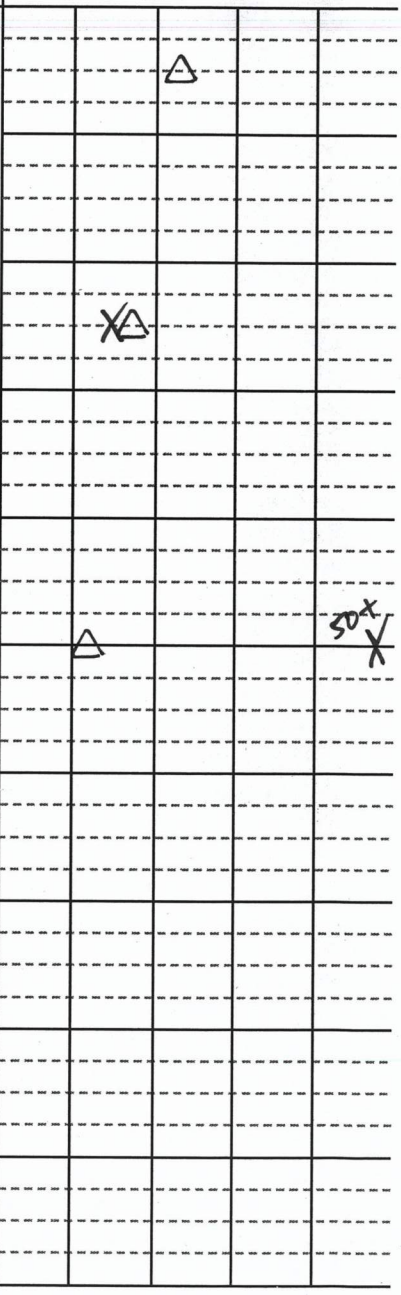
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Dark brown silt,some clay,trace sand & roots,damp (topsoil)		22.6		
1					
	Brown silt,some clay & sand,trace gravel, damp,medium dense to very dense				
2					
		15	18.4		
3					
4					
	(rock encountered at 4.5')				
5		50+	11.3		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-14

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Bituminous concrete - 4.5"				
	Crushed limestone - 15.0"				
1					
2	Dark brown-black silt,some clay,trace sand & gravel,damp,medium dense - Fill	14	14.3		
3	Brown fine-medium sand,some coarse sand & gravel,trace silt,damp,medium dense				
4					
5	End of Boring	12	10.7		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG P-15

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Dark brown fine sand & silt,trace roots, damp (topsoil)		16.8		
2	Brown clay & silt,trace sand & gravel, damp,hard				
3		12	16.4	105.6	4.3
4	Brown silt,some sand & clay,trace gravel, damp,dense				
5		33	7.9		
6	End of Boring				
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG P-16

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

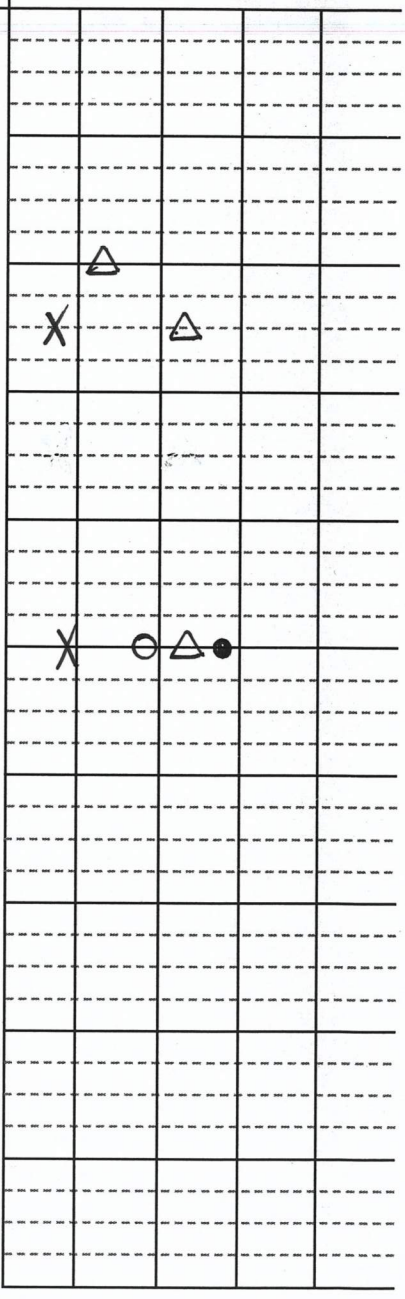
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Bituminous concrete - 4.5"				
	Sand & gravel - 5.5"				
1	Dark brown-black silt,some clay,trace sand,damp (topsoil)				
2			13.4		
	Brown silt,some clay,trace sand & gravel, damp,loose	7	22.7		
3					
4	Brown clay & silt,trace sand & gravel, damp,tough				
5		8	22.8	98.9	1.9
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-17

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

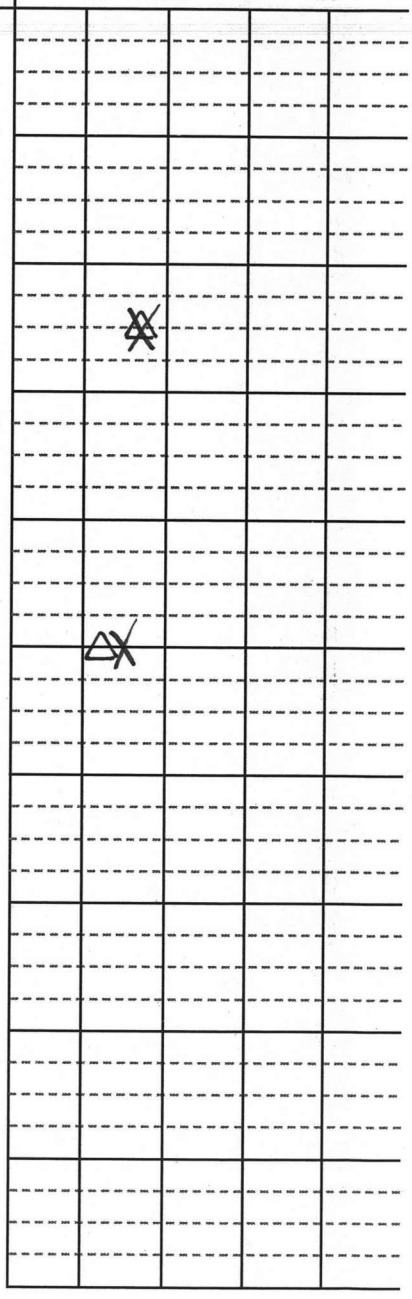
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Bituminous concrete - 5.0"				
	Sand & gravel - 5.0"				
1	Brown silt,some clay,trace sand & gravel, damp,medium dense				
2		17	17.2		
3	Brown silt,some sand & clay,trace gravel, damp,medium dense				
4					
5		15	11.9		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG P-18

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

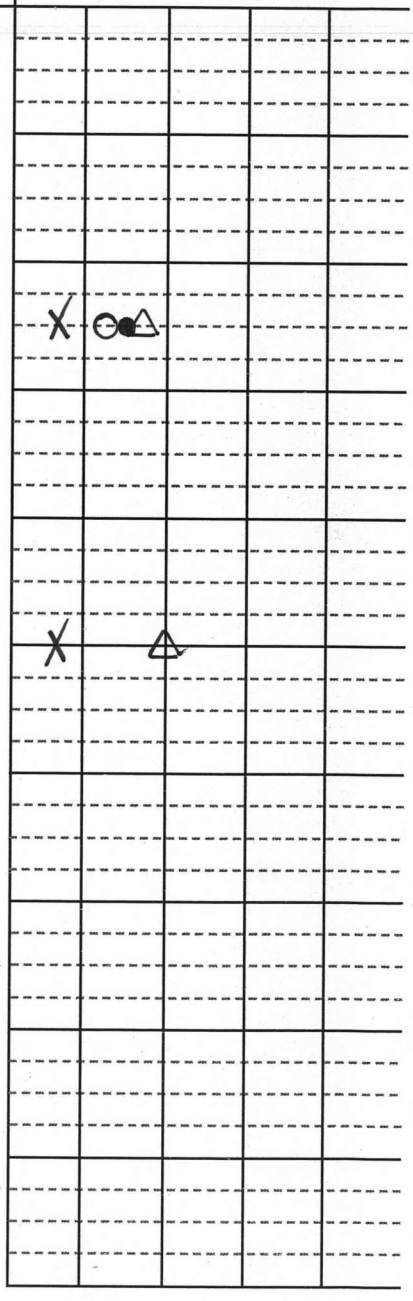
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Bituminous concrete - 5.0"				
	Sand & gravel - 3.0"				
1	Brown clay & silt,trace sand & gravel, damp,tough				
2		7	17.4	106.7	1.3
3					
4	Brown-gray silt,some clay,trace sand & gravel,damp,loose				
5		7	20.0		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-19

