



ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT
2100 CLARENDON BOULEVARD, SUITE 500
ARLINGTON, VA 22201
(703) 228-3410

INVITATION TO BID NO. 21-DPR-ITB-291

ELECTRONIC SEALED BIDS WILL BE RECEIVED BY ARLINGTON COUNTY VIA VENDOR REGISTRY UNTIL 4:00 P.M. ON THE 16TH DAY OF NOVEMBER 2021.

ALCOVA HEIGHTS PARK RENOVATION PHASE 1:

For the provision of demolition, site work, utilities (stormwater, electrical), multi-use court, lighting, picnic areas, picnic shelter, fire pit, bathroom renovation, stormwater management, walkways, fencing, signage, site furnishings, reforestation area, conserved open space and landscaping.

VENDORS ARE REQUIRED TO REGISTER ON [VENDOR REGISTRY](#) IN ORDER TO SUBMIT A RESPONSE TO THIS INVITATION TO BID. NO RESPONSES WILL BE ACCEPTED AFTER THE BID DUE DATE AND TIME.

The County will conduct a virtual bid opening via Microsoft Teams Application (APP). Bidders interested in viewing the public bid opening must download the APP and join the meeting via the Microsoft Teams APP and enable audio, video or both. The link to join the virtual bid opening is provided below:

[Join Microsoft Teams Meeting](#)
[+1 347-973-6905](#) United States, New York City (Toll)
Conference ID: 447 566 028#

Bid Surety in the amount of 5% of the bid must be submitted with the bid. Performance and Payment Bonds in the amount of 100% of the award and a Landscape Maintenance Bond in the amount of 25% of award will be required of the successful bidder.

PREBID CONFERENCE

A virtual prebid conference will be held at 10:00 a.m., October 29, 2021_on Microsoft Teams to allow potential Bidders an opportunity to obtain clarification of the specifications and requirements of the solicitation. To join the meeting, please click the following link [Click here to join the meeting](#) or join by dialing +1 347-973-6905 and enter Conference ID 722 572 132#. ATTENDANCE AT THE PREBID CONFERENCE IS OPTIONAL. Minutes of the prebid conference will be recorded by the County and may be incorporated into the solicitation documents through an Addendum. Interested Bidders are, however, urged to attend.



NOTICE: ANY BIDDER ORGANIZED AS A STOCK OR NONSTOCK CORPORATION, LIMITED LIABILITY COMPANY, BUSINESS TRUST OR LIMITED PARTNERSHIP, OR REGISTERED AS A LIMITED LIABILITY PARTNERSHIP, MUST BE AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH OF VIRGINIA PRIOR TO SUBMITTING A BID (REFER TO AUTHORITY TO TRANSACT BUSINESS SECTION IN THE SOLICITATION FOR FURTHER INFORMATION).

Arlington County reserves the right to reject any and all bids, cancel this solicitation, and waive any informalities or irregularities as defined in the Arlington County Purchasing Resolution.

Arlington County, Virginia
Office of the Purchasing Agent

Kaylin Schreiber
Procurement Officer
kschreiber@arlingtonva.us

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I. INFORMATION FOR BIDDERS

1. QUESTIONS AND ADDENDA

BIDDERS MUST BE REGISTERED IN VENDOR REGISTRY TO SUBMIT A QUESTION FOR THIS INVITATION TO BID.

All communications relating to this solicitation must be submitted online using Vendor Registry. For a question to be considered, the question must be entered in the Question Section of the ITB No. 21-DPR-ITB-291. Prior to the award of a contract resulting from this solicitation, bidders are prohibited from contacting any County staff other than those assigned to the Office of the Purchasing Agent.

QUESTIONS REGARDING THE ORIGINAL SOLICITATION MUST BE SUBMITTED BY NOVEMBER 2, 2021, AT 5:00 PM EASTERN TIME TO BE CONSIDERED FOR AN ADDENDUM. ALL QUESTIONS RECEIVED BY THE QUESTION DEADLINE WILL BE RESPONDED TO WITHIN VENDOR REGISTRY AND POSTED FOR ALL BIDDERS. THE SYSTEM WILL NOT ACCEPT ANY QUESTIONS AFTER THIS DATE AND TIME.

If any questions or responses require revisions to this solicitation, such revisions will be by formal Addendum only. Bidders are cautioned not to rely on any written, electronic, or oral representations made by any County representative or other person, including the County's technical contact, that appear to change any portion of the solicitation unless the change is ratified by a written Addendum to this solicitation issued by the Office of the Purchasing Agent.

2. INTEREST IN MORE THAN ONE BID AND COLLUSION

Reasonable grounds for believing that a Bidder is interested in more than one bid for a solicitation, including both as a Bidder and as a subcontractor for another Bidder, or that collusion exists between two or more Bidders, will result in rejection of all affected proposals. However, an individual or entity acting only as a subcontractor may be included as a subcontractor on bids of two or more different Bidders. Bidders rejected under the above provision will also be disqualified if they respond to a re-solicitation for the same work.

3. TRADE SECRETS OR PROPRIETARY INFORMATION

Trade secrets or proprietary information that a bidder or contractor submits in connection with a procurement transaction may be exempted from public disclosure under the Virginia Freedom of Information Act ("VFOIA"). However, the bidder or contractor must invoke VFOIA protection clearly and in writing on the Bid Form for County review. The Bid Form must include at least the following: (1) the data or other materials sought to be protected and (2) specific reasons why the material is confidential or proprietary. It is the bidder's sole responsibility to defend such exemptions if challenged in a court of competent jurisdiction.

4. DEBARMENT STATUS

The Bidder must indicate on the Bid Form whether it or any of its principals is currently debarred from submitting bids to the County or to any other state or political subdivision and whether the Bidder is an agent of any person or entity that is currently debarred from submitting bids to the County or to any other state or political subdivision. An affirmative response may be considered grounds for rejection of the bid.

5. AUTHORITY TO TRANSACT BUSINESS

Any Bidder organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership must be authorized to transact business in the Commonwealth of Virginia as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia, or as otherwise required by law. The proper and full legal name of the entity and the identification number issued to the Bidder by the Virginia State Corporation Commission must be included on the Bid Form. Any Bidder that is not required to be authorized to transact business in the Commonwealth must include in its proposal a statement describing why the Bidder is not required to be so authorized. The County may require a Bidder to provide documentation that 1) clearly identifies the complete name and legal form of the entity and 2) establishes that the entity is authorized by the State Corporation Commission to transact business in the Commonwealth of Virginia. Failure of a Bidder to provide such documentation will be a ground for rejection of the bid or cancellation of any award. For further information refer to the Commonwealth of Virginia State Corporation Commission website at: www.scc.virginia.gov.

6. ARLINGTON COUNTY BUSINESS LICENSES

The successful Bidder must comply with the provisions of Chapter 11 (“Licenses”) of the Arlington County Code, if applicable. For information on the provisions of that Chapter and its applicability to this solicitation, contact the Arlington County Business License Division, Office of the Commissioner of the Revenue, at 2100 Clarendon Blvd., Suite 200, Arlington, Virginia, 22201, tel. (703) 228-3060, or e-mail mailto: business@arlingtonva.us.

7. COVID-19 VACCINATION POLICY FOR CONTRACTORS

Due to the ongoing COVID-19 pandemic, the County has taken various steps to protect the welfare, health, safety, and comfort of the workforce and public at large. As part of these steps, the County has implemented various requirements with respect to health and safety including policies with respect to social distancing, the use of face-coverings and vaccine mandates. To protect the County’s workforce and the public at large, all employees and subcontractors of the Contractor who are assigned to this Contract, must be fully vaccinated against COVID-19. Any contractor employee or subcontractor who is not fully vaccinated should follow a weekly testing protocol as established by the Contractor, unless exempt pursuant to a valid reasonable accommodation under state or federal law. By submitting a bid, the Bidder certifies that it will comply with this provision and will ensure that its subcontractors, if any, do so as well. For questions, Bidders may email contractorvaccineinfo@arlingtonva.us.

8. ESTIMATED QUANTITIES/NON-EXCLUSIVITY OF CONTRACTOR

The contract that will result from this solicitation will not obligate the County to purchase a specific quantity of items or services during the Contract Term. Any quantities that are included in the contract documents are the present expectations the County for the period of the contract, and the County is under no obligation to buy that, or any, amount as a result of having provided this estimate or of having had any normal or otherwise measurable requirement in the past. The County may require more goods and/or services than the estimated annual amount, and any such additional quantities will not give rise to any claim for compensation other than at the unit prices and/or rates specified in the contract.

The items or services covered by this contract may be or become available under other County contract(s), and the County may determine that it is in its best interest to procure the items or services through such other contract(s). The County does not guarantee that the selected contractor will be the exclusive provider of the goods or services covered by the resulting contract.

9. BID FORM SUBMISSION

The submitted Bid Form must be signed and fully executed. The Bid Form must be submitted electronically via Vendor Registry no later than the date and time specified in this solicitation. The Vendor Registry system will not accept bids after the close date and time. The County will not accept emailed or faxed bid

The Bidder name on the electronic bid submittal shall be the same as the Contractor/Vendor name as the registration in Vendor Registry for the upload to be considered a valid bid. ONLY ELECTRONIC SUBMISSION IS ALLOWED, NO BID SUBMITTED OTHER THAN A VENDOR REGISTRY ELECTRONIC UPLOAD WILL BE ACCEPTED. **Arlington County is not responsible for late submissions, missed Addendums, or questions not submitted before the end date and time.**

Timely submission is solely the responsibility of the Bidder. The Vendor Registry System will not accept applications after the publicly posted date and time. A bid may be rejected if the Bid Form is not signed in the designated space by a person authorized to legally bind the Bidder.

Modification of or additions to the Bid Form may be cause for rejection of the bid; however, Arlington County reserves the right to decide, in its sole discretion, whether to reject such a bid as nonresponsive. As a precondition to bid acceptance, Arlington County may request the bidder to withdraw or modify any such modifications or additions, if it does not affect quality, quantity, price, or delivery.

Bids and all documents uploaded/submitted to Arlington County by an Bidder become the property of the County upon receipt.

10. ERRORS IN EXTENSION

If the unit price and the extension price differ, the unit price will prevail.

11. EXCEPTIONS

Conditional or qualified bids containing exceptions, unless specifically allowed in the solicitation, are subject to rejection in whole or in part as nonresponsive.

12. NONCONFORMING TERMS AND CONDITIONS

If a bid contains alternate terms and conditions that do not conform to the terms and conditions in this solicitation, the bid will be subject to rejection for nonresponsiveness. The County reserves the right to permit a bidder to withdraw nonconforming terms and conditions from its bid prior to the County's determination of nonresponsiveness.

13. BIDDERS' RESPONSIBILITY TO INVESTIGATE

Before submitting a bid, each bidder must make all investigations necessary to ascertain all conditions and requirements affecting the full performance of the contract and to verify any representations made by the County upon which the bidder will rely. No pleas of ignorance of such conditions and requirements will relieve the successful bidder from its obligation to comply in every detail with all provisions and requirements of the contract or will be accepted as a basis for any claim for any monetary consideration on the part of the successful bidder.

14. SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK

Each bidder is responsible for ascertaining the nature and locations of the Work of the solicitation, and for investigating the general and local conditions and factors which can affect the work or its cost, including but not limited to:

- a. conditions bearing upon transportation, disposal, handling, and storage of materials;
- b. the availability of labor, water, electric power, and roads;
- c. uncertainties of weather, river stage, tides, or similar physical conditions at the site;
- d. the conformation and conditions of the ground; and
- e. the character of equipment and facilities needed before and during work performance.

Each bidder is responsible for investigating the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work publicly or otherwise available, as well as from the drawings and specifications made a part of this solicitation.

The locations of existing utilities, including underground utilities, which may affect the work are indicated on the drawings or in the specifications insofar as their existence and location were known at the time of preparation of the drawings. However, nothing in these drawings or specifications shall be construed as a guarantee that such utilities are in the location indicated or that they actually exist, or that other utilities are not within the area of operations. The bidder shall make all necessary investigations to determine the existence and locations of such utilities.

The County assumes no responsibility for any conclusions or interpretations made by the bidder based on the information made available by the County. The County assumes no responsibility for any understanding reached or representation made concerning conditions which could affect the work by any of its officers or agents before the execution of the contract, unless that understanding, or representation is expressly stated in the Contract.

15. INCOMPLETE DOCUMENTS

Each bidder is responsible for having determined the accuracy and/or completeness of the solicitation documents upon which it relied in making its bid, and has an affirmative obligation to notify the Arlington County Purchasing Agent immediately upon discovery of an apparent or suspected inaccuracy, error in, or omission of any pages, drawings, sections, or addenda whose omission from the documents was apparent from a reference or page numbering or other indication in the solicitation documents.

If a bidder downloads an electronic version of the solicitation documents, that potential bidder is responsible for determining the accuracy and/or completeness of the electronic documents and ensuring that the electronic documents used in preparing the bid are the most current version of solicitation documents issued by the County.

If the successful bidder proceeds with any activity that may be affected by an inaccuracy, error in, or omission in the solicitation documents of which it is aware but has not notified the Arlington County Purchasing Agent, the bidder hereby agrees to perform any activity described in the missing or incomplete documents at bidder's sole expense and at no additional cost to Arlington County.

16. ERRONEOUS OR INFEASIBLE REQUIREMENTS

Each bidder is responsible for having determined the feasibility of the work required and shall notify the County Purchasing Agent immediately upon discovery of any apparent erroneous, contradictory, incomplete, or infeasible requirements or directions contained in the Solicitation Documents. If a bidder fails to notify the County of such conditions immediately upon discovery, the bidder assumes all responsibility for any and all work required to satisfy the contract requirements at no additional cost to the County and within the Time for Completion.

17. QUALIFICATION OF BIDDERS

The Purchasing Agent may require a bidder to demonstrate that it has the necessary facilities, ability, and financial resources to comply with the contract and furnish the service, material or goods specified herein in a satisfactory manner before the award of any contract. A bidder may also be required to provide past history and references. Failure to qualify according to the foregoing requirements will result in bid rejection.

18. ALTERNATE BID

Bidders who have other items they wish to offer in lieu of, or in addition to, what is required by this solicitation shall submit a separate bid clearly marked "ALTERNATE BID". Alternate bids will be automatically deemed nonresponsive.

19. INFORMALITIES

The County reserves the right to waive minor defects or variations from the exact requirements of the solicitation in a bid insofar as those defects or variations do not affect the price, quality, quantity, or delivery schedule of the services being procured. If insufficient information is submitted for Arlington County to properly evaluate a bid or a bidder; the County may request such additional information after bid opening, provided that the information requested does not change the price, quality, quantity, or delivery schedule for the services being procured.

20. USE OF BRAND NAMES/"OR EQUIVALENT" BIDS

Unless identified as a "No Equivalent" item in the solicitation, the name of a certain brand, make or manufacturer does not restrict bidders to that specific brand, make or manufacturer. The use of the brand, make or manufacturer's identification is intended to convey the general type, style, character, and quality of the article described. When a brand name is specified and followed by the phrase "or approved equal," the brand name product may be substituted if a suitable equivalent considering quality, workmanship, economy of operation, and suitability for the intended use, is accepted by the County Purchasing Agent.

The County may accept any equivalent item(s) that it considers suitable for the intended use.

For those items not identified as "No Equivalent", and followed by the phrase "or approved equal," the County has established the following procedure for determining the equivalency of a particular item:

Bidder Submission of Proposed Equivalent Item(s):

- 1) Bidder shall submit to the County its proposed item(s) for determination of their equivalency to the Brand Name(s) specified.

- 2) Each proposed item must be described on a separate page, indicating the appropriate specification section number, product or fabrication or installation method to be replaced, and specifics of the proposed item. Attach any technical information, photographs, brochures and the relevant data listed below that supports the proposed item and will permit the County to fairly determine acceptability of the item proposed:
 - a. Reasons why the specified product cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the product specified.

- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and owners, if requested.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Statement of impact on the construction schedule. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - i. Cost information.
 - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
- 3) The County will consider factors such as relative costs, equivalency of features, serviceability, the design of the item proposed, and/or pertinent performance factors as provided in the project technical specifications.
- 4) All pages of the submission shall be marked with the name, address and contact information of the bidder, and sent via email to the Office of the Purchasing Agent to arrive prior to the question deadline established in Section I., paragraph I. ADDITIONAL INFORMATION. E-mail transmittals will be accepted at kschreiber@arlingtonva.us.