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

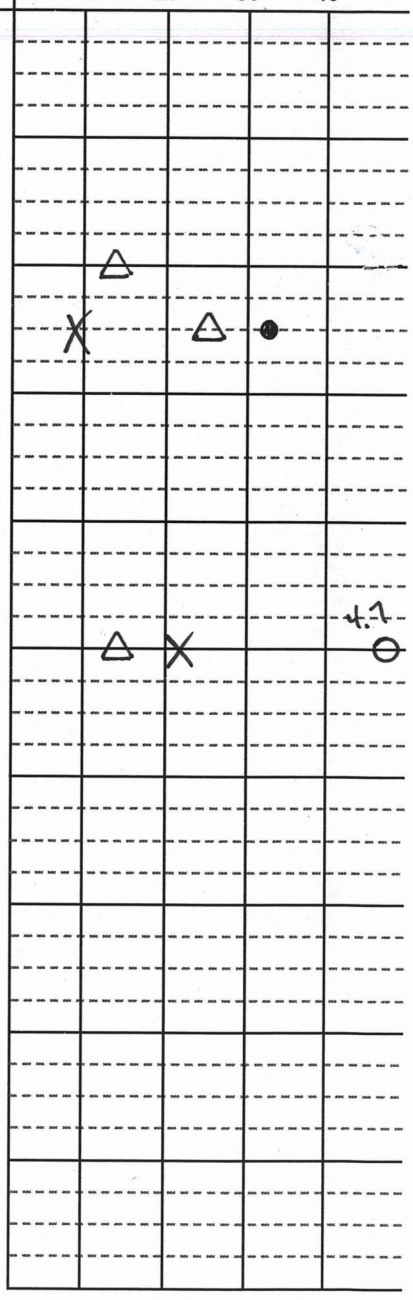
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ϑ	unconfined compressive strengh ○
	Bituminous concrete - 5.0"				
1	Sand & gravel - 11.0"				
2	Dark brown-black silt,some clay,trace fine sand,damp,loose (topsoil)		14.0		
3	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	9	25.3		
4					
5	End of Boring	12	14.3	114.8	4.7
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG P-20

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/28/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

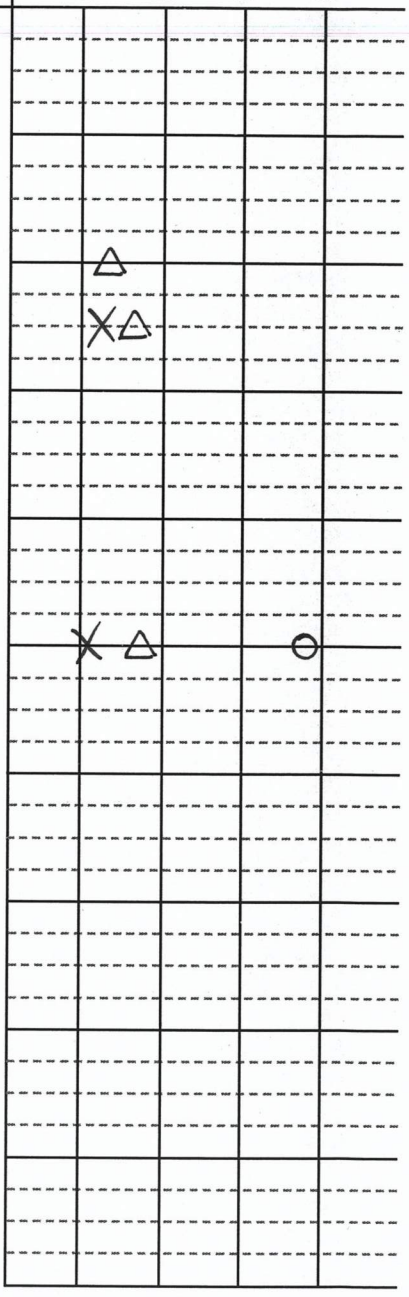
Comments:

Equipment: ☒CME 45B ☐CME 55 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Bituminous concrete - 4.0"				
	Sand & gravel - 8.0"				
1	Dark brown-black silt,some clay & sand, damp,medium dense (topsoil)				
2			12.6		
	Brown silt,some sand & clay,trace gravel, damp,medium dense	12	16.4		
3					
	Brown clay,some silt,trace sand & gravel, damp,very tough				
4					
5	End of Boring	11	17.5	109.2	3.9
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-1

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Dark brown silt & fine sand,trace roots, damp (topsoil)		19.2		
2	Brown clay & silt,trace sand & gravel, damp,very tough	5	19.6		
3	Brown silt,some sand,trace clay & gravel, dry,medium dense				
4					
5		25	8.3		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

8 W. COLLEGE DR. • SUITE C • ARLINGTON HEIGHTS, IL 60004

SOIL BORING LOG T-2

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Dark brown silt,some clay,trace sand & roots,damp (topsoil)		27.1		
2	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	8	15.7		
3					
4					
5	End of Boring	13	15.4	115.5	4.5
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-3

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Dark brown silt,some clay,trace sand & roots,damp (topsoil)		24.9		
1					
	Brown clay,some silt,trace sand & gravel, damp,hard				
2					
		7	17.8		
3					
4					
5		14	17.0	112.9	5.1
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0
× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-4

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

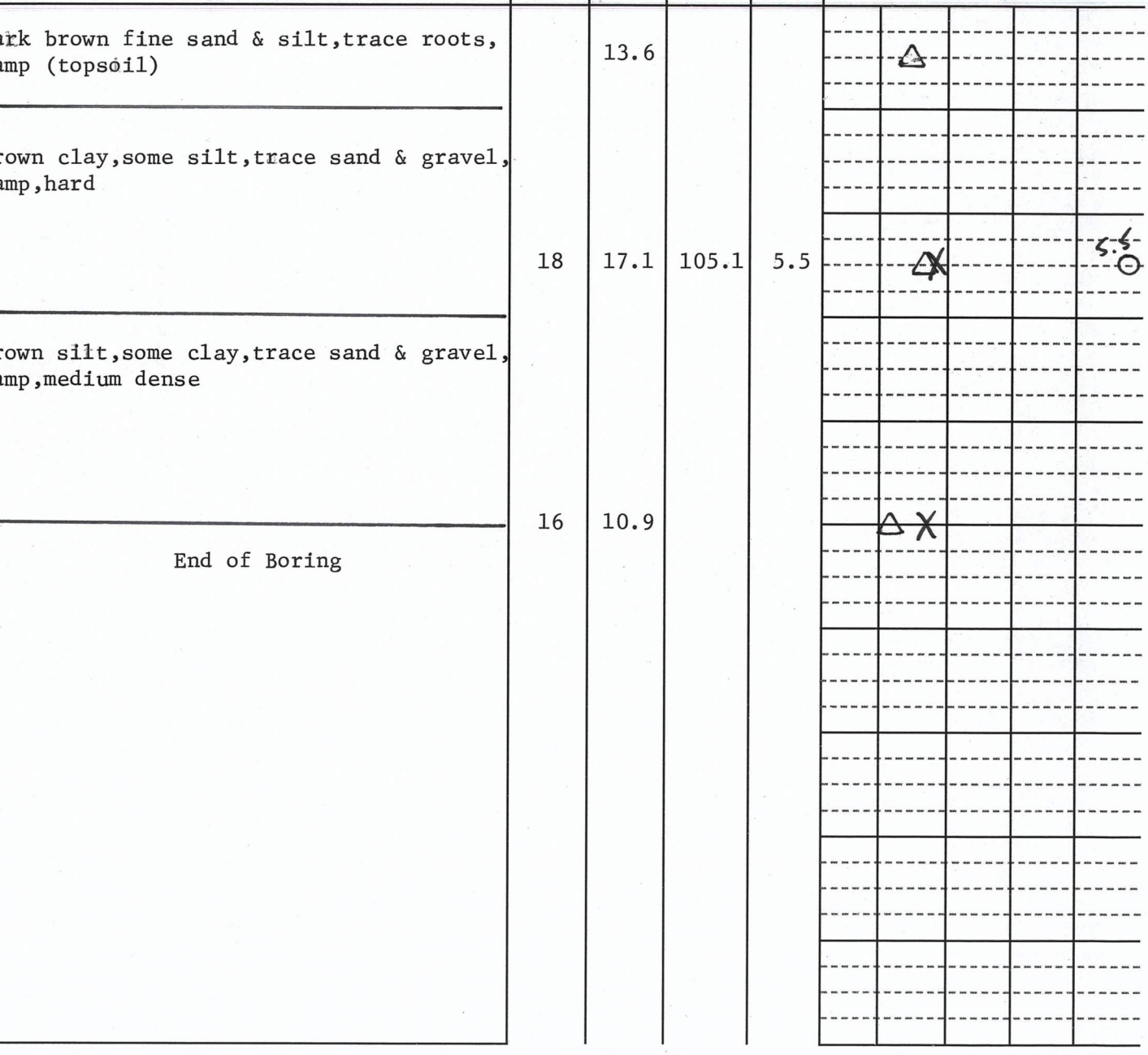
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
	Dark brown fine sand & silt,trace roots, damp (topsoil)		13.6		
1					
	Brown clay,some silt,trace sand & gravel, damp,hard				
2		18	17.1	105.1	5.5
3					
	Brown silt,some clay,trace sand & gravel, damp,medium dense				
4					
5		16	10.9		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-5

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Dark brown sand & silt,trace roots,damp (topsoil) - 13.0"				
1					
	End of Boring				
2					
3					
4					
5					
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-6

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

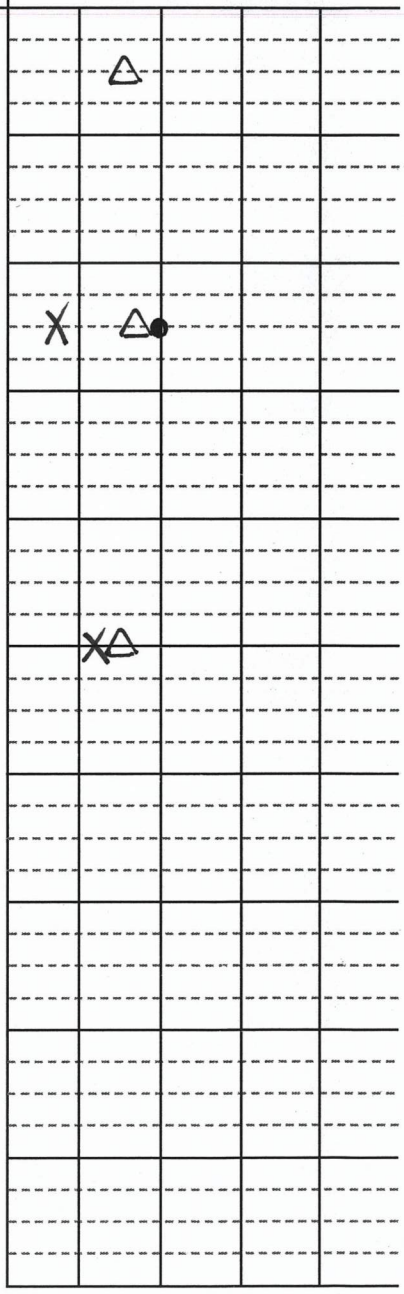
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Dark brown fine sand & silt,trace roots, damp (topsoil)		15.0		
2	Brown clay & silt,trace sand & gravel, damp,very tough	7	16.9		
3					
4	Brown silt,some fine sand,trace medium-coarse sand & gravel,damp,medium dense				
5		12	15.2		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-7

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strength ○
1	Black silt,some clay,trace sand & roots, damp (topsoil)		24.9		
2	Brown silt,some clay & sand,trace gravel, damp,loose	9	16.6		
3					
4	Brown fine sand & gravel,some silt & medium-coarse sand,damp,dense				
5		44	3.9		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-8

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves **File No.** 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

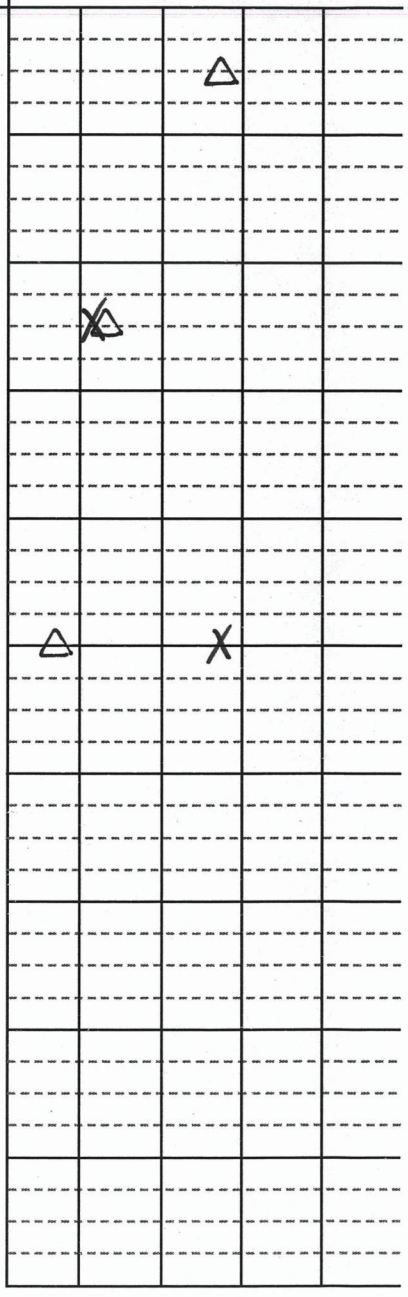
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black silt,some fine sand & clay,trace roots,damp (topsoil)		28.7		
2	Brown silt,some clay,trace sand & gravel, damp,medium dense	12	13.1		
3					
4	Brown fine sand,some gravel & medium-coarse sand,damp,medium dense				
5		27	6.0		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-9

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Dark brown silt,some sand,trace clay & roots,damp (topsoil)		18.0		
1	Brown-dark brown silt,some clay,trace sand & gravel,damp,loose - Fill				
2		7	13.8		
3					
4	Brown silt,some clay,trace sand & gravel, damp,very tough				
5		7	19.2	104.0	3.5
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40

Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-10

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

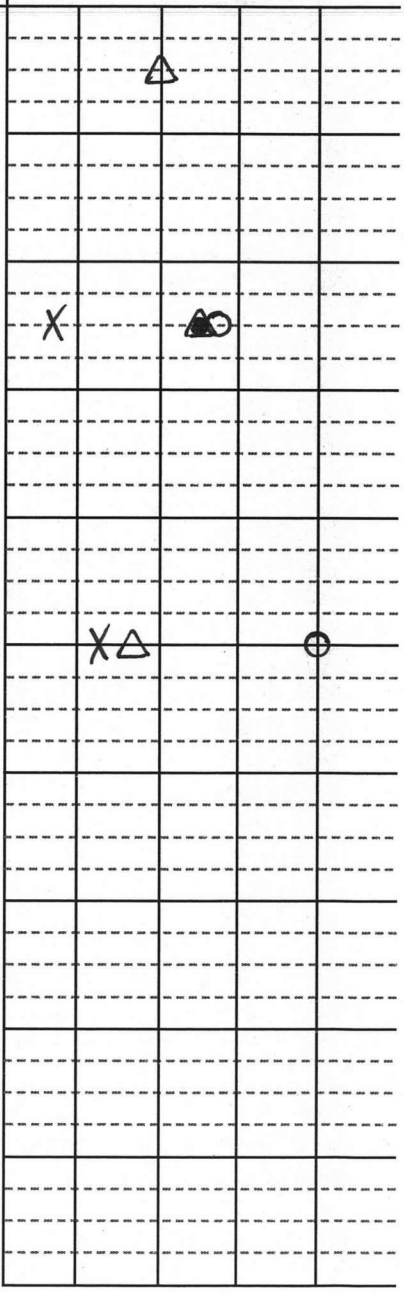
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Dark brown silt,some clay,trace sand & gravel,damp - Fill		19.6		
2	Brown clay,some silt,trace sand & gravel, damp,very tough to hard	7	25.2	95.0	2.8
5		13	17.3	111.3	4.0
	End of Boring				

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.

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SOIL BORING LOG T-11

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

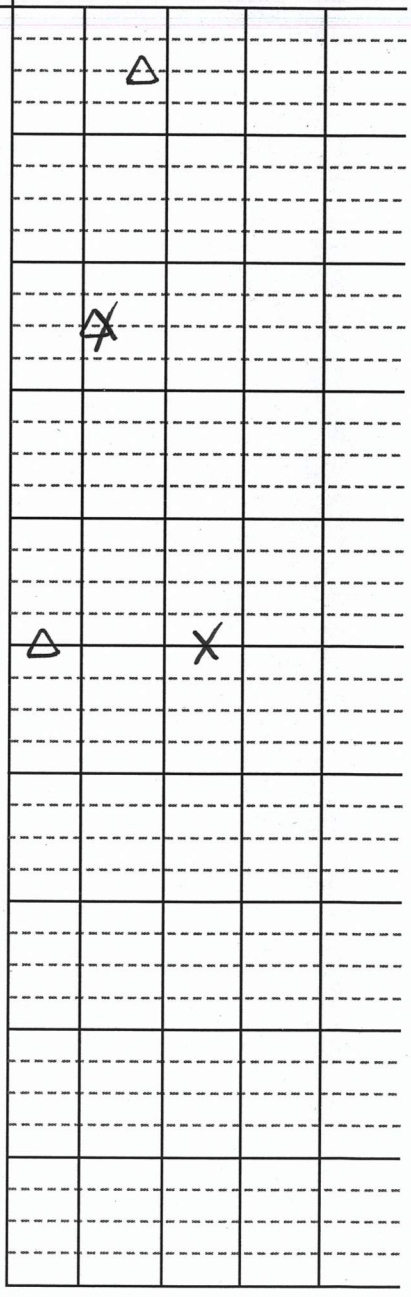
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black silt & fine sand,trace roots,damp (topsoil)		17.6		
2	Brown silt,some clay & sand,trace gravel, damp,medium dense	13	10.8		
3	Brown fine sand,some gravel & medium-coarse sand,damp,medium dense				
4					
5	End of Boring	25	3.9		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