County Review of Proposed Equivalent Item(s):

- 1) Approved item(s) will be added to the solicitation, in the form of an Addendum to the solicitation, and forwarded to all bidders of record.
- 2) Bidders whose item(s) have not been approved will be so advised in writing simultaneously with the issuance of the Addendum.

21. NEW MATERIAL

Unless otherwise provided for in this solicitation, all goods, materials, supplies, or components offered to the County under this bid solicitation must be new, not used or reconditioned, and are not of such age or so deteriorated as to impair their usefulness or safety and that the goods, materials, supplies, or components offered are current production models of the respective manufacturer. If a bidder believes that furnishing used or reconditioned goods, materials, supplies or components will be in the County's interest, the bidder shall notify the County Purchasing Agent in writing no later than fifteen (15) calendar days prior to the date set for opening of bids. The notice shall include the reasons for the request and any benefits which may accrue to the County if the Purchasing Agent authorizes the bidding of used or reconditioned goods, materials, supplies or components.

22. VIRGINIA CONTRACTOR LICENSE

For all work that is classified as being performed by "Contractors" as defined by the Virginia State Board for Contractors, a Class A, B, or C License is required.

If a contract for performing or managing construction, removal, repair or improvements is for \$120,000 or more, or if the total value of all such construction, removal, repair, or improvements undertaken by

the bidder within any twelve month period is \$750,000 or more, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS A CONTRACTOR."

If a contract for performing or managing construction, removal, repair or improvements is for \$10,000 or more, but less than \$120,000, or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any twelve month period is \$150,000 or more, but less than \$750,000, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS B CONTRACTOR."

If a contract for performing construction, removal, repair or improvements is for \$1,000 or more, but no more than \$10,000 or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any twelve month period is less than \$150,000, the bidder is required under Title 54.1, Chapter 11, Code of Virginia, as amended, to be licensed as a "CLASS C CONTRACTOR." Class C contractors shall not include electrical, plumbing, and heating, ventilation and air conditioning contractors.

For further information, contact the State Board for Contractors, 2 South Ninth Street, Richmond, VA 23219, (804) 367-8511.

23. BID WITHDRAWAL PRIOR TO BID OPENING

The Bidder may withdraw a bid from Vendor Registry before the opening date and time. It is the sole responsibility of the Bidder to remove and/or resubmit a bid before the bid deadline.

24. WITHDRAWAL OF BID FROM CONSIDERATION AFTER BID OPENING

After the opening of a bid, a bidder may withdraw its bid from consideration if the price of the bid is substantially lower than other bids due solely to a mistake therein, provided the bid is submitted in good faith, the mistake is a clerical mistake as opposed to a judgment mistake, and is actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of the bid, which unintentional error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. No partial withdrawals of bids will be permitted after the time and date set for the bid opening. The bidder must give an electronic written notice to the Arlington County Purchasing Agent of a claim of right to withdraw a bid and provide all work papers, documents and other materials used in the preparation of the bid sought to be withdrawn, within two (2) business days after the date of bid opening. A bid may also be withdrawn if the County fails to award or issue a notice of intent to award the bid within ninety (90) days after the date fixed for opening bids.

25. METHOD OF AWARD

The County will award to the lowest responsive and responsible bidder. The lowest bidder will be determined by Lump Sum Grand Total.

26. NOTICE OF DECISION TO AWARD

When the County has made a decision to award a contract(s), the County will post a Notice of Award or Intent to Award to [Vendor Registry](#).

27. INSURANCE REQUIREMENTS

Each bidder must be able to demonstrate proof of the specific coverage requirements and limits applicable to this solicitation. If the bidder is not able to do so, it may propose alternate insurance

coverage for consideration by the County. Written requests for consideration of alternate coverage must be received by the County Purchasing Agent at least 10 working days prior to bid due date. If the County permits alternate coverage, an amendment to the Insurance Checklist will be issued prior to the time and date set for receipt of bids.

28. SURETY REQUIRED

Companies who wish to implement digital signatures during the COVID-19 public health emergency may do so, along with a SURETY BOND SEAL ADDENDUM which contains an electronic corporate seal and states the following:

“Due to logistical issues associated with the use of traditional seals during this COVID-19 pandemic, [Surety Company] has authorized its Attorney-in-Fact to affix [Surety Company’s] corporate seal to any bond executed on behalf of [Surety Company] by any such Attorney-in-Fact by attaching this Addendum to said bond.

To the extent this Addendum is attached to a bond that is executed on behalf of [Surety Company] by its Attorney-in-Facts, [Surety Company] hereby agrees that the seal below shall be deemed affixed to said bond to the same extent as if its raised corporate seal was physically affixed to the face of the bond.”

A. BID SURETY:

A fully completed and properly executed original Bid Bond, cashier's check, certified check, money order, or cash escrow in the amount of 5% of the amount of the bid made payable to the Treasurer of Arlington County shall accompany each bid. The Bid Surety will be retained until after the award to the successful bidder. The Bid Surety of the successful bidder will be retained until completion of the Contract or the posting of a Performance Bond, whichever occurs sooner. A bid submitted without a proper bid surety will be rejected.

B. FAILURE TO EXECUTE:

The failure of a bidder to accept an award and file acceptable Performance and Payment Bonds within ten (10) days after notice of intent to award will cause cancellation of the award and the forfeiture of the Bid Surety to the County.

C. PERFORMANCE SURETY:

A fully completed and properly executed original Performance Bond in the amount of 100% of the amount of the bid will be required of the successful bidder to ensure satisfactory completion of the work. The bond shall be a corporate surety bond issued by a surety company authorized to do business in the Commonwealth of Virginia and acceptable to the County. Where applicable, the Performance Bond shall be renewable annually in the original amount through the completion of the Contract, including all warranty and guarantee periods.

D. PAYMENT BOND:

A fully completed and properly executed original Payment Bond in the amount of 100% of the amount of the bid, will be required of the successful bidder to ensure payment of all persons who have and fulfill contracts for the Contractor for performing labor, providing equipment, or providing material in the performance of the work provided for in the Contract. The Bond shall be a corporate surety bond issued by a surety company authorized to do business in the

Commonwealth of Virginia and acceptable to the County. Where applicable, the Payment Bond shall be renewable annually in the original amount for the duration of the Contract.

E. **LANDSCAPE MAINTENANCE BOND:**

A fully completed and properly executed original two (2) year Landscape Maintenance Bond in the amount of 25% of the bid will be required of the successful bidder to ensure landscape maintenance for two (2) years after Final Completion per the warranty provisions in the Specifications. The bond shall be a corporate surety bond issued by a surety company authorized to do business in the Commonwealth of Virginia and acceptable to the County. Where applicable, the Landscape Maintenance Bond shall be renewable annually in the original amount for the duration of the Contract.

29. EXECUTION OF CONTRACT

Within three days after the Contract is presented to the successful Bidder for signature, the Contractor must submit to the County Purchasing Agent the original of the executed Agreement. Within ten days the Contractor must submit executed performance and payment bonds and required certificate of insurance. Failure to do so shall constitute a default, and the County may award the Contract to the next lowest responsive and responsible bidder or solicit new bids. The County may then charge against the Contractor the difference between the amount of the Contract award and the amount for which a Contract is subsequently executed, up to the total amount of the Contractor's bid security.

30. EXPENSES INCURRED IN PREPARING BID

All expenses related to a bid are the sole responsibility of the bidder.

31. NEGOTIATIONS WITH LOWEST RESPONSIVE AND RESPONSIBLE BIDDER

If the bid by the lowest responsive and responsible bidder exceeds available funds, the County reserves the right to negotiate with the apparent low bidder to obtain an acceptable price. Negotiations with the apparent low bidder may involve discussions of reduction of quantity, quality, or other cost saving mechanisms. The final negotiated contract shall be subject to final approval of the County, in its sole discretion.

32. ELECTRONIC SIGNATURE

If awarded, the Bidder may be required to accept an agreement and sign electronically through the County's e-signature solution, DocuSign.

FOLLOWING THIS PAGE IS THE AGREEMENT THAT WILL BE ENTERED INTO BETWEEN THE COUNTY AND THE CONTRACTOR. THE AGREEMENT IS PART OF THIS SOLICITATION. THIS AGREEMENT IS SUBJECT TO REVIEW BY THE COUNTY ATTORNEY PRIOR TO BEING SUBMITTED FOR CONTRACTOR'S SIGNATURE.

II. **AGREEMENT AND CONTRACT TERMS AND CONDITIONS**

ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT
SUITE 500, 2100 CLARENDON BOULEVARD
ARLINGTON, VA 22201

AGREEMENT NO. 21-DPR-ITB-291

THIS AGREEMENT is made, on _____, between Contractor's name, Contractor's address ("Contractor") a name of state type of entity authorized to do business in the Commonwealth of Virginia, and the County Board of Arlington County, Virginia ("County"). The County and the Contractor, for the consideration hereinafter specified, agree as follows:

1. CONTRACT DOCUMENTS

The Contract Documents consist of:

- Agreement No. 21-DPR-ITB-291, and all modifications properly incorporated into the Agreement
- Exhibit A – Arlington County Invitation to Bid No. 21-DPR-ITB-291, including the General Conditions, and any Special Conditions and/or Supplementary Specifications (incorporated by reference)
- Exhibit B – Specifications, Bid plans, Drawings and Construction Notes
- Exhibit D – Price Bid of Contractor

Where the terms and provisions of this Agreement vary from the terms and provisions of the other Contract Documents, the order of precedence of the Contract Documents shall be as follows:

Attachments A, B and C are considered complementary documents, what is in one shall be considered as in all; where the terms of these Contract Documents vary the most stringent shall apply; and Attachments A, B and C shall prevail over Attachment F.

The Contract Documents set forth the entire agreement between the County and the Contractor. The County and the Contractor agree that no representative or agent of either party has made any representation or promise with respect to the parties' agreement that is not contained in the Contract Documents. The Contract Documents may be referred to below as the "Contract" or the "Agreement".

2. PROJECT OFFICER

The performance of the Contractor is subject to the review and approval of the County Project Officer who will be appointed by the Director of the Arlington County department or agency requesting the work under the Contract.

3. SCOPE OF WORK

The Contractor will furnish all labor, materials, and equipment for the Alcova Heights Park Renovation Phase 1 for the provision of demolition, site work, utilities (stormwater, electrical), multi-use court, lighting, picnic areas, picnic shelter, fire pit, bathroom renovation, stormwater management, walkways, fencing, signage, site furnishings, reforestation area, conserved open space, and landscaping (the

“Project”) and all other work shown, described, and required by the Contract Documents (hereinafter “the Work”).

The Work shall be performed according to the standards established by the Contract Documents read together as a single specification. It shall be the Contractor's responsibility, at solely the Contractor's cost, to provide sufficient services to fulfill the purposes of the Work. Nothing in the Contract Documents shall be construed to limit the Contractor's responsibility to manage the details and execution of its Work.

4. TIME FOR COMPLETION

Work under this Agreement shall achieve Final Completion no later than three hundred (300) consecutive calendar days after the commencement date given in a Notice to Proceed provided by the County to the Contractor, subject to any modifications made as provided for in the Contract Documents. This three hundred (300) day period shall be the Period of Performance for Final Completion. No Work shall be deemed Finally Complete until it meets the requirements of Final Completion set forth in the General Conditions.

Unless otherwise provided, no claims for early completion are allowed.

5. CONTRACT AMOUNT

The County will pay the Contractor in accordance with the terms of the Progress Payments and Retainage and Payment Terms sections below and at the prices shown in Attachment D, but not more than \$_____ for the Contractor's completion of the Work as required by the Contract Documents provided the Work is performed to the satisfaction of and is accepted by the Project Officer. The Contractor will complete the Work for the total amount specified in this section (“Contract Amount”) unless such amount is modified as provided in this Agreement. The Contract Amount includes all of the Contractor's costs and fees (profit).

6. PROGRESS PAYMENTS AND RETAINAGE

The County will make monthly progress or partial payments to the Contractor on the basis of an estimate, provided by the Contractor and approved by the Project Officer, of all work performed during the preceding calendar month to the satisfaction of the Project Officer. However, 5% of each progress payment will be retained by the County until Final Completion and acceptance of all Work covered by the Agreement.

All material and work covered by partial payments will become the property solely of the County at the time the partial payment is made. However, the Contractor will have the sole responsibility, care and custody for all materials and work upon which payments have been made until Final Acceptance.

When calculating payment for materials on-site, the County shall not pay for materials which are not scheduled for incorporation into the Work within sixty (60) days from the date of application for payment.

7. PAYMENT TERMS

The Contractor must submit invoices to the County’s Project Officer, who will either approve the invoice or require corrections. The County will pay the Contractor within forty-five (45) days after approval of an invoice for completed work which is reasonable and allocable to the Contract. The number of the County Purchase Order pursuant to work has been performed must appear on all invoices. Unless otherwise

specified herein, payment shall not be made prior to delivery and acceptance of the entire Work by the County.

8. PAYMENT OF SUBCONTRACTORS

The Contractor is obligated to take one of the two following actions within seven days after receipt of payment by the County for work performed by any subcontractor under this Contract:

- a. Pay the subcontractor for the proportionate share of the total payment received from the County attributable to the work performed by the subcontractor under this Contract; or
- b. Notify the County and the subcontractor, in writing, of the Contractor's intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor is obligated to pay interest to the subcontractor on all amounts owed by the Contractor to the subcontractor that remain unpaid after seven days following receipt by the Contractor of payment from the County for work performed by the subcontractor under this Contract, except for amounts withheld as allowed in subsection b., above. Unless otherwise provided under the terms of this Contract, interest will accrue at the rate of 1% per month.

The Contractor must include in each of its subcontracts, if any are permitted, a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.

The Contractor's obligation to pay an interest charge to a subcontractor pursuant to this section may not be construed to be an obligation of the County. A Contract modification may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

9. RELEASE AND REQUEST FOR FINAL PAYMENT

In order to receive final payment upon Final Completion of the Project and before Final Acceptance, the Contractor must submit to the Project Officer a signed original notarized copy of the Arlington County Release and Request for Final Payment form per the General Conditions.

10. LIQUIDATED DAMAGES

Time is of the essence under this Contract. The Work must be completed within the Time for Completion. The County and the Contractor agree that damages for failure to achieve Final Completion of the Work by the date specified under Time for Completion are not susceptible to exact determination but that \$715.00 per calendar day is in proportion to the loss that the County would suffer from such delay. Therefore, the Contractor will pay the County as liquidated damages \$715.00 per day for each and every day beyond the time for Final Completion that the County determines Final Completion has not achieved. The County and the Contractor also agree that damages for failure to achieve Final Completion of the Work by the date specified under Time for Completion are not susceptible to exact determination but that \$715.00 per calendar day is in proportion to the loss the County would suffer from such delay. Therefore, the Contractor will pay the County as liquidated damages \$715.00 per day for each and every day beyond the time for Final Completion until Final Completion is achieved. The County will be entitled to deduct liquidated damages against any sums owed by the County to the Contractor under this Contract. The Contractor hereby waives any defense as to the validity of any liquidated damages on grounds that such liquidated damages are void as penalties or are not reasonably related to actual damages.

11. NON-APPROPRIATION

All payments by the County to the Contractor pursuant to this Contract are subject to the availability of an annual appropriation for this purpose by the County Board of Arlington County, Virginia (“Board”). In the event that the Board does not appropriate funds for the goods or services provided under this Contract, the County will terminate the Contract, without termination charge or other liability to the County, on the last day of the fiscal year or when the previous appropriation has been spent, whichever occurs first.

12. ESTIMATED QUANTITIES/NON-EXCLUSIVITY OF CONTRACTOR

This Contract does not obligate the County to purchase a specific quantity of items or services during Contract Term. Any quantities that are included in the Contract Documents are the present expectations of the County for the period of the Contract; and the County is under no obligation to buy that or any amount as a result of having provided this estimate or of having had any normal or otherwise measurable requirement in the past. The County may require more goods and/or services than the estimated annual quantities, and any such additional quantities will not give rise to any claim for compensation other than at the unit prices and/or rates in the Contract.

The County does not guarantee that the Contractor will be the exclusive provider of the goods or services covered by this Contract. The items or services covered by this Contract may be or become available under other County contract(s), and the County may determine that it is in its best interest to procure the items or services through those contract(s).

13. COUNTY PURCHASE ORDER REQUIREMENT

County purchases are authorized only if the County issues a Purchase Order in advance of the transaction, indicating that the ordering County agency has sufficient funds available to pay for the purchase. If the Contractor provides goods or services without a signed County Purchase Order, it does so at its own risk and expense. The County will not be liable for payment for any purchases made by its employees that are not authorized by the County Purchasing Agent.

14. LIEN

It is expressly agreed that after any payment has been made by the County either to the Contractor for work done, or labor or material supplied under the Contract, the County will have a lien upon all material delivered to the site either by the Contractor, or for the Contractor, which is to be used in the performance of the Contract.

15. EMPLOYMENT DISCRIMINATION BY CONTRACTOR PROHIBITED

During the performance of its work pursuant to this Contract:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability or on any other basis prohibited by state law. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- B. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation will be deemed sufficient for meeting the requirements of this section.

- C. The Contractor will state in all solicitations or advertisements for employees that it places or causes to be placed that such Contractor is an Equal Opportunity Employer.
- D. The Contractor will comply with the provisions of the Americans with Disabilities Act of 1990 (“ADA”), which prohibits discrimination against individuals with disabilities in employment and mandates that disabled individuals be provided access to publicly and privately provided services and activities.
- E. The Contractor must include the provisions of the foregoing paragraphs in every subcontract or purchase order of more than \$10,000.00 relating to this Contract so that the provisions will be binding upon each subcontractor or vendor.

16. EMPLOYMENT OF UNAUTHORIZED ALIENS PROHIBITED

In accordance with §2.2-4311.1 of the Code of Virginia, as amended, the Contractor must not during the performance of this Contract knowingly employ an unauthorized alien, as that term is defined in the federal Immigration Reform and Control Act of 1986.

17. DRUG-FREE WORKPLACE TO BE MAINTAINED BY CONTRACTOR

During the performance of this Contract, the Contractor must: (i) provide a drug-free workplace for its employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violating such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that the Contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of more than \$10,000.00 relating to this Contract so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "workplace" means the site(s) for the performance of the work required by this Contract.

18. *SEXUAL HARASSMENT POLICY

If the Contractor employs more than five employees, the Contractor shall (i) provide annual training on the Contractor's sexual harassment policy to all supervisors and employees providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the Contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the Contractor owns or leases for business purposes and (b) the Contractor's employee handbook.

19. COVID-19 VACCINATION POLICY FOR CONTRACTORS

Due to the ongoing COVID-19 pandemic, the County has taken various steps to protect the welfare, health, safety, and comfort of the workforce and public at large. As part of these steps, the County has implemented various requirements with respect to health and safety including policies with respect to social distancing, the use of face-coverings and vaccine mandates. To protect the County's workforce and the public at large, all employees and subcontractors of the Contractor who are assigned to this Contract, must be fully vaccinated against COVID-19. Any contractor employee or subcontractor who is not fully

vaccinated should be following a weekly testing protocol as established by the Contractor, unless exempt pursuant to a valid reasonable accommodation under state or federal law.

20. PROJECT STAFF

The County has the right to reasonably reject staff or subcontractors whom the Contractor assigns to the Project. The Contractor must then provide replacement staff or subcontractors satisfactory to the County in a timely manner and at no additional cost to the County. The day-to-day supervision and control of the Contractor's employees and its subcontractors is the sole responsibility of the Contractor.

21. FAILURE TO DELIVER

If the Contractor fails to deliver goods or services in accordance with the Contract terms and conditions, the County, after notice to the Contractor, may procure the goods or services from other sources and hold the Contractor responsible for any resulting additional purchase and administrative costs. The County shall be entitled to offset such costs against any sums owed by the County to the Contractor. However, if public necessity requires the use of nonconforming materials or supplies, they may be accepted at a reduction in price to be determined solely by the County.

22. UNSATISFACTORY WORK

If any of the work done, or material, goods, or equipment provided by the Contractor, is unsatisfactory to the County the Contractor must, upon notice from the County, immediately remove at the Contractor's expense such unsatisfactory work, material, goods, or equipment and replace the same with work, material, goods, or equipment satisfactory to the County. If the Contractor fails to do so after fifteen (15) days the County shall have the right to remove or replace the rejected work, material, goods, or equipment at the expense of the Contractor and offset the expense and administrative costs against any sums owed to the Contractor. This provision applies during the Contract term and during any warranty or guarantee period. At the Project Officer's discretion, rather than correction or replacement of the work, an appropriate adjustment to the Contract Amount may be made.

23. TERMINATION FOR CAUSE, INCLUDING BREACH AND DEFAULT; CURE

The County may terminate this Contract at any time as follows: (1) for cause, if, as determined by the County, the Contractor is in breach or default or has failed to perform the Work satisfactorily; or (2) for the convenience of the County.

Upon receipt of a notice of termination, the Contractor must not place any further orders or subcontracts for materials, services or facilities; must terminate all vendors and subcontracts, except as are necessary for the completion of any portion of the Work that the County did not terminate; and must immediately deliver all documents related to the terminated Work to the County.

Any purchases that the Contractor makes after the notice of termination will be the sole responsibility of the Contractor, unless the County has approved the purchases in writing as necessary for completion of any portion of the Work that the County did not terminate.

If any court of competent jurisdiction finds a termination for cause by the County to be improper, then the termination will be deemed a termination for convenience.

A. TERMINATION FOR CAUSE, INCLUDING BREACH AND DEFAULT; CURE

1. Termination for Unsatisfactory Performance. If the County determines that the Contractor has failed to perform satisfactorily, then the County will give the Contractor written notice of such failure(s) and the opportunity to cure them within 15 days or any other period specified by the County ("Cure Period"). If the Contractor fails to cure within the Cure Period, the County may terminate the Contract for failure to provide satisfactory performance by providing written notice with a termination date. The Contractor must submit any request for termination costs, with all supporting documentation, to the County Project Officer within 30 days after the expiration of the Cure Period. The County may accept or reject the request for termination costs, in whole or in part, and may notify the Contractor of its decision within a reasonable time.

In the event of termination by the County for failure to perform satisfactorily, the Contractor must continue to provide its services as previously scheduled through the termination date, and the County must continue to pay all fees and charges incurred through the termination date.

2. Termination for Breach or Default. If the County terminates the Contract for default or breach of any Contract provision or condition, then the termination will be immediate after notice of termination to the Contractor (unless the County provides for an opportunity to cure), and the Contractor will not be permitted to seek termination costs.

Upon any termination pursuant to this section, the Contractor will be liable to the County for costs that the County must expend to complete the Work, including costs resulting from any related delays and from unsatisfactory or non-compliant work performed by the Contractor or its subcontractors. The County will deduct such costs from any amount due to the Contractor; or if the County does not owe the Contractor, the Contractor must promptly pay the costs within 15 days of a demand by the County. This section does not limit the County's recovery of any other damages to which it is entitled by law.

Except as otherwise directed by the County, the Contractor must stop work on the date of receipt the notice of the termination.

B. TERMINATION FOR THE CONVENIENCE OF THE COUNTY

The County may terminate this Contract in whole or in part whenever the Purchasing Agent determines that termination is in the County's best interest. The County will give the Contractor at least 15 days' notice in writing. The notice must specify the extent to which the Contract is terminated and the effective termination date. The Contractor will be entitled to termination costs, plus any other reasonable amounts that the parties might negotiate; but no amount will be allowed for anticipatory profits.

Except as otherwise directed by the County, the Contractor must stop work on the date of receipt of the notice of the termination.

24. INDEMNIFICATION

The Contractor covenants for itself, its employees and its subcontractors to save, defend, hold harmless and indemnify the County and all of its elected and appointed officials, officers, current and former employees, agents, departments, agencies, boards and commissions (collectively the "County Indemnitees") from and against any and all claims made by third parties for any and all losses, damages,

injuries, fines, penalties, costs (including court costs and attorneys' fees), charges, liability, demands or exposure resulting from, arising out of or in any way connected with the Contractor's acts or omissions, including the acts or omissions of its employees, and/or subcontractors, in performance or nonperformance of the Contract. This duty to save, defend, hold harmless and indemnify will survive the termination of this Contract. If the Contractor fails or refuses to fulfill its obligations contained in this section, the Contractor must reimburse the County for any and all resulting payments and expenses, including reasonable attorneys' fees. The Contractor must pay such expenses upon demand by the County, and failure to do so may result in the County withholding such amounts from any payments to the Contractor under this Contract.

25. INTELLECTUAL PROPERTY INDEMNIFICATION

The Contractor warrants and guarantees that in providing services under this Contract neither the Contractor nor any subcontractor is infringing on the intellectual property rights (including, but not limited to, copyright, patent, mask and trademark) of third parties.

If the Contractor or any of its employees or subcontractors uses any design, device, work or material that is covered by patent or copyright, it is understood that the Contract Amount includes all royalties, licensing fees, and any other costs arising from such use in connection with the Work under this Contract.

The Contractor covenants for itself, its employees and its subcontractors to save, defend, hold harmless, and indemnify the County Indemnitees, as defined above, from and against any and all claims, losses, damages, injuries, fines, penalties, costs (including court costs and attorneys' fees), charges, liability or exposure for infringement of or on account of any trademark, copyright, patented or unpatented invention, process or article manufactured or used in the performance of this Contract. This duty to save, defend, hold harmless and indemnify will survive the termination of this Contract. If the Contractor fails or refuses to fulfill its obligations contained in this section, the Contractor must reimburse the County for any and all resulting payments and expenses, including reasonable attorneys' fees. The Contractor must pay such expenses upon demand by the County, and failure to do so may result in the County withholding such amounts from any payments to the Contractor under this Contract.

26. COPYRIGHT

By this Contract, the Contractor irrevocably transfers, assigns, sets over and conveys to the County all rights, title and interest, including the sole exclusive and complete copyright interest, in any and all copyrightable works created pursuant to this Contract. The Contractor will execute any documents that the County requests to formalize such transfer or assignment.

The rights granted to the County by this section are irrevocable and may not be rescinded or modified, including in connection with or as a result of the termination of or a dispute concerning this Contract.

The Contractor may not use subcontractors or third parties to develop or provide input into any copyrightable materials produced pursuant to this Contract without the County's advance written approval and unless the Contractor includes this Copyright provision in any contract or agreement with such subcontractors or third parties related to this Contract.

27. OWNERSHIP OF WORK PRODUCT

This Contract does not confer on the Contractor any ownership rights or rights to use or disclose the County's data or inputs.

All work product, in any form, that results from this Contract is the property of the County and must be provided or returned to the County upon completion, termination, or cancellation of this Contract. The Contractor will not use or allow others to use the work product for any purpose other than performance of this Contract without the written consent of the County.

The work product is confidential, and the Contractor may neither release the work product nor share its contents. The Contractor will refer all inquiries regarding the status of any work product to the Project Officer or to his or her designee. At the County's request, the Contractor will deliver all work product, including hard copies of electronic files, to the Project Officer and will destroy all electronic files.

The Contractor must include the provisions of this section as part of any contract or agreement related to this Contract into which it enters with subcontractors or other third parties.

The provisions of this section will survive any termination or cancellation of this Contract.

28. CONFIDENTIAL INFORMATION

The Contractor and its employees, agents and subcontractors will hold as confidential all County information obtained under this Contract. Confidential information includes, but is not limited to, nonpublic personal information; personal health information (PHI); social security numbers; addresses; dates of birth; other contact information or medical information about a person; and information pertaining to products, operations, systems, customers, prospective customers, techniques, intentions, processes, plans and expertise. The Contractor must take reasonable measures to ensure that all of its employees, agents and subcontractors are informed of and abide by this requirement.

29. ETHICS IN PUBLIC CONTRACTING

This Contract incorporates by reference Article 9 of the Arlington County Purchasing Resolution, as well as all state and federal laws related to ethics, conflicts of interest or bribery, including the State and Local Government Conflict of Interests Act (Code of Virginia § 2.2-3100 et seq.), the Virginia Governmental Frauds Act (Code of Virginia § 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2 of the Code of Virginia, as amended (§ 18.2-438 et seq.). The Contractor certifies that its proposal was made without collusion or fraud; that it has not offered or received any kickbacks or inducements from any other offeror, supplier, manufacturer or subcontractor; and that it has not conferred on any public employee having official responsibility for this procurement any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

30. COUNTY EMPLOYEES

No Arlington County employee may share in any part of this Contract or receive any benefit from the Contract that is not available to the general public.

31. FORCE MAJEURE

Neither party will be held responsible for failure to perform the duties and responsibilities imposed by this Contract if such failure is due to a fire, riot, rebellion, natural disaster, war, act of terrorism or act of God that is beyond the control of the party and that makes performance impossible or illegal, unless otherwise specified in the Contract.

32. AUTHORITY TO TRANSACT BUSINESS

The Contractor must, pursuant to Code of Virginia § 2.2-4311.2, be and remain authorized to transact business in the Commonwealth of Virginia during the entire term of this Contract. Otherwise, the Contract is voidable at the sole option of and with no expense to the County.

33. RELATION TO THE COUNTY

The Contractor is an independent contractor, and neither the Contractor nor its employees or subcontractors will be considered employees, servants or agents of the County. The County will not be responsible for any negligence or other wrongdoing by the Contractor or its employees, servants or agents. The County will not withhold payments to the Contractor for any federal or state unemployment taxes, federal or state income taxes or Social Security tax or for any other benefits. The County will not provide to the Contractor any insurance coverage or other benefits, including workers' compensation.

34. ANTITRUST

The Contractor conveys, sells, assigns and transfers to the County all rights, title and interest in and to all causes of action under state or federal antitrust laws that the Contractor may have relating to this Contract.

35. REPORT STANDARDS

The Contractor must electronically submit all written reports required by this Contract for advance review in a format approved by the Project Officer. Reports must be accurate and grammatically correct and should not contain spelling errors. The Contractor will bear the cost of correcting grammatical or spelling errors and inaccurate report data and of other revisions that are required to bring the report(s) into compliance with this section.

Whenever possible, proposals must avoid unnecessary attachments or documents or superfluous use of paper (e.g. separate title sheets or chapter dividers)

36. AUDIT

The Contractor must retain all books, records and other documents related to this Contract for at least five years, or such period of time required by the County's funding partner(s), if any, whichever is greater, after the final payment and must allow the County or its authorized agents to examine the documents during this period and during the Contract Term. The Contractor must provide any requested documents to the County for examination within 15 days of the request, at the Contractor's expense. Should the County's examination reveal any overcharging by the Contractor, the Contractor must, within 30 days of County's request, reimburse the County for the overcharges and for the reasonable costs of the County's examination, including, but not limited to, the services of external audit firm and attorney's fees; or the County may deduct the overcharges and examination costs from any amount that the County owes to the Contractor. If the Contractor wishes to destroy or dispose of any records related to this Contract (including confidential records to which the County does not have ready access) within five years after the final payment, or such period of time required by the County's funding partner(s), if any, whichever is greater, the Contractor must give the County at least 30 days' notice and must not dispose of the documents if the County objects.

The Purchasing Agent may require the Contractor to demonstrate that it has the necessary facilities, ability, and financial resources to comply with the Contract and furnish the service, material or goods specified herein in a satisfactory manner at any time during the term of this Contract.

37. ASSIGNMENT

The Contractor may not assign, transfer, convey or otherwise dispose of any award or any of its rights, obligations or interests under this Contract without the prior written consent of the County.

38. AMENDMENTS

This Contract may not be modified except by written amendment executed by persons duly authorized to bind the Contractor and the County.

39. ARLINGTON COUNTY PURCHASING RESOLUTION AND COUNTY POLICIES

Nothing in this Contract waives any provision of the Arlington County Purchasing Resolution, which is incorporated herein by reference, or any applicable County policy.