G-303d

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SOIL BORING LOG T-12

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

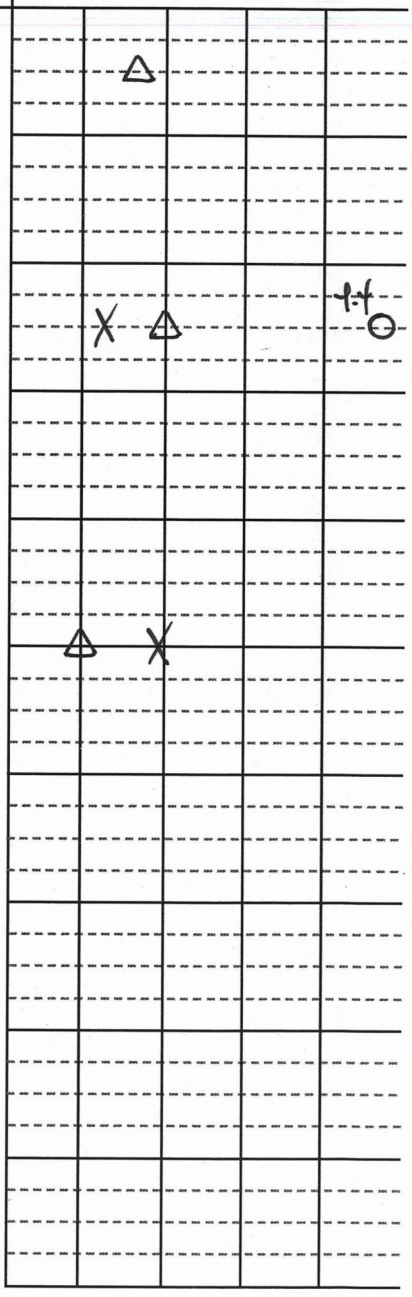
Comments: D-12

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Dark brown fine sand & silt,trace roots, damp (topsoil) - 10.0"		16.4		
1	Brown clay,some silt,trace sand & gravel, damp,hard				
2		13	20.4	103.2	4.4
3	Brown silt,some clay & sand,trace gravel, damp,medium dense				
4					
5		19	10.4		
	End of Boring				
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-13

Logged By: CS **Page:** 1 of 1

File No. 24956 **Date Drilled:** 9/24/20

Client: Lake County Forest Preserves

Reference: 2019 Lakewood Soil Testing
Lake County, IL

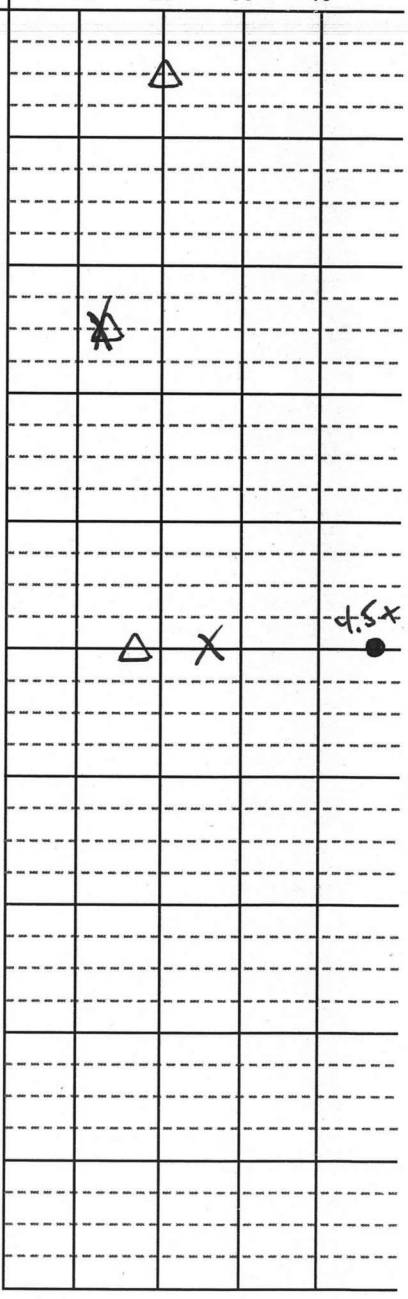
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content △	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black-dark brown silt & fine sand,trace roots,damp (topsoil)		19.5		
2	Brown silt,some clay,trace sand & gravel, damp,medium dense	13	13.7		
3					
4	Brown clay,some silt,trace sand & gravel, damp,hard				
5	End of Boring	26	17.7		
6					
7					
8					
9					
10					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
△ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG T-14

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 24956 **Date Drilled:** 9/24/20

Reference: 2019 Lakewood Soil Testing
Lake County, IL

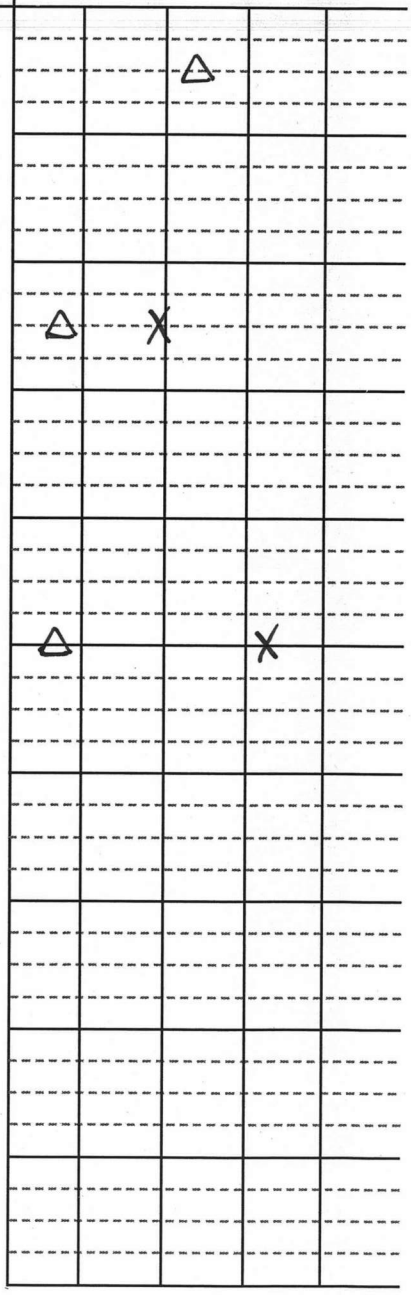
Comments: D-50

Equipment: ☐CME 45B ☐CME 55 ☐Hand Auger ☒Other

depth, ft.	CLASSIFICATION Elevation Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
1	Black-dark brown silt & fine sand,trace roots,damp (topsoil)		23.5		
2	Brown fine sand & gravel,some silt,trace medium-coarse sand,damp,medium dense to dense	19	7.9		
5	End of Boring	33	6.7		

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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8 W. COLLEGE DR. • ARLINGTON HEIGHTS, IL 60004 • 847-870-0544 • FAX 847-870-0661

GENERAL NOTES

SAMPLE CLASSIFICATION

Soil sample classification is based on the Unified Soil Classification System, the Standard Practice for Description and Identification Soils (Visual-Manual Procedure), ASTM D-2488, the Standard Test Method for Classification of Soils for Engineering Purposes, ASTM D-2487 (when applicable), and the modifiers noted below.