40. DISPUTE RESOLUTION

All disputes arising under this Agreement or concerning its interpretation, whether involving law or fact and including but not limited to claims for additional work, compensation or time, and all claims for alleged breach of contract must be submitted in writing to the Project Officer as soon as the basis for the claim arises. In accordance with the Arlington County Purchasing Resolution, claims denied by the Project Officer may be submitted to the County Manager in writing no later than 60 days after the final payment. The time limit for a final written decision by the County Manager is 30 days. Procedures concerning contractual claims, disputes, administrative appeals and protests are contained in the Arlington County Purchasing Resolution. The Contractor must continue to work as scheduled pending a decision of the Project Officer, County Manager, County Board or a court of law.

41. APPLICABLE LAW, FORUM, VENUE, AND JURISDICTION

This Contract is governed in all respects by the laws of the Commonwealth of Virginia; and the jurisdiction, forum and venue for any litigation concerning the Contract or the Work is in the Circuit Court for Arlington County, Virginia, and in no other court.

42. ARBITRATION

No claim arising under or related to this Contract may be subject to arbitration.

43. NONEXCLUSIVITY OF REMEDIES

All remedies available to the County under this Contract are cumulative, and no remedy will be exclusive of any other at law or in equity.

44. NO WAIVER

The failure to exercise a right provided for in this Contract will not be a subsequent waiver of the same right or of any other right.

45. SEVERABILITY

The sections, paragraphs, clauses, sentences, and phrases of this Contract are severable; and if any section, paragraph, clause, sentence or phrase of this Contract is declared invalid by a court of competent jurisdiction, the rest of the Contract will remain in effect.

46. ATTORNEY'S FEES

In the event that the County prevails in any legal action or proceeding brought by the County to enforce any provision of this Contract, the Contractor will pay the County's reasonable attorney's fees and expenses.

47. SURVIVAL OF TERMS

In addition to any statement that a specific term or paragraph survives the expiration or termination of this Contract, the following sections also survive: INDEMNIFICATION; INTELLECTUAL PROPERTY INDEMNIFICATION; RELATION TO COUNTY; OWNERSHIP OF WORK PRODUCT; AUDIT; COPYRIGHT; DISPUTE RESOLUTION; APPLICABLE LAW AND JURISDICTION; ATTORNEY'S FEES, AND CONFIDENTIAL INFORMATION.

48. HEADINGS

The section headings in this Contract are inserted only for convenience and do not affect the substance of the Contract or limit the sections' scope.

49. AMBIGUITIES

The parties and their counsel have participated fully in the drafting of this Agreement; and any rule that ambiguities are to be resolved against the drafting party does not apply. The language in this Agreement is to be interpreted as to its plain meaning and not strictly for or against any party.

50. NOTICES

Unless otherwise provided in writing, all legal notices and other communications required by this Contract are deemed to have been given when either (a) delivered in person; (b) delivered by an agent, such as a delivery service; or (c) deposited in the United States mail, postage prepaid, certified or registered and addressed as follows:

TO THE CONTRACTOR:

TO THE COUNTY:

_____, Project Officer

AND

Dr. Sharon T. Lewis, LL.M, MPS, VCO, CPPB
Purchasing Agent
Arlington County, Virginia
2100 Clarendon Boulevard, Suite 500

Arlington, Virginia 22201
Phone: (703) 228-3294
Email: slewis1@arlingtonva.us

TO COUNTY MANAGER'S OFFICE (FOR PROJECT CLAIMS):

County Manager
Arlington County, Virginia
2100 Clarendon Boulevard, Suite 318
Arlington, Virginia 22201

51. ARLINGTON COUNTY BUSINESS LICENSES

The Contractor must comply with the provisions of Chapter 11 ("Licenses") of the Arlington County Code, if applicable. For information on the provisions of that Chapter and its applicability to this Contract, the Contractor must contact the Arlington County Business License Division, Office of the Commissioner of the Revenue, 2100 Clarendon Blvd., Suite 200, Arlington, Virginia, 22201, telephone number (703) 228-3060.

52. NON-DISCRIMINATION NOTICE

Arlington County does not discriminate against faith-based organizations.

53. INSURANCE, PAYMENT AND PERFORMANCE BONDS

The Contractor shall maintain the required insurance coverage and payment and performance bonds through completion of the Contract, including all warranty and guarantee periods.

54. MATERIAL CHANGES

The Contractor shall notify Purchasing Agent within seven days of any material changes in its operation that relate to any matter attested regarding certifications on its bid form.

55. COUNTERPARTS

This Agreement may be executed in one or more counterparts and all of such counterparts shall together constitute one and the same instrument. Original signatures transmitted and received via facsimile or other electronic transmission, (e.g., PDF or similar format) are true and valid signatures for all purposes hereunder and shall be effective as delivery of a manually executed original counterpart.

WITNESS these signatures:

THE COUNTY BOARD OF ARLINGTON
COUNTY, VIRGINIA

CONTRACTOR

AUTHORIZED
SIGNATURE: _____

AUTHORIZED
SIGNATURE: _____

NAME: _____

NAME: _____

TITLE: _____

TITLE: _____

DATE: _____

DATE: _____

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- 3) STIPULATED PRICE ITEMS
- 4) PAYMENTS WITHHELD
- 5) COUNTY ORDERED CHANGES IN WORK
- 6) CLAIMS FOR EXTRA COST
- 7) DAMAGES FOR DELAY; EXTENSIONS OF TIME FOR COMPLETION OTHER THAN FOR WEATHER
- 8) TIME EXTENSIONS FOR WEATHER
- 9) RELEASE OF LIENS
- 10) FINAL PAYMENT

A. INTRODUCTION TO TERMS

- 1) The term "Agreement" means the completed and signed Form of Contract Agreement.
- 2) The term "Award Date" means the date of execution of the Agreement by the Purchasing Agent.
- 3) The term "Business Day" shall refer to any day that the County is open for general business.
- 4) The term "Calendar Day" means any day of twenty-four hours measured from midnight to the next midnight. Included are weekends and holidays. When the term "Day" is used, it shall be assumed to refer to a Calendar Day, unless otherwise specified.
- 5) The term "Change Order" means a written order to Contractor, signed by the County and the Contractor, which authorizes a change in the Work, or an adjustment in the Contract Amount, and/or the Time for Completion issued after execution of the Agreement and is incorporated into and becomes part of the Contract Documents.
- 6) The term "Commencement Date" means the date on which the Time for Completion shall commence for the Contractor to begin to perform his obligations under the Contract Documents, as provided in the Notice to Proceed.
- 7) The term "Construction Change Directive" means a written order issued by the County directing a change in the Work prior to agreement on adjustment, if any, in the Contract Amount or Contract Time, or both.
- 8) The term "Contract Documents" means the Agreement and all the documents and Exhibits identified therein, which shall include the Drawings and the Specifications, and all modifications thereto properly incorporated in the Contract.
 - 1) The term "Contract Drawings" means all drawings and construction notes which show the locations, character, dimensions, and details of the Work pertaining to the Contract.
 - 2) The term "Specifications" means that part of the Contract Documents that describes the quality of materials, methods of installation, standard of workmanship, and the administrative and procedural requirements for the performance of the Work under the Contract.
 - 3) The term "Special Conditions" means the written statements modifying or supplementing the General Conditions for requirements or conditions particular to the Contract.
- 9) The terms "County" and "Contractor" shall mean the respective parties to the Contract. They shall be treated throughout the Contract Documents as though each were of the singular number and masculine gender. Only one Contractor is recognized as a party to this Contract.
- 10) The term "Critical Path" shall mean the longest sequence of activities in the Project schedule which must be completed on time for the Project to be completed within the Time for Completion. An activity on the critical path cannot be started until its predecessor activity is complete.

- 11) The term "Delay" means an event or condition that results in a work activity starting or being completed later than originally planned.
- 12) The term "Final Acceptance" shall mean the date on which the County issues the final payment for the Work.
- 13) The term "Final Completion" shall mean the condition when all of the requirements, as identified in Project Specifications Section 017700, Closeout Procedures, and conditions specified in paragraph F.4.b. below have been met and accepted by the Project Officer. The date of the Final Completion of the Work under the Contract is the date on which Final Completion is accomplished.
- 14) The term "Float" shall represent the amount of time that a task in a project network or sequence can be delayed without causing a delay to: subsequent tasks ("free Float") or project completion date ("total Float"). Float shall belong to the County and shall be used for the successful completion of the Project within the Time for Completion
- 15) The term "Landscape Architect" means the County Landscape Architect assigned by the Director of the County Department responsible for the project or a contractor employed by the County to perform design services or design oversight and identified in the Contract Documents or in a written notice to the Contractor from the Project Officer responsible for the project.
- 16) "Notice to Proceed" shall mean a written notice given by the County to the Contractor specifying the Commencement Date.
- 17) The term "Project" means the entire proposed construction to be executed as stipulated in the Contract Documents.
- 18) The term "Project Officer" means the County Project Officer assigned by the Director of the County Department responsible for the project, or the Director's designee. When a designee to act on behalf of the Project Officer is used by the County, the name of the designee and the duties and authority of such designee will be identified in the Contract Documents or in a written notice to the Contractor from the Project Officer responsible for the project. The designee may be a professional architect, landscape architect, engineer or other person employed by or hired by the County to perform construction services administration, design services, or project oversight.
- 19) The term "Punch List" means unfinished items of the construction of the Project. The unfinished items of construction shall be minor or insubstantial details of construction, mechanical adjustment or decoration remaining to be performed, the non-completion of which would not materially affect use of the Project, and which are capable of being completed within the specified limits following Substantial Completion.
- 20) The term "Schedule of Values" means a listing of the Contractor's total contract value by Construction Specifications Institute (CSI) divisions, including Division 1, Contractor's General Conditions.
- 21) The term "Site" refers to that portion of the property on which the Work is to be performed or which has otherwise been set aside for use by the Contractor.

- 22) The term "Stipulated Price Item" involves items of Work, unanticipated or of unknown quantity at the time of issuance of the solicitation for a Bid. The Unit Price for the "Stipulated Price Item", as identified in the "Stipulated Price Items" section of the Bid Form, is predetermined by the County as the current reasonably workable rate for the Item inclusive of all necessary labor, equipment, materials, overheads (provision and installation), and the contractor's profit.
- 23) The term "Subcontractor", as employed herein, shall include only those having a direct contract with the Contractor, and it shall include those who furnish material worked to a special design according to the plans and specifications for this Work but shall not include those who merely furnish material not so worked.
- 24) The term "Substantial Completion" shall mean the condition when all of the requirements, as identified in Project Specifications Section 01770, Closeout Procedures, and conditions specified in paragraph F.4.a. below, have been met and accepted by the Project Officer. The date of Substantial Completion of the Work under the Contract is the milestone date on which Substantial Completion condition is accomplished.
- 25) The term "Time for Completion" shall mean the time period set forth in the Agreement.
- 26) The term "Work" shall mean the services and tasks performed under this Contract including, but not limited to, furnishing labor, and furnishing and installing materials and equipment required to complete the Project as specified in the Contract Documents.

B. DRAWINGS, SPECIFICATIONS AND RELATED DATA

1. INTENT OF THE DRAWINGS AND SPECIFICATIONS

- a. It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, water haulage, light power, transportation, superintendence, temporary construction of all kinds, and other services and facilities of every nature whatsoever that are necessary to execute and deliver the Work, complete and usable within the scope of the Contract with all parts in working order, and all connections properly made.
- b. The general character and scope of the Work are illustrated by the Drawings and listed in the Specifications. Any additional drawings and other instructions deemed necessary by the Project Officer will be furnished to the Contractor when required for the Work and shall become incorporated into the Contract Documents.
- c. Unless otherwise specifically noted, the word "similar" where it occurs in the Drawings, shall be interpreted in its general sense and not as meaning identical, and all details shall be worked out in relation to their locations and their connection with other parts of the Work.
- d. Where "as shown", "as indicated" "as detailed", or words of similar import are used, it shall be understood that the direction, requirements, permission, approval or acceptance of the Project Officer is intended unless stated otherwise. As used herein, "provide" shall be understood to mean "provide complete in place", that is, "furnish and install".

- e. Materials or work described in words which, so applied, have a well-known technical or trade meaning, shall be held to refer to the recognized technical or trade meaning.
- f. Figured dimensions on the plans shall be used; drawings shall not be scaled.

2. DISCREPANCIES AND ERRORS

If the Contractor discovers any discrepancies between the Drawings and Specifications and the site conditions or any errors or omissions in the Drawings or Specifications, the Contractor shall at once, but in no event later than two business days after discovery of the discrepancy or error, report them in writing to the Project Officer. If the Contractor proceeds with any work that may be affected by such discrepancies, errors, or omissions, after their discovery, but before their clarification, such work shall be at the Contractor's sole risk and expense and such work may not be the basis of any Claim for Extra Cost. Issues affecting critical path activities shall be made known to the Project Officer or designee within two business days after discovery.

3. DIFFERING SITE CONDITIONS

The Contractor shall, within twenty-four (24) hours after becoming aware of differing site conditions, and before the conditions are disturbed, give a written notice to the Project Officer of subsurface or latent physical conditions at the site which differ materially from those indicated in the Contract Documents, or previously unknown physical conditions discovered at the site of an unusual nature and which differ materially from those ordinarily expected to be encountered at the site.

The Project Officer will investigate the site conditions within five (5) calendar days after receiving the notice. If the conditions do materially differ to the extent that an increase or decrease would result in the Contractor's cost of the Work, or the time required for performing any part of the Work under the contract, an equitable adjustment may be made under this clause and the Contract modified in writing accordingly.

No request by the Contractor for an adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required. If the Contractor proceeds with any work that may be affected by such differing site conditions before giving notice to the Project Officer as set forth herein, such work shall be at the Contractor's sole risk and expense.

No request by the Contractor for an adjustment to the contract for differing site conditions shall be allowed if made after Final Payment under the Contract.

4. DOCUMENTS ON THE JOBSITE

The Contractor shall keep on the site of the Project a copy of the Drawings, Specifications, Permits, Permitted Drawings, and all other applicable documents including all authorized revisions, and shall at all times give the County and its authorized representatives access thereto.

5. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All Drawings and Specifications and copies thereof furnished by the County are the property of the County and shall not be used on other projects. Upon completion of the Project, all copies of the Drawings and Specifications except the signed Contract sets shall be returned to the Project Officer.

6. SUBMITTALS

Submittals shall be processed in accordance with the Specifications.

7. TESTS

The County, through a third party testing agency, will perform any specified laboratory tests of materials and finished articles at the County's expense. Failure of any material to pass the specified tests or any test performed by the third-party testing agency will be sufficient cause for refusal to consider, under this Contract, any further materials of the same brand or make of that material. Additionally, the Project Officer, in his discretion, may order that any failed test be re-performed at the Contractor's sole expense. Samples of various materials delivered on the site or in place may be taken by the third party testing agency for testing. Samples failing to meet the Contract requirements will automatically void previous approvals of the items tested. The Contractor is required to coordinate and schedule all testing in a manner that permits the quality control standards to be met but does not incur unreasonable expenses upon the County. Any charges resulting from the Contractor failing to coordinate testing services will be the responsibility of the Contractor.

8. STANDARDS

Any material specified by reference to the number, symbol or title of a specific standard, such as a Commercial Standard, a Federal Specification, a Trade Association Standard, or other similar standard, shall comply with the requirements in the latest revision of the standards or specification and any amendment or supplement, except as limited to type, class or grade, or as modified in such reference. The standard referred to, except as modified in the Specifications, shall have full force and effect as though printed in the Specifications.

9. SUBSTITUTIONS AFTER CONTRACT AWARD

Requests for substitutions for specified items after the award of Contract will not be considered except with just cause and with the written approval of the Project Officer. Applications for acceptance of substitutions for specified items will be considered only upon request of the Contractor, not of individuals, trades or suppliers, and only for a specific purpose; no blanket acceptance will be granted. No acceptance of a substitution will be valid unless it is in written form and signed by the Project Officer or designee. The Contractor shall use Form CSI 13.1A when requesting a substitution.

If any proposed substitution will affect a correlated function, adjacent construction or the work of other contractors, then the necessary changes and modifications to the affected work shall be considered as an essential part of the proposed substitution, to be accomplished by the Contractor without additional expense or an extension of contract time to the County, if and when accepted. Detail drawings and other information necessary to show and explain the proposed modifications shall be submitted with the request for acceptance of the substitution.

10. SURVEYS AND CONTROLS

Unless otherwise stated, the County will provide horizontal and vertical reference points necessary for the Contractor to proceed with the Work. The Contractor shall carefully preserve all reference points, and in the case of destruction thereof by the Contractor or due to the negligence of the Contractor or of any subcontractor, the Contractor shall be responsible for expense and damage resulting therefrom and shall be responsible for any mistakes or construction errors that may be caused by the loss or disturbance of such reference points. The Contractor shall be

responsible for laying out the Work and shall retain a professional land surveyor licensed in the Commonwealth of Virginia to survey and provide all necessary construction layouts and to establish all control lines, grades, and elevations during construction.

11. AS-BUILT DRAWINGS

- A. The contractor will be responsible for providing certificated final redlined as-built drawings of the project and obtain approval and closeout of all permits. The contractor will also supply all documents related to the project to the Project Officer.
- B. The Contractor shall provide the Project Officer with electronic versions of all submittals, shop drawings, correspondence, material certifications, operating manuals, inspections, and testing results related to completed project at the time of as-built submission.
- C. Digital files shall be in AutoCAD format as well as a set of vectored PDFs of the approved As-Built plans. All supporting documents must be submitted to the Project Officer. Contactor is responsible for submitting As-Built drawings to permitting agencies, as required by the jurisdictional agencies.
- D. Throughout construction, the Contractor shall maintain all pertinent records of construction materials, testing, and inspections required to document that the actual construction is in conformance with the Contract Documents and regulatory permits.
- E. At the completion of the project, the contractor shall develop certified final redlined As-Built drawings of the project and obtain approval and closeout of all permits. Preparation of As-Built plans includes, but is not limited to:
 - 1. Confirming the horizontal locations and vertical elevations of all new facilities built throughout the Project Site.
 - 2. Storm drain as well as storm water management facilities shall be surveyed during installation. This includes facility and structure inverts and top elevations and dimensions for base of core trench, infiltration trench, filters, underground structures and pipe networks, bioretention layers and geotechnical information as required by DES, etc.
 - i. Stormwater Management Facility as-built drawings shall be signed and sealed by a surveyor or engineer with a DPOR professional Virginia license.
 - 3. Underground utilities, irrigation systems, septic tanks, etc. including profiles, inverts and top of facility elevations
 - 4. Footprint of utility structures and top of curb elevations
 - 5. Any considerable change or shift in the size or location of any facilities from approved drawings
 - 6. Any utility certification as required for as-built certification of the underground utilities such as DES.
 - 7. All the survey work required for As-Built plans is the sole responsibility of the contractor
 - 8. Any significant deviations from the approved drawings
 - 9. A digital file in AutoCAD format including scans of all approved electronic copies including permit drawings.
 - 10. Electronic version of the approved As-Built plans and of all supporting documents must be submitted to the Project Officer.
- F. In addition to the standard requirements of Arlington County and the Project Officer, the Contractor shall also be responsible for completing all As-Built requirements related to any permits issued for the project. The Contractor shall prepare As-Built plans in accordance with the standards, procedures, and requirements of the permit agency at the time of construction. This includes any required survey, inspection, and professional certification by an independent

firm familiar with the work performed. For example, the completed As-Built package for Stormwater Managements facilities shall include all supporting documents and information as required on the latest DES "Construction Inspection Checklist" for Dry Swales, Bioretention and Urban Bioretention. Furthermore, the Contractor shall make any and all repairs and/or modifications required to obtain As-Built approval and final release of permit at no additional cost to the owner. The Contractor shall submit certified As-Built plans and support documents directly to the permitting agency, with two (2) hard copies and electronic copies to the Project Officer. Once the appropriate agency approves the As-Built plans and the Project Officer concurs, the Contractor shall submit to Arlington County a digital file including vectored PDFs of all approved permit drawings. The Contractor shall coordinate with the permitting agency and inspectors as required to obtain final approval and permit release which includes a final field inspection with staff from the permitting agencies involved and the Project Officer present. The Contractor shall consider the As-Built preparation, review, and approval as part of the overall construction schedule and shall complete this work within the Contract Period established for the project. The design documents in electronic file format including base survey information will be provided to the contractor. At the completion of the Project and prior to request of Final Payment, the Contractor shall turn over to the Project Officer the final cumulative listing on plan changes and a complete set of As Built drawings in paper copy and .pdf electronic format signed and sealed by a Registered Professional Engineer or Registered Land Surveyor. The as-built shall comply with Arlington County DES-CEP permitting and certification requirements.

12. RECORD KEEPING AND PROJECT DOCUMENT FILES

The Contractor shall provide a web based construction management tool acceptable to the County that will allow, but not be limited to, record keeping and document storage of all construction files, including approved shop drawings, change orders, construction progress meeting minutes, warranties, equipment specifications and brochures, record drawings, and Operation and Maintenance (O&M) Manuals. The Contractor shall provide at least six (6) hours of training of use of the construction management tool to the Project Officer as well as to the architect and sub-consultants. Before Final Payment is made, the Contractor shall provide the Project Officer a CD of all the files in the web based construction management tool. The Project Officer and the architect shall have unlimited access to the construction management tool, during the construction period and up to one (1) year after completion of the Project or after Final Payment is made.

C. COUNTY, PROJECT OFFICER, AND CONTRACTOR RELATIONS

1. STATUS OF PROJECT OFFICER

The Project Officer or designee shall be the County's representative during the construction period. The Project Officer or designee shall have authority to suspend the Work whenever such suspension may be necessary in the responsible opinion of the Project Officer. The Project Officer or designee shall also have authority to reject all work and materials that do not conform to the Contract and to decide questions that arise in the execution of the Work. The Project Officer will, within a reasonable time, make decisions on all matters relating to the execution and progress of the Work.

2. LIMITATION ON COUNTY'S RESPONSIBILITIES

Except as modified by the Contract Documents, the County shall not supervise, direct, or have control or authority over, nor be responsible for the Contractor's means, methods, techniques,

sequences or procedures of construction; the safety precautions and programs related to safety; or the Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

3. INSPECTION OF WORK

The Project Officer and representatives of any public authority having jurisdiction shall, at all times, have access to the Work while in progress. The Contractor shall provide suitable facilities for such access and for proper observation of the Work and shall conduct all special tests required by the specifications, the Project Officer's instructions, and any laws, ordinances or the regulations of any public authority applicable to the Work. Nothing in this section shall abrogate or otherwise limit or relieve the Contractor's independent duty to inspect the Work.

4. INSPECTION OF MATERIALS

All articles, materials, and supplies purchased by the Contractor for the Work are subject to inspection by the Project Officer upon delivery to the site and during manufacturing or fabrication. The County reserves the right to return for full credit, at the risk and expense of the Contractor, all or part of the articles, materials, or supplies furnished contrary to specifications and instructions. Nothing in this section shall abrogate or otherwise limit or relieve the Contractor's independent duty to inspect the materials.

5. EXAMINATION OF COMPLETED WORK

If the Project Officer requests it, the Contractor, at any time before acceptance of the Work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, then the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as extra work, but should the work so exposed or examined prove unacceptable, then the uncovering, removing, restoration, and/or replacing shall be at the Contractor's expense.

6. RIGHT TO SUSPEND WORK

The County shall have the authority to suspend the Work, in whole or in part, for such periods and such reasons as the County may deem necessary or desirable. Any such suspension shall be in writing to the Contractor and the Contractor shall obey such order immediately and not resume the Work until so ordered in writing by the County. No such suspension of the Work shall be the basis for a claim by the Contractor for any increase in the Contract Amount provided that the suspension is for a reasonable time under the circumstances then existing. If the suspension of Work is caused by the County's belief that non-conforming work is being installed, and subsequent investigation proves that the Work was non-conforming, the Contractor shall not be awarded additional time or costs.

7. RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the County, or such shorter time as may be reasonable under the circumstances, to commence and continue correction of such default or neglect with diligence and promptness, the County may, without prejudice to other remedies the County may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including County's expenses,

including additional architect or engineering costs necessary by Contractor's default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the County.

8. SUPERINTENDENCE BY CONTRACTOR

The Contractor shall keep a competent superintendent and any necessary assistants on the Work site at all times during progress of the Work and such persons shall be satisfactory to the Project Officer. The superintendent shall not be changed, except on the Project Officer's determination the superintendent is no longer satisfactory or except with the consent of the Project officer where the superintendent proves to be unsatisfactory to the Contractor or ceases to be in the Contractor's employment. If requested by the County, the superintendent must be replaced within 7 calendar days of Project Officer's written notice. The superintendent shall represent the Contractor in the Contractor's absence and all directions given to him shall be as binding as if given to the Contractor. In general, instructions by the Project Officer shall be confirmed in writing, and always upon written request from the Contractor. The Contractor shall at all times enforce strict discipline and good order among the workers performing under this Contract and shall not employ any person on the Work not reasonably proficient in the work assigned. Persons permitted to perform Work under Contractor or any subcontractor or sub-subcontractor shall meet all employment eligibility, safety training, security or drug/alcohol testing requirements required by law or by Owner. Any person not complying with all such requirements shall be immediately removed from the Site.

9. DRUG-FREE POLICY

The Contractor is responsible for ensuring that the Site remains a drug-free site. Contractor will require that employees undergo random drug/alcohol screening on a quarterly interval. Any employee who fails the test must be removed from the Site immediately. Random screening shall be performed by a third party licensed to do so in the Commonwealth of Virginia. The Contractor must provide proof that the quarterly drug testing is performed to the Project Officer on a quarterly basis. The Contractor shall provide its random testing schedule to the Project Officer within 30 days of Notice to Proceed. The Contractor shall include this provision in every subcontract relating to this Contract. Any infraction by an employee of the Drug-Free policy shall be reported to the Project Officer within 24 hours and the employee shall be removed from the County project.

10. PERFORMANCE OF WORK BY THE CONTRACTOR

The Contractor shall perform on site, and with its own organization, at least ten percent (10%) of the total direct labor and at least ten percent (10%) of the total work in place to be performed under the Contract. Prior to award, the Contractor must demonstrate to the Project Officer's satisfaction that both of these standards will be met during contract performance. Labor and work to be counted when determining whether the Contractor has met the self-performance requirement shall not include any work that the Contractor performs under the supervision of a subcontractor.

The self-performance percentage may be reduced by an Amendment to the Contract, if during performance of the Work, the Contractor requests a reduction and the Project Officer determines that the reduction would be to the advantage of the County.

11. LANDS BY COUNTY

The County shall provide the lands shown on the Drawings upon which the Work under the Contract is to be performed and to be used for rights-of-way and for access. In case all of the lands, rights-of-way or easements have not been obtained as herein contemplated before construction begins, the Contractor shall begin its work on such lands and rights-of-way as the County may have previously acquired.

12. LANDS BY CONTRACTOR

If the Contractor requires additional land for temporary construction facilities and for storage of materials and equipment other than the areas available on the site or right-of-way, or as otherwise furnished by the County, the Contractor shall provide such other lands and access thereto entirely at the Contractor's own expense and without liability to the County. The Contractor shall not enter upon private property for any purpose without written permission. The Contractor shall provide copies of all agreements to the County and shall include language in the agreement indemnifying and holding harmless the County for any damages, repairs, restoration or fees associated with the use of the property. Upon termination of the agreement, the Contractor shall provide to the County, a fully executed release from the property owner.

13. PROTECTION OF WORK AND PROPERTY

- a. The Contractor shall continuously maintain protection of all its work from damage and shall protect the County's property from damage or loss arising in connection with this Contract. The Contractor shall make good any such damage or loss, except such as may be caused by agents or employees of the County.
- b. The Contractor shall not place upon the Work, or any part thereof, any loads which are not consistent with the design strength of that portion of the Work.
- c. The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, etc., along and adjacent to the street and/or right-of-way, and shall use every precaution to prevent damage to pipes, conduits and other underground structures, curbs, pavements, etc., except those to be removed or abandoned in place and shall protect carefully from disturbance or damage all monuments and property markers until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed. Any damage which occurs by reason of the operations under this Contract shall be completely repaired by the Contractor at the Contractor's expense.
- d. The Contractor shall shore, brace, underpin, secure, and protect, as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site that may be affected in any way by excavations or other operations connected with the work required under this Contract. The Contractor shall be responsible for giving any and all required notices to owners or occupants of any adjoining or adjacent property or other relevant parties before commencement of any work. The Contractor shall indemnify and save the County harmless from any damages on account of settlements or loss of all damages for which the County may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- e. In an emergency affecting the safety of life or of the Work, or of adjoining property, the Contractor, without special instruction or authorization from the Project Officer or designee, or County, is hereby permitted to act, at the Contractor's discretion, to prevent such

threatened loss or injury, and the Contractor shall so act without appeal, if so instructed or authorized.

14. SEPARATE CONTRACTS

- a. The County reserves the right to let other contracts in connection with this Project. The Contractor shall afford other contractors' reasonable access to the Project, including the opportunity for the delivery and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with the work of other such contractors.
- b. If any part of the Contractor's work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the Project Officer any defects in such work that renders it unsuitable for such proper execution and results. The Contractor's failure to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of the Contractor's work, except as to defects which may develop in other contractor's work after its execution.
- c. If the Contractor or any of the Contractor's subcontractors or employees cause loss or damage to any separate contractor on the Work, the Contractor agrees to settle or make every effort to settle or compromise with such separate contractor. If such separate contractor sues the County on account of any loss so sustained, the County shall notify the Contractor, who shall indemnify and save the County harmless against any expense, claim or judgment arising therefrom, including reasonable attorney's fees.

15. SUBCONTRACTS

- a. Unless otherwise specified, the Contractor shall, within fifteen (15) calendar days after written notification by the Project Officer, provide the names of all subcontractors proposed for the principal parts of the Work and for such others as requested by the Project Officer and shall not employ any subcontractor that the Project Officer may, within a reasonable time, object to as incompetent or unfit after an appropriate determination of the subcontractor's ability. No proposed subcontractor will be disapproved except for cause.
- b. The Contractor shall make no substitutions for any subcontractor previously selected and approved unless first submitted to the County for approval.
- c. The Contractor shall be as fully responsible to the County for the acts and omissions of the Contractor's subcontractors as the Contractor is for the acts and omissions of persons directly employed by the Contractor.
- d. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the General Conditions of the Contract, Special provisions and other documents comprising the Contract insofar as such documents are applicable to the work of subcontractors.
- e. Nothing contained in the Contract shall be construed to create any contractual relation between any subcontractor and the County, nor shall it establish any obligation on the part of the County to pay to or see to the payment of any sums to any subcontractor.

- f. If requested by the County, the Contractor shall replace any subcontractor at no cost to the County within 7 calendar days of the Project Officer's written notice. No additional time or compensation will be provided in the event a subcontractor is removed due to non-compliance of the requirements outlined within the Contract.

16. ELIMINATED ITEMS

The Project Officer may, upon written notice to the Contractor, eliminate item(s) from the Contract. Payment shall not be made for such item(s) so eliminated; except that the Contractor will be compensated for the actual cost of any work performed for the installation of such item(s) and the net cost of materials purchased before the item(s) was eliminated from the Contract, including freight and tax costs, as evidenced by invoice. If the County notifies the Contractor of such elimination at least fifteen (15) calendar days prior to scheduled installation of such item(s), then no additional compensation will be made for overhead or anticipated profit.

D. MATERIALS AND WORKMANSHIP

1. MATERIALS FURNISHED BY THE CONTRACTOR

Unless otherwise specified, all materials and equipment incorporated in the Work under the Contract shall be new. All workmanship shall be accomplished by persons qualified in the respective trades.

2. IBC AND VUSBC REQUIREMENTS

The Contractor certifies that all material supplied or used under this Contract meets all current International Building Code (IBC) requirements and the requirements of the Virginia Uniform Statewide Building Code (VUSBC); and further certifies that, if the material delivered or used in the performance of the Work is found to be deficient in any of the applicable state or national code requirements, all costs necessary to bring the material into compliance with the requirements shall be borne by the Contractor. The County shall be entitled to offset such costs against any sums owed by the County to the Contractor under this Contract.