CONSISTENCY OF COHESIVE SOILS

Term	Qu-tons.sq.ft.	N (unreliable)
Very soft	0.00 – 0.25	0 – 2
Soft	0.26 – 0.49	3 – 4
Stiff	0.50 – 0.99	5 – 8
Tough	1.00 – 1.99	9 –15
Very Tough	2.00 – 3.99	16 – 30
Hard	4.00 – 7.99	30 +
Very Hard	8.00 +	

RELATIVE DENSITY OF GRANULAR SOILS

Term	N – blows/foot
Very Loose	0 – 4
Loose	5 – 9
Medium Dense	10 – 29
Dense	30 – 49
Very Dense	50 +

IDENTIFICATION AND TERMINOLOGY

Term	Size Range
Boulder	over 8 in.
Cobble	3 in. to 8 in.
Gravel - coarse	1 in. to 3 in.
- medium	3/8 in. to 1 in.
- fine	#4 sieve to 3/8 in.
Sand - coarse	#10 sieve to #4 sieve
- medium	#40 sieve to #10 sieve
- fine	#200 sieve to #40 sieve
Silt	0.002 mm to #200 sieve
Clay	smaller than 0.002mm

Modifying Term	Percent by Weight
Trace	1 – 10
Little	11 – 20
Some	21 – 35
And	36 – 50

Moisture Content

Dry
Damp
Very Damp
Saturated

DRILLING, SAMPLING & SOIL PROPERY SYMBOLS

- CF - Continuous Flight Auger
- HS - Hollow Stem Auger
- HA - Hand Auger
- RD - Rotary Drilling
- AX - Rock Core, 1-3/16 in. diameter
- BX - Rock Core, 1-5/8 in. diameter
- NX - Rock Core, 2-1/8 in. diameter
- S - Sample Number
- T - Type of Sample
- J - Jar
- AS - Auger Sample
- SS - Split Spoon (2 in. O.D. with 1-3/8 in. I.D.)
- ST - Shelby Tube (2 in. O.D. w/ith1-7/8 in. I. D.)
- R - Recovery Length, in.
- B - Blows/6 in. interval, Standard Penetration Test (SPT)
- N - Blows/foot to drive 2 in. O.D. split-spoon sampler with 140 lb. hammer falling 30 in., (STP)
- Pen. - Pocket Penetrometer readings, tons/sq.ft.
- W - Water Content, % dry weight
- Uw - Dry Unit Weight of soil, lbs./cu.ft.
- Qu - Unconfined Compressive Strength, tons/sq.ft.
- Str - % Strain at Qu.
- WL - Water Level
- WD - While Drilling
- AD - After Drilling
- DCI - Dry Cave-in.
- WCI - Wet Cave-in.
- LL - Liquid Limit, %
- PL - Plastic Limit, %
- PI - Plasticity Index (LL-PL)
- LI - Liquidity Index [(W-PL)/PI]

SOIL AND MATERIAL CONSULTANTS, INC.

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Fax: 847-870-0661
us@soilandmaterialconsultants.com
www.soilandmaterialconsultants.com

February 24, 2023
File No. 24956 Revised

Jeff Sloot
Lake County Forest Preserves
1899 West Winchester Road
Libertyville, IL 60182

Re: Topsoil Investigation
2019 Lakewood Soil Testing
Lake County, Illinois

Dear Mr. Sloot:

The following are our results for the topsoil investigation completed at the Lake County Forest Preserves in Lake County, Illinois. Soil samples were obtained by use of a power auger to depths of approximately 3.0 feet. The investigation was requested to determine existing topsoil depths at the locations shown on the attached sketch. Below is a table summarizing our results:

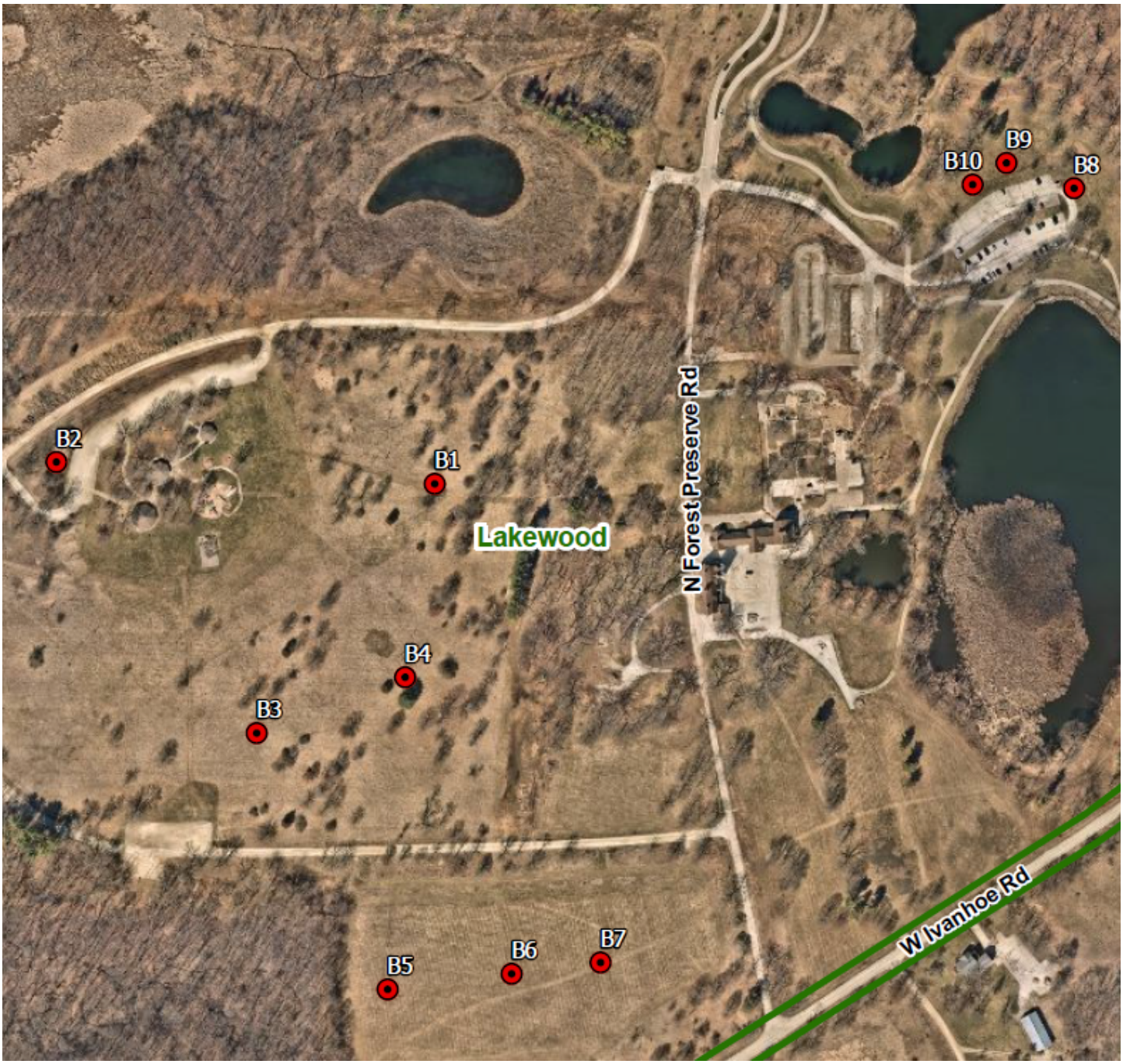
Location	Topsoil Depth (inches)
B-1	12.0
B-2	8.0
B-3	10.0
B-4	9.0
B-5	12.0
B-6	14.0
B-7	12.0
B-8	9.0
B-9	12.0
B-10	7.0

If you have any questions concerning the findings or recommendations presented in this report, please let me know.

Very truly yours,

SOIL AND MATERIAL CONSULTANTS, INC.

Reid T. Steinbach, P.E.
Director of Engineering



N

SMC	SOIL AND MATERIAL CONSULTANTS, INC.	LOCATION SKETCH
Client:	LAKE COUNTY FOREST PRESERVES	
Project:	2019 LAKEWOOD SOIL TESTING	
Location:	LAKE COUNTY, ILLINOIS	
File No. 24956	Date: 04-14-21	Scale: NONE

SOIL AND MATERIAL CONSULTANTS, INC.

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December 12, 2022
File No. 26935

Mr. Patrick Bovill
Lake County Forest Preserves
19808 W. Grand Avenue
Lake Villa, IL 60046

Re: Geotechnical Investigation
Lakewood Forest Preserve
Site Improvements
Wauconda, Illinois

Dear Mr. Bovill:

We are submitting our report for the subsurface investigation completed for the above referenced project in Lake County, Illinois.

The investigation was requested to determine current subsurface soil and water conditions at select boring locations. The findings of the field investigation and the results of laboratory testing are intended to assist in the planning, design and construction of proposed site improvements which will include fishing piers.

SCOPE OF THE INVESTIGATION

The field investigation included obtaining 4 borings at the locations requested and as indicated on the enclosed location sketch. The boring locations were established using field taping methods and accuracy. Surface elevations were estimated to the nearest 0.5 ft. using data presented on the topographic survey.

We auger drilled the borings to depths of 15.0 feet below existing surface elevations. Soil samples were obtained using a split barrel sampler advanced utilizing an automatic SPT hammer. Soil profiles were determined in the field and soil samples returned to our laboratory for additional testing including determination of moisture content. Cohesive soils obtained by split barrel sampling were tested further to determine dry unit weight and unconfined compressive strength.

The results of all field determinations and laboratory testing are included in summary with this report.

RESULTS OF THE INVESTIGATION

Enclosed are boring logs indicating the soil conditions encountered at each location. Site surface conditions include vegetation, topsoil and fill soil conditions. The topsoil is classified as dark brown to black silt/clay mixtures with traces of roots usually present.

Fill soil conditions were encountered at boring B-1. Composition of the fill includes the presence of silt/sand/gravel mixtures extending to depths of 3.0 feet. The limits of fill placement were not determined within the scope of this investigation. Larger debris may also be present within the fill but was not encountered during the investigation.

Underlying natural soil conditions include the presence of cohesive soils. These are classified as very tough to very hard clay/silt mixtures with lesser portions of sand and gravel.

Non-cohesive soils were also encountered as indicated at borings B-1, B-3 and B-4. These include medium dense silt, sand/gravel, and silt/sand mixtures. Cobbles and boulders were encountered within the site soils as noted on the boring logs, additional cobbles and boulders are expected to be present within the site soils at any elevation.

The following table summarizes depth ranges below existing grade, the magnitude of soil strength within these ranges and other information:

Boring	Surface Elevation (feet)	Depth Range Below Existing Surface (feet)	Soil Strength (lbs./sq.ft.)	Recorded Water Levels, W.D./A.D. (feet)
1	848.0	0.5 to 3.5	*2,000	dry/dry
		3.5 to 8.5	4,000	
		8.5 to 12.0	8,000	
2	848.0	1.5 to 3.5	6,000	dry/dry
		3.5 to 12.0	8,000	
3	847.5	2.0 to 6.0	3,000	dry/dry
		6.0 to 12.0	8,000	
4	847.5	1.0 to 7.0	5,000	dry/dry
		7.0 to 12.0	4,000	

* Not recommended for support of foundations. Deeper foundation depths or foundations supported on coarse crushed stone fill may be needed to reduce the magnitude of long-term total and differential settlement.

It is expected that foundations can be supported on undisturbed natural soils located at any elevation within the depth ranges indicated in the above table, except as noted at borings B-1. Above these depth ranges the soils are not considered able to support foundations, even at reduced design bearing values, due to long-term settlement considerations.

SUBSURFACE WATER

The boring logs and the above table subsurface water was not encountered in the bore holes at the time of the drilling operations and during the period of these readings. It is expected that fluctuations from the water levels recorded will occur over a period of time due to variations in

rainfall, temperature, subsurface soil conditions, soil permeability and other factors not evident at the time of the water level measurements.

FOUNDATIONS

Based on the results of this investigation it is our opinion that continuous and isolated footing foundations may be considered for support of the new structures. These foundations can be supported on undisturbed natural soils located below all topsoil, debris, unsuitable fill soils, low strength soils and other unsuitable conditions which may be encountered. Soil strength values and the depths at which they are expected to be encountered at these boring locations are indicated in the above table. A net allowable bearing value of 3,000 lbs./sq.ft. is available for design. This value can be used to size foundations for support of structure dead and live loads. Increased bearing values may be available at some locations and elevations. The feasibility of using a higher value is best determined after our review of proposed foundation details and elevations.

All exterior building foundations should extend at least 42.0 inches below exposed surface elevations to provide adequate protection against uplift due to freezing of the supporting soils. Foundations for unprotected improvements should extend at least 48.0 inches below exposed surface elevations. We recommend providing adequate reinforcing steel in foundation walls and piers to minimize the effects of long-term differential settlement.

Weak soil conditions may be discovered locally at design foundation elevations and may require extending the foundation to a deeper elevation. Alternately, removal of the weak soil followed by replacement with properly compacted coarse crushed granular fill (CA01) may be feasible. When removal is approved by the Soil Engineer, the removal of the weak soil should also extend beyond the face of footings and/or piers to a distance at least equal to the depth of fill that will be present beneath the footings and/or piers. A capping layer of finer crushed granular fill (CA06) can be utilized to establish a working surface.

FLOOR SLABS

Floor slabs planned for support on the existing soil conditions are expected to undergo some degree of long-term settlement as the soils consolidate under loading and as they shrink due to desiccation. Slabs may be considered for support on suitable natural soils or on properly placed and compacted fill soils. This is feasible when the soils supporting the slabs are prepared in accordance with the Building Pad recommendations above. These include the removal of topsoil as well as removal or aeration of underlying high moisture content soils.

DEWATERING

Excavations may require dewatering due to subsurface water seepage and/or surface precipitation. This water can likely be removed to depths of several feet by standard sump and pump operations. Soils exposed at foundation, slab or undercut elevations should not be permitted to become saturated. Loss of bearing strength and stability may occur, requiring additional soil excavation.

Fill soils, organic soils, non-cohesive soils and others can be unstable when saturated. These soils tend to cave or run when submerged or disturbed. The stability of exposed embankments is minimal to non-existent as confining soil pressures are removed. Proper drainage within excavations is necessary at all times, particularly when excavations extend below anticipated water levels and below saturated soils.

The contractor should be made responsible for designing and constructing stable temporary excavations. Also, the contractor should shore, slope, bench or restrain the sides of the excavations as required to maintain stability of both the excavation sides and bottom. In no case, should the slope, slope heights, or excavation depth exceed those in the local, state, and federal safety regulations.

SUBGRADE SOIL PREPARATION

The procedure in all areas of subgrade supported improvements should include the removal of unsuitable surface conditions including vegetation, topsoil, unsuitable fill soils, significant debris, weak or unstable soils, and other deleterious conditions which may be encountered. Above grade areas should be cut to design subgrade elevations. Exposed subgrade soils should be leveled, compacted and proof-rolled in the presence of the Soil Engineer.

Proof-rolling may reveal areas of unstable soil conditions. Discing and aeration of high moisture content soils can be effective to depths of up to 1.0 foot, depending upon the equipment utilized. Removal of unstable soils may be necessary if high moisture content conditions extend to depths greater than the effective depth of discing. If the depth of undercut appears to be significant, it may be economical to limit the depth of undercut to that needed to establish adequate support of slabs and remediate weak soil conditions at foundation elevations at the time of foundation construction.

Soft or unstable soil conditions in pavement areas can often be bridged by use of an effective depth of crushed granular material. The placement of the crushed granular bridging material, possibly in conjunction with the use of an appropriate geotextile fabric, should only proceed after review of the proof-roll conditions by the Soil Engineer. Long-term settlement of pavement surfaces may occur locally as the bridged soils desiccate.

Structural fill can be placed on soils prepared to the satisfaction of the Soil Engineer. The fill should be placed in lifts not to exceed 8.0 inches when uncompacted. Each lift should exceed minimum compaction requirements prior to placement of the next lift. We recommend a minimum of 95% compaction based on the modified Proctor test, ASTM D-1557, be achieved within building areas. A minimum of 90% compaction should be achieved beneath exterior improvements such as pavements and sidewalks. Compaction requirements also apply to backfill placement around foundations and within trench excavations located below subgrade supported improvements.

FILL SOURCES

The onsite non-organic soils are generally suitable for reuse as fill. Offsite sources may also be used provided they are approved in advance by the Soil Engineer. Aeration may be necessary

to reduce soil moisture content prior to compaction. Soil borrowed from near the surface where seasonal fluctuations in soil moisture content occur may require particular attention. The moisture content of fill soils should be within approximately 3.0% of optimum moisture content as determined by the modified Proctor test for the soils to meet or exceed minimum compaction requirements.

CONCLUSION

The information within this report is intended to provide initial information concerning subsurface soil and water conditions on the site. Variations in subsurface conditions are expected to be present between boring locations due to naturally changing soil conditions. Variations are also expected within areas of disturbed (filled) soil conditions.

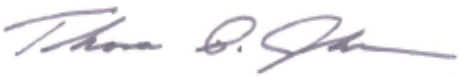
Our understanding of the proposed improvements is based on limited information available to us at the writing of this report. The findings of the investigation and the recommendations presented are not considered applicable to significant changes in the scope of the improvements or applicable to alternate site uses. We recommend that proposed foundation, pavement and grading plans be reviewed by our office to determine if additional considerations are necessary to address anticipated subsurface conditions.

The soils exposed in soil undercut areas should be evaluated for suitability prior to placement of structural fill, as previously indicated in this report. Soils and aggregates placed as structural fill should be tested as the work progresses to verify that minimum compaction requirements have been met. We recommend that soil conditions encountered at foundation elevations be tested to verify the presence of design soil strength prior to concrete placement.

If you have any questions concerning the findings or recommendations presented in this report, please let me know.