3. ADA COMPLIANCE

The Contractor shall ensure that all Work performed under this Agreement is completed in accordance with the Contract Documents, including Work intended to meet the accessibility requirements of the Americans with Disabilities Act (ADA).

The Contractor is not required to ascertain whether the Contract Documents meet ADA design standards and guidelines. However, should the Contractor discover any non-conformity with such requirements, the Contractor shall immediately inform the County and its design consultant, if applicable, to allow for corrective action.

The Contractor shall defend and hold the County harmless from any expense or liability arising from the Contractor's non-compliance in meeting its obligations herein. The Contractor shall be responsible for all costs related to permitting delays, redesign, corrective work, and litigation relating to such non-compliance.

4. MANUFACTURER'S DIRECTIONS

Manufactured articles, material, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's directions, as approved by the Project Officer, unless herein specified to the contrary.

5. WARRANTY

Unless otherwise specified, all material provided to the County shall be fully guaranteed by the Contractor against manufacturing defects within the period of the manufacturer's standard warranty. Such defects shall be corrected by the Contractor at no expense to the County.

The Contractor shall provide all manufacturer's warranties to the Project Officer by the date of Final Completion.

Unless otherwise specified by the Contract Documents, all work is guaranteed by the Contractor against defects resulting from the use of inferior or faulty materials, or inferior or faulty workmanship, or work not in accordance with the requirements of the Contract Documents for one (1) year from the date of Final Acceptance of the work by the County in addition to and irrespective of any manufacturer's or supplier's warranty. No date other than the date of Final Acceptance shall govern the effective date of the Guaranty or Warranty, unless that date is agreed upon by the County and the Contractor in advance and in a signed writing. The Contractor shall promptly correct any defective work or materials after receipt of a written notice from the County to do so. If the Contractor fails to proceed promptly or use its best efforts and due diligence to complete such compliance as quickly as possible, the County may have the materials or work corrected and the Contractor and its Sureties shall be liable for all expenses and costs incurred by the County.

Nothing in this section shall be construed to establish a period of limitations with respect to other obligations the Contractor may have under this Contract.

6. INSPECTION, ACCEPTANCE AND TITLE OF MATERIALS

Inspection and acceptance of materials by the County will be at the work site in Arlington County, Virginia, and within ten (10) calendar days of delivery unless otherwise provided for in the Contract. The County will not inspect, accept, or pay for any materials stored off-site by the Contractor. Title and risk of loss or damage to all items shall be the responsibility of the Contractor until Final Acceptance by the County. The County's right of inspection shall not be deemed to relieve the Contractor of its obligation to ensure that all articles, materials and supplies are consistent with specifications and instructions and are fit for their intended use. The County reserves the right to conduct any tests or inspections it may deem advisable to assure that goods or services conform to the specification. The Contractor shall be responsible for maintaining all materials and supplies in the condition in which they were accepted until they are used in the Work.

7. CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the Work shall be purchased by the Contractor or any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that it has good title to, and that it shall require all subcontractors to warrant that they have good title to, all materials and supplies for which the Contractor invoices for payment.

8. TITLE TO MATERIALS AND WORK COVERED BY PARTIAL PAYMENTS

All material and work covered by partial payments made by the County shall become the property solely of the County at the time the partial payment is made. However, risk of loss or damage to

all items shall be the responsibility of the Contractor until Final Acceptance by the County. This provision shall not be construed as relieving the Contractor from having sole responsibility for all materials and work upon which payments have been made and for the restoration of any damaged work or replacement or repair at the County's option of any damaged materials. This provision shall not be construed as a waiver of the County's right to require fulfillment of all terms of the Agreement, including full rights under the terms of the Warranty provisions of the Agreement, nor shall payment indicate acceptance of the materials or Work.

9. CUTTING, PATCHING, AND DIGGING

The Contractor shall do all cutting, fitting, or patching of the Contractor's work that may be required to make its several parts come together properly and to receive or be received by work of other contractors as shown upon or reasonably implied by the Drawings and Specifications for the completed project, as the Project Officer may direct. The Contractor shall not endanger any work by cutting, digging, or otherwise, and shall not cut or alter the work of any other contract except with the consent of the Project Officer.

10. REJECTED WORK AND MATERIALS

- a. Any of the Work or materials, goods or equipment which do not conform to the requirements of the Contract Documents, are not equal to samples approved by the Project Officer, or are in any way unsatisfactory or unsuited to the purpose for which they are intended, shall be rejected and replaced at the Contractor's expense and to the satisfaction of the County. Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, shall be removed and the work shall be re-executed by the Contractor at no cost to the County. The fact that the Project Officer may have previously overlooked such defective materials or work shall not constitute acceptance of any part of it.
- b. If the Contractor fails to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, when notified to do so by the Project Officer, the County may, by contract or otherwise, replace such material or correct such workmanship and charge the cost to the Contractor. At its discretion, the County shall be entitled to offset such expenses against any sums owed by the County to the Contractor under the Contract. This clause applies during the Contract and during any warranty or guarantee period.
- c. If the Project Officer and County deem it expedient not to require correction of work which has been damaged or not done in accordance with the Contract, an appropriate adjustment to the Contract Price may be made therefor.

11. HAZARDOUS MATERIALS

Arlington County is subject to the Hazard Communication Standard, 29 CFR §1910.1200 (Standard). The Contractor agrees that it shall provide or cause to be provided Safety Data Sheets ("SDS") required under the Standard for all hazardous materials supplied to the County or used in the performance of the Work. Such SDS information shall be delivered to the County no later than the time of actual delivery of any hazardous materials to the County or use of such material in the performance of Work under the Contract by the Contractor or its subcontractors, whichever occurs first. Container labeling meeting the requirements of the Standard shall be appropriately affixed to the shipping or internal containers. The County reserves the right to refuse shipments of hazardous materials not appropriately labeled, or when SDS information has not been received

prior to or at the time of receipt of the shipment for use by the County or for use by the Contractor in the performance of the Contract, or whenever the material is delivered in a manner inconsistent with any applicable law or regulation. Any expenses incurred due to the refusal or rejection of SDS information are the responsibility of the Contractor. The Contractor shall comply with all federal, state, and local laws governing the storage, transportation, and use of toxic and hazardous materials. The Contractor shall maintain on site an up to date and complete SDS binder for all materials used and delivered to the Project. The County Project Officer or designee shall be allowed access to the SDS book at all times.

12. HAZARDOUS WASTE

Hazardous Waste Generator/Hazardous Waste Disposal: The County Board of Arlington County, Virginia and the Contractor shall be listed as Co-generators. The Contractor shall assume all the duties pertaining to the Waste Generator, including signing the Waste Shipment Record ("WSR") and manifest. The Contractor shall supply the County Project Officer with the executed original Owner's Copy of the WSR, as required by applicable regulatory agencies within 35 days from the time the waste was accepted by the initial waste transporter, and prior to request for final payment. A separate WSR shall be submitted for each shipment to the disposal site.

Delayed Waste Shipment Records: The Contractor shall report in writing to the EPA Region III office within 45 days if an executed copy of the WSR is not received from the operator of the disposal site. The report to the Environmental Protection Agency (EPA) regional office shall include a copy of the original WSR and a cover letter signed by the Contractor stating the efforts taken to locate the hazardous waste shipment and the results of those efforts.

Temporary Hazardous Waste Storage Prohibited: The Contractor shall not temporarily store hazardous waste unless pre-approved by the County in writing. If so approved, hazardous waste stored off-site in a temporary facility shall be monitored and records shall be kept on the number of containers, size, and weight. The Contractor shall inform the County when the hazardous waste is to be transported to the final disposal site. The County has the right to inspect the temporary site at any time. The Contractor shall submit copies of all relevant manifests, Waste Shipment Record(s), and landfill receipts to the County Project Officer prior to the request for final payment. All paperwork shall be signed by the Contractor and disposal site operator as required.

13. ASBESTOS

Whenever and wherever during the course of performing any Work under this Contract the Contractor discovers the presence of asbestos or suspects that asbestos is present, the Contractor shall stop work immediately, secure the area, notify the County Project Officer immediately and await positive identification of the suspect material. During the downtime in such a case, the Contractor shall not disturb any surrounding surfaces but shall protect the area with suitable dust covers. Work shall not proceed without an Asbestos-Related Work Authorization executed by the County Asbestos Program Manager.

14. PROHIBITION AGAINST ASBESTOS CONTAINING MATERIALS

No goods or equipment provided to the County or construction material installed shall contain asbestos. If a Contractor or supplier provides or installs any goods, equipment, supplies, or materials that contain asbestos in violation of this prohibition, the Contractor shall be responsible for all costs related to the immediate removal and legal disposal of the goods, equipment or materials containing asbestos and replacement with a County-approved alternate. The

Contractor shall be responsible for all goods, equipment, supplies or materials installed or provided by any of its employees, agents or subcontractors in connection with the work under this Contract. The Contractor shall also reimburse to the County all costs of such goods, equipment, supplies or materials installed if not corrected by the Contractor. If the Contractor fails to remove and legally dispose of the asbestos-containing goods, equipment or construction materials within ninety (90) days from the date of notice by the County, the County shall remove and dispose of the asbestos-containing goods, equipment or construction materials at the Contractor's expense. The County shall be entitled to offset such expenses against any sums owed by the County to the Contractor under this Contract.

E. LEGAL RESPONSIBILITY AND PUBLIC SAFETY

1. MAINTENANCE OF TRAFFIC

The Contractor shall conduct its operations in a manner that will ensure that all modes of traffic (vehicular, bicycle, pedestrian) will be uninterrupted except as approved by the County. At the close of each work day, the area of work shall be confined to the smallest area possible, but in no event larger than the area designated in the Construction Documents, so that the maximum use of the street and sidewalk will be restored and the hazard to traffic reduced to the minimum. No excavation shall remain open within the roadway or sidewalk without the approval of the County except when the excavation can be safely bridged with the use of steel plates or other materials acceptable to the County. When areas of excavation do remain open, the area shall be barricaded and warning signs shall be posted. Approved safety barriers may be required.

At all times the Contractor shall use the personnel and traffic control signs and devices necessary to comply with Part VI of the "National Manual on Uniform Traffic Control Devices, latest edition." During the progress of the work when the street may be obstructed to any extent by construction equipment or construction operations, in addition to the signs and barricades, special workers, equipped with VDOT required "STOP\SLOW" double sided traffic control paddles, shall be designated by the Contractor to direct traffic. These workers so designated shall not be assigned to any other duties while engaged in directing traffic. The Contractor has sole responsibility for ensuring that its operations are conducted in a safe manner and notwithstanding any other provision to the contrary, shall fully indemnify Arlington County, its officers, agents and employees for any damage or injury related to traffic operations which is caused by negligent or otherwise improper or deficient performance under the Contract or nonperformance of the terms of the Contract. All personnel, signs, barricades and any other items necessary for the maintenance of traffic and safety shall be provided by the Contractor. No separate payment shall be made by the County for Maintenance of Traffic, unless otherwise specified.

2. SAFETY AND ACCIDENT PREVENTION

The Contractor shall comply with, and ensure that the Contractor's employees and subcontractors comply with, all current applicable local, state and federal policies, regulations and standards relating to safety and health, including, by way of illustration and not limitation, the U.S. Department of Labor's Occupational Safety and Hazard Administration (OSHA) 29 CFR, 1926, Construction Industry Regulations, the standards of the Virginia Occupational Safety and Health program of the Department of Labor and Industry for General Industry and for the Construction Industry, the Federal Environmental Protection Agency Standards, and the applicable standards of the Virginia Department of Environmental Quality.

The Contractor shall provide, or cause to be provided, all technical expertise, qualified personnel, equipment, tools, and material to safely accomplish the Work specified to be performed by the Contractor and subcontractor(s).

The Contractor shall identify to the County Project Officer at least one on-site person who is the Contractor's competent, qualified, and authorized person on the worksite and who is, by training or experience, familiar with policies, regulations, and standards applicable to the work being performed. The competent, qualified, and authorized person must be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees; shall be capable of ensuring that applicable safety regulations are complied with; and shall have the authority and responsibility to take prompt corrective measures, which may include removal of the Contractor's personnel from the work site.

The Contractor shall provide to the County, at the County's request, a copy of the Contractor's written safety policies and safety procedures applicable to the scope of work. Failure to provide this information within seven (7) calendar days of the County's request may result in cancellation of the Contract.

The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all injuries to persons and damage to property either on or off the site, which occur as a result of the Contractor's performance of the Work.

The Contractor shall take or cause to be taken such additional safety and health measures as the County may determine to be reasonably necessary. Machinery, equipment, and all hazards shall be guarded in accordance with the safety provisions of the current version of "Manual of Accident Prevention" published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws. The Contractor is directed to the "Rules and Regulations Governing Construction, Demolition and All Excavation" and adopted by the Safety Codes Commission of Virginia, 1966, or latest edition, covering requirements for shoring, bracing, and sheet piling of trench excavations.

3. OVERHEAD HIGH VOLTAGE LINES SAFETY ACT

If any work required herein will be performed within ten (10) feet of an overhead high voltage line, the provisions of Virginia Statute 59.1-406, et. seq., "Overhead High Voltage Line Safety Act" (Act) shall apply. The "person or contractor responsible for the work to be done", as that term is used in the Act, will be interpreted to mean the Contractor. The Contractor shall notify the owner or operator of the high voltage line in the manner prescribed in Section 59.1-411 of the Act in sufficient time prior to the time work is to be commenced to avoid any delays in the work. The County will not pay for lost time, profits, or permit any extension of the work for any delays caused by the failure of the Contractor to make such arrangements in a timely manner. All costs for the work shall be paid by the Contractor. The County shall reimburse the Contractor for the actual reasonable cost paid to the owner or operator of the high voltage line by the Contractor on presentation to the County by the Contractor of original invoices from the owner or operator of the high voltage line in the same manner as for other Contractor invoices submitted for work performed. Retention, if applicable to the Contract, shall not be withheld from the payment to the Contractor by the County. No processing, administrative, or other charges above the actual

amount charged by the owner or operator of the high voltage line shall be paid to the Contractor by the County.

4. SANITARY PROVISIONS

The Contractor shall provide and maintain such sanitary accommodations for the use of the Contractor's employees and those of its subcontractors as may be necessary to comply with the requirements and regulations of the local and state departments of health and where additional accommodations are necessary to maintain a reasonably sanitary environment, then such additional accommodations shall be made as determined by the Project Officer.

5. DAMAGES CAUSED BY WORK

Any damage resulting from Work performed by the Contractor under this Contract shall be repaired to the County's satisfaction at the Contractor's expense.

6. CLEANING UP

The Contractor shall remove and legally dispose of, as frequently as necessary, all refuse, rubbish, scrap materials and debris from the site to the extent they are the result of the Contractor's operations to the end that the site of the Work shall present a neat, orderly, and workmanlike appearance at all times. At completion of the Work, but before Final Acceptance, the Contractor shall remove and legally dispose of all surplus material, falsework, temporary structures, including foundations thereof, and debris of every nature resulting from the Contractor's operations or resulting from any activity on the site related to the Contractor's operations, and put the site in a neat, orderly condition; if the Contractor fails to do so, the County shall have the right to remove and legally dispose of the surplus material, falsework, temporary structures, including foundations thereof, and debris, put the site in a neat, orderly condition, and charge the cost to the Contractor.

F. PROGRESS AND COMPLETION OF THE WORK

1. NOTICE TO PROCEED

Within thirty (30) calendar days of the Award Date, the Contractor shall be given written Notice to Proceed with the Work. Such Notice to Proceed shall state the date on which the Work is to be commenced, and every calendar day thereafter shall be counted in computing the actual Time for Completion.

2. TIME FOR COMPLETION

It is hereby understood and mutually agreed by and between the Contractor and the County that the Commencement Date, the rate of progress, and the Time for Completion of the Work to be done hereunder are essential conditions of the Contract. The Contractor agrees that the Work shall be started promptly upon the Commencement Date and the Work shall be performed regularly, diligently, and uninterruptedly at a rate of progress that will ensure full completion thereof in the shortest length of time consistent with good workmanship, within the Time for Completion specified in the Contract Documents.