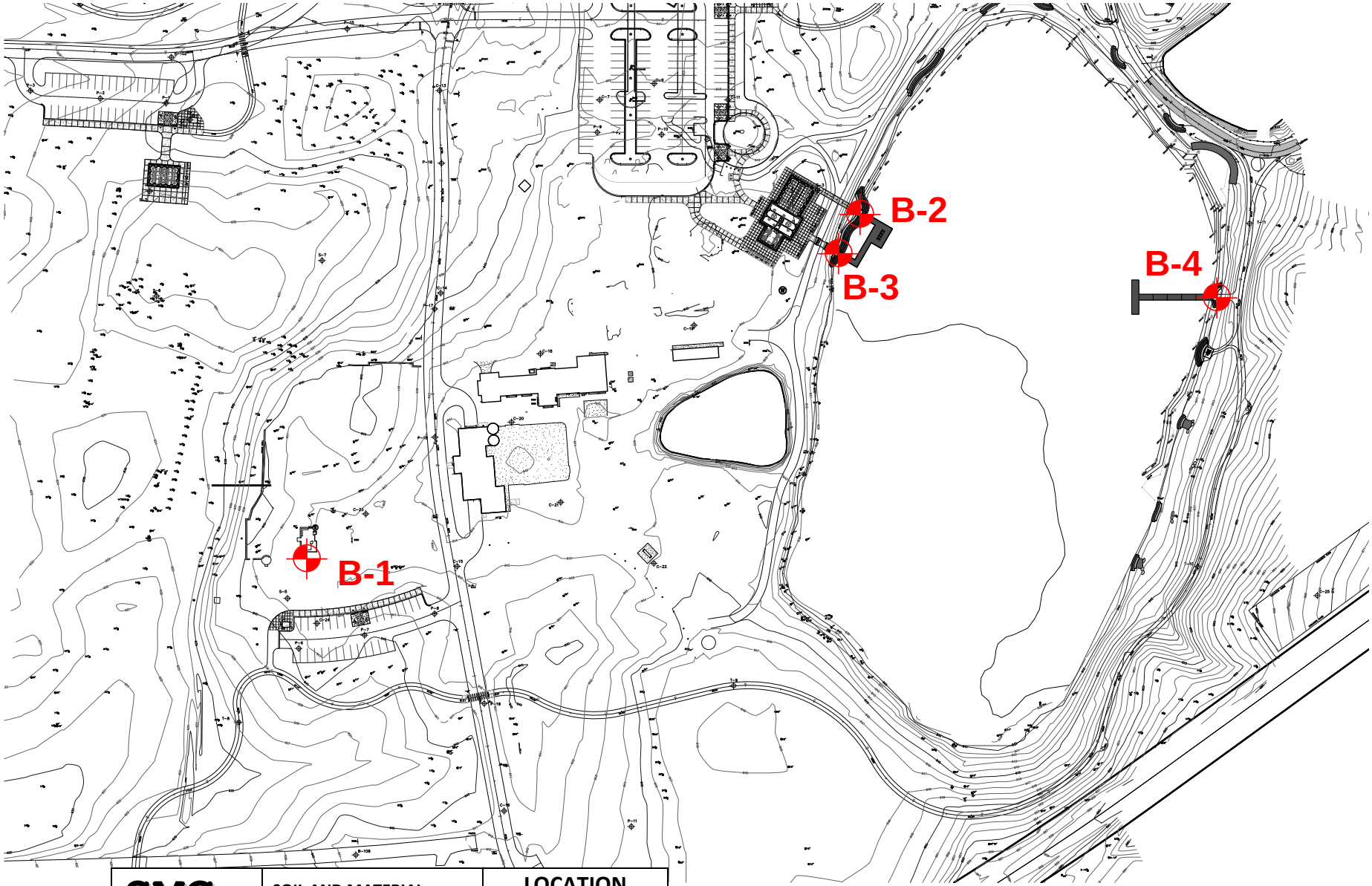
Very truly yours,

SOIL AND MATERIAL CONSULTANTS, INC.



Thomas P. Johnson, P.E.
President

TPJ:ek
Enc.



N

SMC	SOIL AND MATERIAL CONSULTANTS, INC.	LOCATION SKETCH
Client:	LAKE COUNTY FOREST PRESERVES	
Project:	SITE IMPROVEMENTS	
Location:	WAUCONDA, ILLINOIS	
File No. 26935	Date: 12-6-22	Scale: 1" ≈ 200'

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG 1

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves **File No.** 26935 **Date Drilled:** 12/6/22

Reference: Lakewood Forest Preserve
Site Improvements
Wauconda, IL

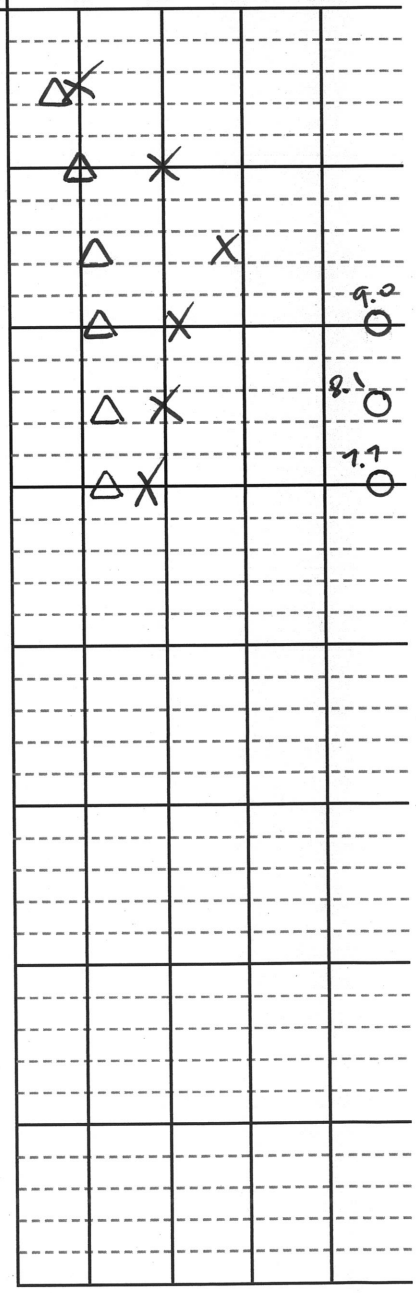
Comments:

Equipment: ☐D - 25 ☑D - 50 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation 842.0' Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	Dark brown-black silt,sand & gravel, damp,medium dense - Fill	10	6.9		
5	Brown silt,trace clay & sand,dry,medium dense	20	9.9		
		28	11.1		
10	Brown clay,some silt,trace sand & gravel damp,very hard	22	12.4	124.8	9.0
		20	13.5	124.2	8.1
15	Brown clay,some silt,trace sand & gravel damp,hard	17	14.0	124.4	7.7
	End of Boring				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG 2

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 26935 **Date Drilled:** 12/6/22

Reference: Lakewood Forest Preserve
Site Improvements
Wauconda, IL

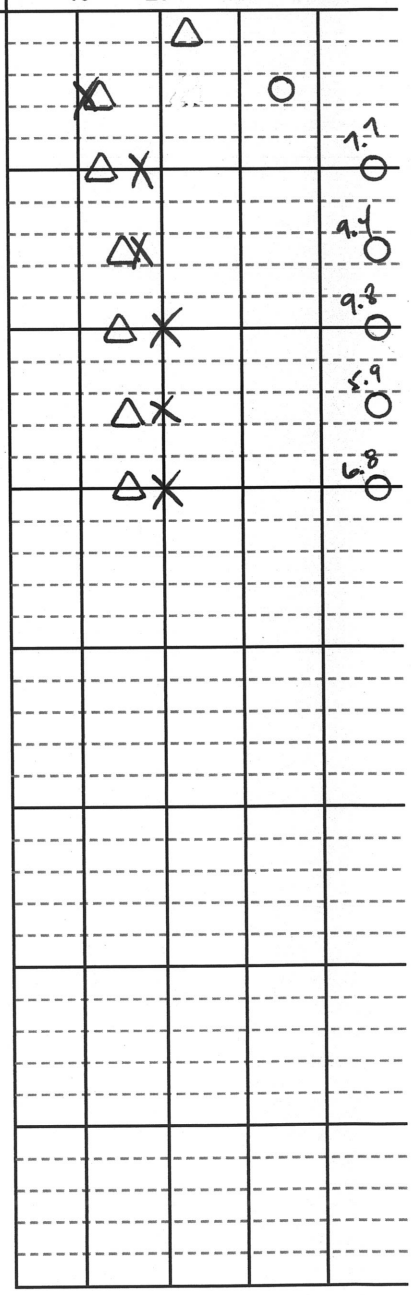
Comments:

Equipment: ☐D - 25 ☑ D - 50 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation 841.5' Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	(a) see below		23.8		
	Brown clay,some silt,trace sand & gravel damp,very tough to very hard	11	13.7	117.7	3.5
5		17	12.6	124.4	7.7
		17	14.6	123.2	9.4
10		20	14.7	124.7	9.8
	Brown clay,some silt,trace sand & gravel damp,hard	20	15.9	119.8	5.9
15		20	15.5	121.5	6.8
	End of Boring				
	(a) Black silt,some clay,trace sand & roots,damp (topsoil)				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

SOIL AND MATERIAL CONSULTANTS, INC.
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SOIL BORING LOG 3

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves **File No.** 26935 **Date Drilled:** 12/6/22