3. SCHEDULE OF COMPLETION

Unless otherwise specified, the Contractor shall within five (5) calendar days prior to the pre-construction meeting, submit schedules which show the order in which the Contractor proposes to carry on the Work in accordance with the Specifications. When the Work is behind the schedule, the County may require the Contractor to prepare and submit, at no extra cost to the

County, a recovery schedule indicating by what means the Contractor intends to regain compliance with the schedule. The recovery schedule must be submitted to the County for review within five (5) calendar days of the County's written demand.

4. CONDITIONS FOR COMPLETION

a. FINAL COMPLETION: The Work will be considered Finally Complete when the provisions of Project Specifications Section 017700, Closeout Procedures, have been met, in addition to the following:

- 1) The Project Officer has agreed that the condition of the Work warrants Final Completion; and
- 2) All construction deficiencies and punch list items have been closed and all construction deficiencies corrected and accepted by the Project Officer; and
- 3) All spare parts and attic stock have been delivered, stored in an orderly manner in a space designated by the Project Officer, and a complete inventory list has been verified and accepted by the Project Officer; and
- 4) All warranty certificates and contact information for parties providing warranties have been delivered and accepted by the Project Officer; and
- 5) All final Operating and Maintenance manuals have been delivered and accepted by the Project Officer; and
- 6) All final As-Built Drawings in .PDF format on a CD and one full-size paper copy have been delivered and accepted by the Project Officer.

5. USE OF COMPLETED PORTIONS

The County shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions may not have expired; but taking such possession and use shall not be deemed an acceptance of any work not done in accordance with the Contract Documents. If the Contractor claims that such prior use increases the cost or delays the completion of remaining work, or causes refinishing of completed work, the Contractor may submit a claim for compensation or extension of time or both.

G. PAYMENT, CHANGES, CLAIMS, DELAYS

1. PAYMENTS TO CONTRACTOR

The County will make monthly partial payments, less retainage, to the Contractor based upon the Schedule of Values and the work performed during the preceding calendar month as approved by the Project Officer.

The Contractor shall submit a monthly payment application using AIA Form G-702 "Application and Certification for Payment" or equivalent form acceptable to the Project Officer or designee.

The Contractor's application for payment shall indicate the amount of work completed to date in a format consistent with the accepted bid and as indicated below:

- a. Lump Sum: If required by this Contract, the Contractor shall provide to the Project Officer a Schedule of Values for each Lump Sum item in the Contract, and the application for payment shall reflect the schedule of values and the amount of work completed in those units.

Otherwise, the application for payment shall reflect the percentage of work completed for each lump sum item.

- b. Unit Price: The schedule of unit prices in the accepted bid shall be used as the basis for preparing the estimates, and each partial payment shall represent the total value of all units of work completed, computed at the unit prices stated in the Contract, less the aggregate of previous payments.

In addition to the amount of work completed to date, the application for payment shall indicate the aggregate of all previous payments for each line item, the retainage previously withheld, and the total payment requested this period.

2. PAYMENT FOR MATERIALS ON SITE

When requested in writing by the Contractor, payment allowances may be made for material secured for use on the Project and secured at the project site. Such payments will only be made for materials scheduled for incorporation into the work within sixty (60) calendar days.

3. STIPULATED PRICE ITEMS

Work on Stipulated Price Items shall be carried out only upon written order by the Project Officer. The payment for a Stipulated Price Item shall be made by the County to the Contractor at the related Unit Price specified in the 'Stipulated Price Items' section of the Bid Form on the same basis as the payment for any other regular Bid Item.

4. PAYMENTS WITHHELD

The Project Officer may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate for payment to the extent necessary to protect the County from loss on account of defective work not remedied or withhold payment for violation of any contract term or condition not remedied after sufficient notice given to the Contractor.

Any such withholding shall not result in any liability to the Contractor for damages.

5. COUNTY ORDERED CHANGES IN WORK

The County, without invalidating the Contract, may order extra Work or make changes by addition, deletion, or revision in the Work, with the total Contract Amount being adjusted accordingly if applicable. Any change amount that will increase the total Contract Amount will require notice to sureties and require that Performance and Payment bonds be increased by the Contractor. All such work shall be executed under the conditions of the original Contract, except that modification of the Time for Completion caused thereby shall be made at the time of approving such change.

- a. The Project Officer or designee shall have authority to make minor changes in the Work by verbal order when such changes do not involve extra cost and are not inconsistent with the

purpose of the Project. Otherwise, except in an emergency endangering life or property, no extra Work or change shall be made unless in pursuance of a written Construction Change Directive or Change Order from the County signed or countersigned by the Project Officer or designee, and no claim for an addition to the Contract Amount of Time for Completion shall be valid unless so ordered.

- b. The Contractor shall review any County requested or directed change and shall respond in writing within ten (10) calendar days after receipt of the proposed change, or such other reasonable time as the County may direct, stating the effect of the proposed change upon Contractor's work, including any increase or decrease in Contract time and price. The Contractor shall furnish the County an itemized breakdown of the quantities and prices used in computing the proposed change.
- c. Unit Price Items: The County expressly reserves the right, except as may be otherwise specifically limited, to increase or decrease quantities of work for which the Contractor provided a unit price in the bid form, as the County deems necessary or desirable to complete the Work covered in this Contract. Increases in such quantities shall be performed by the Contractor at the cost provided in the bid form.
- d. Other Work: Any change in Work which is not covered by Unit Prices in the bid form shall be determined in one or more of the following ways: (a) by estimate and acceptance by the County in a lump sum; (b) by cost and fixed fee; (c) by time and materials; or (d) by any other method permitted under the Arlington County Purchasing Resolution.
- e. If none of the aforementioned methods is agreed upon, the Contractor shall proceed with the Work without delay provided the Contractor receives a Construction Change Directive. In such case, the Contractor shall keep and present in such form as the Project Officer or designee may direct, a correct account of the cost, together with vouchers. The Project Officer or designee shall be permitted to verify such records on a daily basis and may require such additional records as are necessary to determine the cost of the change to the Work. The Project Officer or designee shall certify to the amount due to the Contractor, including a reasonable lump sum allowance for overhead and profit. A complete accounting of the extra cost shall be made within fifteen (15) days after completion of the Work involved in the claim.
- f. A cost proposal for a change in the Work shall provide a complete breakdown itemizing the estimated quantities and costs of labor, materials, and equipment (base cost) required in addition to any markup used. The cost proposal for the change in the Work and the Contractor's signature on the cost proposal is its agreement that the adjustments in Contract Price and/or Time stipulated in this change order proposal constitutes full, complete and final compensation for all costs and time associated (direct and indirect), impacts and/or delays arising out of, or incidental thereto, the applicable work as indicated herein. The Contractor further agrees to waive all rights to make any further claim arising out of or as a result of this change. All terms and conditions of the Contract shall remain unchanged and in full force and effect.
- g. The allowable percentage markups for overhead and profit in the cost proposal for a change to the Work performed by the Contractor's own forces or performed by the Subcontractor

shall be negotiated based on the nature, size, and complexity of the Work involved, but shall not exceed the percentages for each category listed below:

- 1) Subcontractor's markup for overhead and profit for the work it performs in a change to the Work shall be a maximum of fifteen (15%).
 - 2) Contractor's markup for overhead and profit on the Subcontractor's base cost in a change to the Work shall be a maximum of ten percent (10%).
 - 3) Contractor's markup for overhead and profit, including bonds and insurance, for work it self-performs in a change to the Work shall be a maximum of fifteen percent (15%).
 - 4) The markup for overhead and profit of a Sub-contractor to a Subcontractor of the Contractor at any tier on a change to the Work it performs shall be a maximum of fifteen percent (15%). The Contractor and all intervening tiers of Subcontractors' markups on such Sub-subcontractor's base cost in the change to the Work shall not exceed a total of ten percent (10%).
- h. Base Cost is defined as the total of labor, material, and equipment costs. It does not include markup for overhead and profit. The labor costs include only the costs of employees directly constructing or installing the change in the Work and exclude the costs of employees coordinating or managing the Work.
- i. The allowable percentage markups for overhead and profit stated above shall compensate the Contractor, Subcontractor, and Sub-subcontractor for all other costs associated with or relating to the change to the Work, including by way of illustration and not limitation, general conditions, supervision, field engineering, coordination, insurance, bond(s), use of small tools, incidental job costs, and all other general and administrative home and field office expenses.
- j. Allowable costs for changes in the Work shall not include Home Office expenses, including payroll costs for the Contractor's officers, executives, administrators, project managers, estimators, clerks' timekeepers, and other administrative personnel employed by the Contractor, whether at the Site or in the Contractor's principal or branch office for general administration of the Work. These costs are deemed overhead included in the percentage markups in Subsection (d) above.
- k. If the change to the Work also changes the Time for Completion, by adding days to perform the Work, an itemized accounting of the following Site direct overhead expenses for the change to the time may be considered as allowable costs for compensation in addition to the base cost indicated above.
- 1) Site superintendent's pro-rata salary; and
 - 2) Temporary site office trailer expense; and
 - 3) Temporary site utilities, including basic telephone service, electricity, heat, water, and sanitary/toilet facilities.

All other direct and indirect overhead expenses are considered covered by and included in Subsection (d) markups above.

- I. If the Contractor requests an extension to the Time for Completion due to changes in the Work, it must provide to the Project Officer adequate documentation substantiating its entitlement for the time extension. The documentation must demonstrate an anticipated actual increase in the time required to complete the Work beyond that allowed by the Contract as adjusted by prior changes to the Work, not just an increase or decrease in the time needed to complete a portion of the total Work. In the event a Critical Path Method (CPM) schedule is required by the Contract, no extension to the Time for Completion shall be granted unless, and then only to the extent that, the additional or change to the Work increases the length of the critical path beyond the Time for Completion as demonstrated on the approved CPM schedule or bar chart schedule.

6. CLAIMS FOR EXTRA COST

If the Contractor claims that any event will give rise to a claim for an increase in the Contract Amount or that instructions from the Project Officer, by drawings or otherwise, will incur the Contractor extra cost under this Contract, then, except in emergencies endangering life or property, the Contractor shall give written notice thereof before proceeding to execute the work. Said notice shall be given promptly enough to avoid delaying the Work and in no instance later than ten (10) calendar days after the event or receipt of such instruction. The Contractor's notice must provide to the Project Officer the amount of additional compensation claimed, together with the basis therefor and documentation supporting the claimed amount. No such claim shall be valid unless so made. If the Project Officer agrees that such instructions involve extra cost to the Contractor, any additional compensation will be determined by one of the methods provided in "Changes in Work" section of these General Conditions. Except as otherwise specifically provided, no claims for extra cost shall be allowed unless timely notice is given by the Contractor, as required by this Section.

7. DAMAGES FOR DELAY; EXTENSION OF TIME FOR COMPLETION OTHER THAN FOR WEATHER

a. Excusable Non-Compensable Delays: If and to the extent that the Contractor is delayed at any time in the progress of the Work by a Force Majeure event or other causes outside of the County's control or the Contractor's control and which the Contractor could not have reasonably foreseen, the Contractor may request an extension of the Time for Completion. To be considered for an extension of the Time for Completion, the Contractor shall give the Project Officer timely written notice at the inception of the delay. The Contractor thereafter must provide to the Project Officer a full claim within 14 calendar days of the cessation of the delay and demonstrate that the delay affected the critical path of the accepted schedule and any Float has been consumed. If the Project Officer agrees with the existence and impact of the delays, the Project Officer shall extend the Time for Completion for the length of time that the Time for Completion was actually delayed thereby. The Contractor shall not be due compensation or damages of any kind as a result of such delay. Delays caused by weather are addressed in Section G.8.

b. Excusable Compensable Delays: If and to the extent that the Contractor is unreasonably delayed at any time in the progress of the Work by any act or omission of the County, its agents or employees, due to causes within the County's control, the Contractor may request an extension of the Time for Completion and/or additional compensation. The Contractor shall give notice to the Project Officer immediately at the time of the occurrence giving rise to the delay and shall

give written notice no later than five (5) calendar days after the inception of the delay. The Contractor's written notice shall specify the nature of the delay claimed, the cause of the delay, and the impact of the delay on the Contractor's schedule. Thereafter the Contractor shall provide to the Project Officer a full claim within 14 calendar days of the cessation of the delay. The claim must detail the amount of additional contract time or compensation claimed, together with the basis therefor along with itemized documentation supporting the claim. The itemized documentation must demonstrate that the claimed delay directly affected the critical path of the accepted schedule and any Float has been consumed and the time and/or costs incurred by the Contractor are directly attributable to the delay in the work claimed. The Contractor shall be entitled to additional compensation only if the delay was caused solely by acts or omission of the County, its agents or employees, or due to causes within their control.

If the Contractor is entitled to compensation, an itemized accounting of the following direct site overhead expenses will be considered as allowable costs to be used in determining the compensation due the Contractor: the site superintendent(s) (as identified at the inception of the work) pro rata salary, temporary site facilities, temporary site office expense, and temporary site utilities including basic telephone service, electricity, heat, water, and sanitary/toilets. A fifteen percent (15%) markup of these expenses will be allowed to compensate the Contractor for home office and other direct or indirect overhead.

Furthermore, compensation for the delay shall be calculated from the contractual Time for Completion, as adjusted by Change Order, and shall not be calculated based on any early completion planned or scheduled by the Contractor

c. Non-Excusable Non-Compensable Delays: The Contractor shall not be entitled to an extension of the Time for Completion or to any additional compensation for delays if and to the extent they are caused by acts, omissions, fault, or negligence of the Contractor or its subcontractors, agents, or employees or due to foreseeable causes within their control, including, but not limited to, delays resulting from defective work, including workmanship and/or materials, from rejected work which must be corrected before dependent work can proceed, from defective work or rejected work for which corrective action must be determined before like work can proceed, from incomplete, incorrect, or unacceptable Submittals or samples, or from the failure to furnish enough properly skilled workers, proper materials or necessary equipment to diligently perform the work in a timely manner in accordance with the Project schedule.

d. No extension of time or additional compensation shall be given for a delay if the Contractor failed to give notice in the manner and within the time prescribed herein. Furthermore, no extension of time or additional compensation shall be given for any delay unless a full claim is made to the Project Offer within 14 days of the end of the delay. Failure to give written notice or failure to present a timely claim shall constitute a waiver of any claim for extension or additional compensation based upon that cause.

e. If the Contractor submits a claim for damages pursuant to this Section, the Contractor shall be liable to the County for a percentage of all costs incurred by the County in investigating, analyzing, negotiating and litigating the claim, which percentage shall be equal to the percentage

of the Contractor's total delay claim that is determined through litigation to be false or to have no basis in law or fact (Virginia Code §2.2-4335).

f. Any change in the Time for Completion or additional compensation shall be accomplished only by the issuance of a Change Order.

8. TIME EXTENSIONS FOR WEATHER

The Time for Completion will not be extended due to inclement weather conditions that are normal to the general locality of the Work site.

The Contractor's sole relief on any claims for delay which is caused by abnormal weather shall be an extension of the Time for Completion provided the Contractor gave the Project Officer timely written notice at the inception of such delay and provided the weather affected the critical path. A fully-documented claim for a time extension under this section must be submitted no later than thirty (30) calendar days after the cessation of the delay. It shall be the Contractor's responsibility solely to provide the necessary documentation to satisfy the Project Officer that the weather conditions claimed were encountered.

9. RELEASE OF LIENS

The County, before making any payment including Final Payment, shall require the Contractor to furnish a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and if required in either case, an affidavit that so far as the Contractor has knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed. The Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the County, to indemnify him against any lien. If any lien remains unsatisfied after all payments have been made, the Contractor shall refund to the County all money that the latter may be compelled to pay in discharging such lien. However, the County may make payments in part or in full to the Contractor without requiring the releases or receipts, and the payments so made shall not impair the obligations of any Surety or Sureties on any bond or bonds furnished under this Contract.