Reference: Lakewood Forest Preserve
Site Improvements
Wauconda, IL

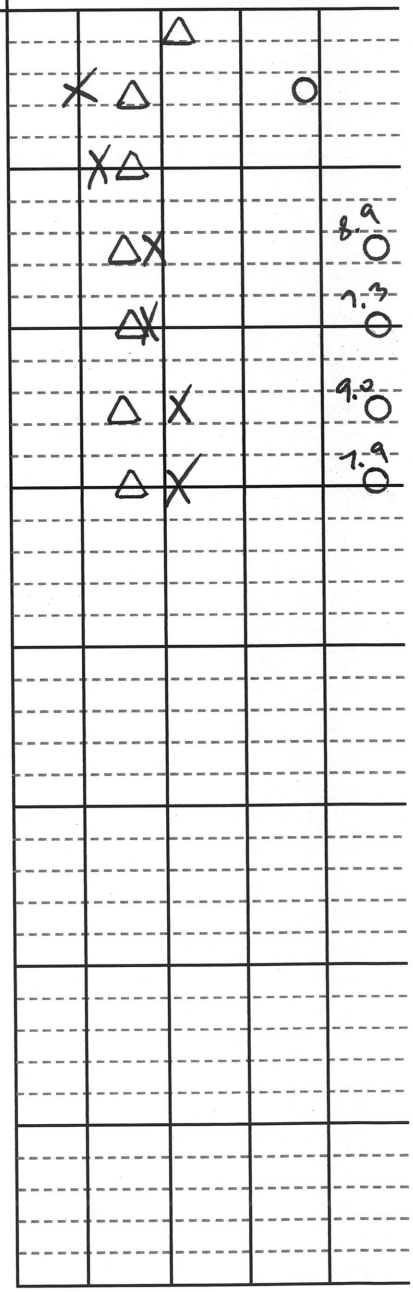
Comments:

Equipment: ☐D - 25 ☒D - 50 ☐Hand Auger ☐Other

depth, ft.	CLASSIFICATION Elevation 841.5' Existing Surface	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	(a) see below		22.1		
	Brown clay,some silt,trace sand & gravel damp,very tough	10	17.3	108.9	3.9
5	Brown fine sand,some gravel & medium-coarse sand,damp,medium dense	13	10.3		
	Brown clay,some silt,trace sand & gravel damp,very hard to hard	19	15.4	113.1	8.9
10		18	16.2	118.1	7.3
		22	15.3	123.9	9.0
15		22	15.8	121.8	7.8
	End of Boring				
	(a) Black silt,some clay,trace sand & roots,damp (topsoil) - 14.0"				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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SOIL BORING LOG 4

Logged By: CS **Page:** 1 of 1

Client: Lake County Forest Preserves

File No. 26935 **Date Drilled:** 12/6/22

Reference: Lakewood Forest Preserve
Site Improvements
Wauconda, IL

Comments:

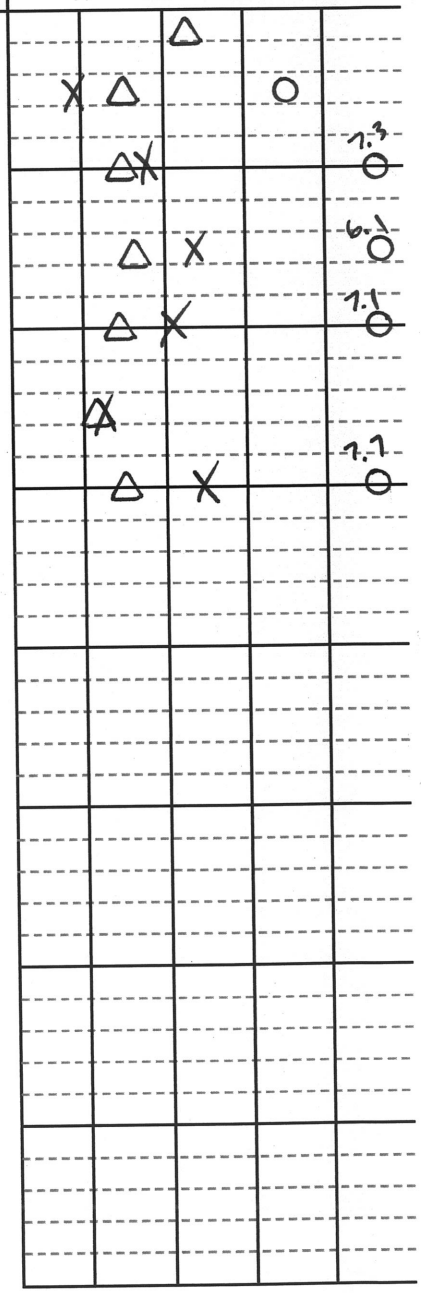
Equipment: ☐D - 25 ☒D - 50 ☐Hand Auger ☐Other

Elevation 840.0' **Existing Surface**

depth, ft.	CLASSIFICATION	standard penetration ×	moisture content Δ	dry unit weight lbs./cu.ft. ɣ	unconfined compressive strengh ○
	(a) see below		22.7		
	Brown clay,some silt,trace sand & gravel damp,very tough to hard	9	14.9	116.4	3.5
5		17	14.8	122.0	7.3
	(large rock between 6.0'-7.0')	24	16.6	117.5	6.1
10		21	15.3	120.4	7.1
	Brown silt,some sand,trace clay & gravel damp,medium dense	13	10.5		
	Brown clay,some silt,trace sand & gravel damp,hard	24	15.0	124.8	7.7
15	End of Boring				
	(a) Black silt,some clay,trace sand & roots,damp (topsoil) - 6.0"				
20					
25					
30					
35					
40					

○ unconfined compressive strength, tons/sq. ft.
● penetrometer reading, tons/sq. ft.
1.0 2.0 3.0 4.0

× standard penetration "N", blows/ft.
Δ moisture content, %
10 20 30 40



Water encountered at dry feet during drilling operations (W.D.)
Water recorded at dry feet on completion of drilling operations (A.D.)
Water recorded at feet hours after completion of drilling operations (A.D.)

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GENERAL NOTES

SAMPLE CLASSIFICATION

Soil sample classification is based on the Unified Soil Classification System, the Standard Practice for Description and Identification Soils (Visual-Manual Procedure), ASTM D-2488, the Standard Test Method for Classification of Soils for Engineering Purposes, ASTM D-2487 (when applicable), and the modifiers noted below.

CONSISTENCY OF COHESIVE SOILS

Term	Qu-tons.sq.ft.	N (unreliable)
Very soft	0.00 – 0.25	0 – 2
Soft	0.26 – 0.49	3 – 4
Stiff	0.50 – 0.99	5 – 8
Tough	1.00 – 1.99	9 –15
Very Tough	2.00 – 3.99	16 – 30
Hard	4.00 – 7.99	30 +
Very Hard	8.00 +	

RELATIVE DENSITY OF GRANULAR SOILS

Term	N – blows/foot
Very Loose	0 – 4
Loose	5 – 9
Medium Dense	10 – 29
Dense	30 – 49
Very Dense	50 +

IDENTIFICATION AND TERMINOLOGY

Term	Size Range
Boulder	over 8 in.
Cobble	3 in. to 8 in.
Gravel - coarse	1 in. to 3 in.
- medium	3/8 in. to 1 in.
- fine	#4 sieve to 3/8 in.
Sand - coarse	#10 sieve to #4 sieve
- medium	#40 sieve to #10 sieve
- fine	#200 sieve to #40 sieve
Silt	0.002 mm to #200 sieve
Clay	smaller than 0.002mm

Modifying Term	Percent by Weight
Trace	1 – 10
Little	11 – 20
Some	21 – 35
And	36 – 50

Moisture Content

Dry
Damp
Very Damp
Saturated

DRILLING, SAMPLING & SOIL PROPERY SYMBOLS

CF	-	Continuous Flight Auger
HS	-	Hollow Stem Auger
HA	-	Hand Auger
RD	-	Rotary Drilling
AX	-	Rock Core, 1-3/16 in. diameter
BX	-	Rock Core, 1-5/8 in. diameter
NX	-	Rock Core, 2-1/8 in. diameter
S	-	Sample Number
T	-	Type of Sample
J	-	Jar
AS	-	Auger Sample
SS	-	Split Spoon (2 in. O.D. with 1-3/8 in. I.D.)
ST	-	Shelby Tube (2 in. O.D. w/ith1-7/8 in. I. D.)
R	-	Recovery Length, in.
B	-	Blows/6 in. interval, Standard Penetration Test (SPT)
N	-	Blows/foot to drive 2 in. O.D. split-spoon sampler with 140 lb. hammer falling 30 in., (STP)
Pen.	-	Pocket Penetrometer readings, tons/sq.ft.
W	-	Water Content, % dry weight
Uw	-	Dry Unit Weight of soil, lbs./cu.ft.
Qu	-	Unconfined Compressive Strength, tons/sq.ft.
Str	-	% Strain at Qu.
WL	-	Water Level
WD	-	While Drilling
AD	-	After Drilling
DCI	-	Dry Cave-in.
WCI	-	Wet Cave-in.
LL	-	Liquid Limit, %
PL	-	Plastic Limit, %
PI	-	Plasticity Index (LL-PL)
LI	-	Liquidity Index [(W-PL)/PI]