10. FINAL PAYMENT

After the Contractor has completed all Work and corrections to the satisfaction of the Project Officer and delivered all maintenance and operating instructions, schedules, quantities, bonds, certificates of inspection maintenance record documents, and other items required as final payment submittal documents, the Contractor may make application for final payment following the procedure for progress payments. The Final Application for Payment shall be accompanied by all documents required in the Contract, including a complete and signed copy of the Final Payment Release Form as follows:

RELEASE AND REQUEST FOR FINAL PAYMENT

CONTRACT NUMBER: _____ CONTRACTOR NAME: _____

FINAL PAYMENT AMOUNT: _____

The Contractor hereby requests final payment in the amount indicated on the above referenced Contract. The Contractor agrees that its acceptance of final payment releases and forever discharges Arlington County and its officers, employees, servants and agents from any and all actions, claims, demands and liability of whatever nature now existing or which may hereafter arise as a result of or in connection with the above referenced Contract.

The Contractor certifies that all of the debts for labor, materials, and equipment incurred in connection with the above referenced Contract have been fully paid.

AUTHORIZED SIGNATURE: _____ DATE: _____

COMMONWEALTH OF VIRGINIA

COUNTY OF ARLINGTON

On this the ____ day of _____, 20__, before me, personally appeared _____, who acknowledged himself/herself to be _____ in the above instrument, and that he/she, as such _____, being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing his/her name by himself/herself as _____.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

My Commission Expires: _____

IV. INSURANCE REQUIREMENTS

Review this section carefully with your insurance agent or broker prior to submitting a bid or proposal. See the Insurance Checklist (part of the Bid or Proposal Forms) for specific coverages applicable to this Contract. The term "Contract," as used in this section, shall mean the fully executed Agreement covering the work entered into between the County and the Contractor.

1. General

- 1.1 The Contractor shall provide insurance as specified in the Insurance Checklist found on the last page of the bid or proposal form.
- 1.2 The Contract with the Contractor will not be executed by the County until the Contractor has obtained, at its own expense, all of the insurance called for hereunder and such insurance has been approved by the County; additionally, the Contractor shall not allow any subcontractor to start work on any subcontract until all insurance required of the subcontractor has been so obtained and approved by the Contractor. The Contractor shall submit to the County Purchasing Agent copies of all required endorsements and documentation of coverage consistent with the requirements herein or, alternately, at the County's request, certified copies of the required insurance policies in compliance with the insurance requirements. All endorsements and documentation shall state this Contract's number and title.
- 1.3 The Contractor shall require all subcontractors to maintain during the term of this Agreement, Commercial General Liability insurance, Business Automobile Liability insurance, and Workers' Compensation, Employers' Liability insurance, or any other insurance required by the Contract in the same manner and form as specified for the Contractor. The Contractor shall furnish subcontractors' evidence of insurance and copies of endorsements to the County Purchasing Agent immediately upon request by the County and/or prior to the subcontractor's performance of work related to this Contract.
- 1.4 If there is a material change or reduction in coverage, nonrenewal of any insurance coverage or cancellation of any insurance coverage required by this contract, the Contractor shall notify the Purchasing Agent immediately. It is the Contractor's responsibility to notify the County upon receipt of a notice indicating that the policy will not be renewed or will be materially changed. Any policy on which the Contractor has received notification from an insurer that the policy has or will be cancelled or materially changed or reduced must be immediately replaced with another policy consistent with the terms of this Contract and in such a manner that there is no lapse in coverage, and the County immediately notified of the replacement. Not having the required insurance throughout the Contract is considered a material breach of this Contract and grounds for termination. The Contractor shall also obtain an endorsement providing to the County thirty (30) days advance notice of cancellation or nonrenewal (ten days for nonpayment of premium. A copy of that endorsement shall be provided to the County Purchasing Agent prior to the execution of this Contract or any Contract extension thereafter.
- 1.5 No acceptance and/or approval of any insurance by the County shall be construed as relieving or excusing the Contractor, any surety, or any bond, from any liability or obligation imposed under this Agreement.

1.6 Arlington County, and its officers, elected and appointed officials, employees, and agents are to be listed as additional insureds under all coverages except Workers' Compensation, Professional Liability, and Automobile Liability, and the endorsement must clearly identify the County as an additional insured permitted to enjoy all the benefits under the applicable policy of insurance. The certified policy, if requested, must so state coverage afforded under this paragraph shall be primary as respects the County, its officers, elected and appointed officials, agents and employees. The following definition of the term "County" applies to all policies issued under the Contract and to all applicable endorsements:

"The County Board of Arlington County and any affiliated or subsidiary Board, Authority, Committee, or Independent Agency (including those newly constituted), provided that such affiliated or subsidiary Board, Authority, Committee, or Independent Agency is either a Body Politic created by the County Board of Arlington County, Virginia, or one in which controlling interest is vested in Arlington County; and Arlington County Constitutional Officers."

1.7 The Contractor shall be responsible for the work performed under the Contract Documents and every part thereof, and for all materials, tools, equipment, appliances, and property of any description used in connection with the work. The Contractor assumes all risks for direct and indirect damage or injury to the property or persons used or employed on or in connection with the Work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract, or in connection in any way whatsoever with the contracted work.

1.8 The insurance coverage required shall remain in force throughout the Contract or as otherwise stated in the Contract Documents or these Insurance Requirements. If the Contractor fails to provide acceptable evidence of current insurance within seven (7) days of written notice at any time during the Contract, the County shall have the absolute right to terminate the Contract without any further obligation to the Contractor.

1.9 Contractual and other liability insurance provided under this Contract shall not contain a supervision, inspection or engineering services exclusion that would preclude the County from supervising or inspecting the work as to the end result. The Contractor shall assume all on-the-job responsibilities as to the control of persons directly employed by it and of the subcontractors and any persons employed by the subcontractor.

1.10 If any policy contains a warranty stating that coverage is null and void (or words to that effect) if the Contractor does not comply with the most stringent regulations governing the work, such policy shall be modified so that coverage shall be afforded in all cases except for the Contractor's willful or intentional noncompliance with applicable government regulations.

1.11 All policies shall include the following language: "The insolvency or bankruptcy of the insured or of the insured's estate will not relieve the insurance company of its obligations under this policy."

1.12 All policy forms must "Pay on behalf of" rather than "Indemnify" the insured.

1.13 Nothing contained in these Insurance Requirements or the Contract Documents shall be construed as creating any contractual relationship between any subcontractor and the County.

The Contractor shall be as fully responsible to the County for the acts and omissions of its subcontractors and of persons employed by them as it is for acts and omissions of persons directly employed by it.

- 1.14 Precaution shall be exercised by the Contractor at all times for the protection of persons, (including employees) and property. All existing structures, utilities, roads, services, trees and shrubbery shall be protected against damage or interruption of service at all times by the Contractor and its subcontractors during the term of the Contract, and the Contractor shall be held responsible for any damage to property occurring by reason of its work under the Contract.
- 1.15 For any claims related to this work, The Contractor's insurance shall be deemed primary and non-contributory to all other applicable coverage and in particular with respect to Arlington County, its representatives, officials, employees, and agents. Any insurance or self-insurance maintained by Arlington County shall be excess and noncontributory of the Contractor's insurance. The Contractor shall waive its right of subrogation for all insurance claims.
- 1.16 If the Contractor does not meet the insurance requirements set forth by the Contract Documents, alternate insurance coverage or self-insurance, satisfactory to the Purchasing Agent, may be considered. Written requests for consideration of alternate coverages including the Contractor's most recent actuarial report and a copy of its self-insurance resolution to determine the adequacy of the insurance funding must be received by the County Purchasing Agent at least ten (10) working days prior to the date set for receipt of bids or proposals. If the County denies the request for alternate coverages, the specified coverages will be required to be submitted. If the County permits alternate coverage, an amendment to the Insurance Requirements will be prepared and distributed prior to the time and date set for receipt of bids or proposals.
- 1.17 All required insurance coverages must be acquired from insurers authorized to do business in the Commonwealth of Virginia and acceptable to the County. The insurers must also have a policyholders' with a rating of "A-VII" in the latest edition of the A.M. Best Co.'s Insurance Reports, unless the County grants specific approval for an exception, in the same manner as described in 1.16 above.
- 1.18 The Contractor shall be responsible for payment of any deductibles applicable to the coverages.
- 1.19 The Contractor must disclose the amount of any deductible or self-insurance component applicable to the General Liability, Automobile Liability, Professional Liability, Intellectual Property or any other policies, if any. The County reserves the right to request additional information to determine if the Contractor has the financial capacity to meet its obligations under a deductible. Thereafter, at its option, the County may require a lower deductible, funds equal to the deductible be placed in escrow, a certificate of self-insurance, collateral, or other mechanism in the amount of the deductible to ensure additional protection for the County.

2. Contractor's Insurance:

- 2.1 The Contractor shall purchase the following insurance coverages, including the terms, provisions and limits shown in the Insurance Checklist.
 - 2.1.1 Commercial General Liability - Such Commercial General Liability policy shall include any or all of the following as indicated on the Checklist:

- i. General aggregate limit is to apply per project;
 - ii Premises/Operations;
 - iii. Actions of Independent Contractors;
 - iv. Products/Completed Operations to be maintained for five (5) years after completion of the Work;
 - v. Contractual Liability, including protection for the Contractor from claims arising out of liability assumed under this Contract;
 - vi. Personal Injury Liability including, including but not limited to, coverage for offenses related to employment and copyright infringement;
 - vii. Explosion, Collapse, or Underground (XCU) hazards.
- 2.1.2 Business Automobile Liability, including coverage for any owned, hired, or non-owned motor vehicles, Uninsured Motorists coverage, and automobile contractual liability.
- 2.1.3 Workers' Compensation - statutory benefits as required by Virginia law or the U.S. Longshoremen's and Harbor Workers' Compensation Act, or other laws as required by labor union agreements, including standard Other States coverage; Employers' Liability coverage. The policy shall not contain any provision or definition which would serve to eliminate third party action over claims, including exclusion for bodily injury to an employee of the insured, employees of the premises owner, or employees of the general contractor to which the insured is subcontracted; or employees of the insured's subcontractor.
- 2.1.4 Contractors Pollution Liability (CPL) Policy
- i. Minimum liability limits required shall be \$1,000,000 Per Loss and \$2,000,000 Total All Losses, including, but not limited to, property damage, bodily injury, loss of use, and clean-up costs.
 - ii. Limits must be dedicated to work performed under this Contract only, unless prior approval by the Arlington County Risk Manager has been obtained. The policy of insurance shall contain or be endorsed to include the following:
 - a. Pollution coverage as respects asbestos, lead, and PCB's.
 - b. "Covered Operations" designated by the CPL policy must specifically include all work performed under this contract. (This would include and not be limited to excavation, off-site incineration of soils, demolition, asbestos abatement, drum removal and disposal, in-situ vapor extraction, etc.) and exclusions or limitations affecting work performed under this contract must be deleted. (i.e., lead, asbestos, pollution, testing, underground storage tanks, radioactive matter, etc.)

- c. Contractor must comply with all applicable DOT and EPA requirements.
- d. Premises/Operations.
- e. Broad form property damage.
- f. Products/Completed Operations coverage for a minimum of five (5) years after Final Payment.
- g. Contractual liability coverage in accordance with ISO policy form CG 00 01 11 85. Modifications to the standard provision will not be acceptable if they serve to reduce coverage.
- h. Cross liability/severability of interest.
- i. The scope of work and all related activities under this Contract shall be scheduled as "Covered Operations" under this policy.
- j. Coverage is included on behalf of the insured for covered claims arising out of the actions of independent contractors. If insured is utilizing subcontractors, the CPL policy must use "By or On behalf of" language with regards to coverage.
- k. Loading and unloading exclusions must be amended so as to include coverage for mobile equipment and automobiles.

2.2 The Contractor shall take reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to, its employees on the job, and others. The Contractor shall comply with all applicable provisions of federal, state and municipal safety laws, insurance requirement's, standard industry practices, the requirements of the operations and this contract, the Contractor, directly through its subcontractors, shall effect and properly maintain at all times, as required by the conditions and progress of the work, necessary safeguards for safety and protection of the public, including securing areas, posting danger signs, placarding, labeling or posting other forms of warning against hazards.

3. Commercial General or other Liability Insurance - Claims-made Basis:

3.1 If Commercial General or other liability insurance purchased by the Contractor has been issued on a claims-made basis, the Contractor must comply with the following additional conditions. The limits of liability and the extensions to be included as described in the Insurance Checklist remain the same. The Contractor must either:

- i. Agree to provide insurance, copies of the endorsement and certified documentation evidencing the above coverages and naming the County as an additional insured for a period of five (5) years after final payment under the Contract. Such documentation shall evidence a retroactive date, no later than the beginning of the Contractors or subcontractors' work under this Contract, or

- ii. Purchase an extended (minimum five [5] years) reporting period endorsement for the policy or policies in force during the term of this Contract and evidence the purchase of this extended reporting period endorsement by means of a copy of the endorsement itself. The extended reporting period will begin upon final payment under the Contract.

4. Builder's Risk Insurance

- 4.1 The Contractor shall purchase and maintain builders risk insurance with a limit equal to the initial Contract Amount and any amendments to the Contract which affect the project cost on a replacement cost basis. Builder's risk insurance shall be maintained until Final Payment under the Contract has been made or until no person or entity other than the County has an insurable interest in the covered property, whichever is earlier. The builders risk insurance shall include the County as defined in Section 1.6, Contractor, subcontractors and sub-subcontractors as named insureds.
- 4.2 Insurance shall be on an all-risks policy form including the perils of fire, theft, vandalism, malicious mischief, lightning, wind, force majeure, collapse, and earthquake. Coverage is to apply for demolition occasioned by enforcement of any applicable legal requirements, and Architect's fees. Coverage for the peril of flood shall not be required unless otherwise required in the Contract Documents.
- 4.3 Unless otherwise provided in the Contract Documents, the builders risk insurance shall also cover materials to be incorporated into the project which are stored off the site.
- 4.4 The Contractor shall purchase and maintain Boiler and Machinery insurance, if required by the contract documents or by law, with a limit satisfactory to the County. The Boiler and Machinery insurance shall cover objects during installation and until Final Acceptance by the County. The County shall be included as a named insured.
- 4.5 Any loss under builder's risk insurance shall be payable to the County as fiduciary for the insureds, as their interests may appear, subject to any mortgagee clause. The Contractor shall pay subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their sub-subcontractors in similar manner. The County, as fiduciary, shall have the right to adjust and settle a loss with insurers.
- 4.6 The insurance company providing the builders risk coverage shall grant permission for the County to partially occupy or use the premises under construction prior to final acceptance without removing or affecting the coverage.

V. ATTACHMENTS AND FORMS

ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT

INVITATION TO BID NO. 21-DPR-ITB-291

B I D F O R M

ELECTRONIC BIDS WILL BE RECEIVED BY THE COUNTY VIA VENDOR REGISTRY NOT LATER THAN 4:00 P.M., NOVEMBER 16, 2021.

FOR PROVIDING ALCOVA HEIGHT PARK RENOVATION PHASE 1 SERVICES IDENTIFIED HEREIN IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, TERMS AND CONDITIONS OF THIS SOLICITATION

THE FULL LEGAL NAME OF THE ENTITY SUBMITTING THIS BID MUST BE WRITTEN IN THE SPACE BELOW. THIS BID FORM AND ALL OTHER DOCUMENTS THAT REQUIRE A SIGNATURE MUST BE FULLY AND ACCURATELY COMPLETED AND SIGNED BY A PERSON WHO IS AUTHORIZED TO BIND THE BIDDER, OR THE BID MAY BE REJECTED.

SUBMITTED BY:

(legal name of entity)

AUTHORIZED SIGNATURE:

PRINT NAME AND TITLE:

ADDRESS:

CITY/STATE/ZIP:

TELEPHONE NO.:

E-MAIL ADDRESS:

THIS ENTITY IS INCORPORATED
IN:

THIS ENTITY IS A:

*(check the applicable
option)*

CORPORATION

LIMITED PARTNERSHIP

GENERAL PARTNERSHIP

UNINCORPORATED ASSOCIATION

LIMITED LIABILITY
COMPANY

SOLE PROPRIETORSHIP

IS OFFEROR AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH
OF VIRGINIA?

YES NO

IDENTIFICATION NO. ISSUED TO THE ENTITY BY THE
SCC:

Any Offeror exempt from Virginia State Corporation Commission (SCC) authorization requirement must include a statement with its proposal explaining why it is not required to be so authorized.

VIRGINIA CONTRACTOR'S LICENSE NUMBER:

ENTITY'S DUN & BRADSTREET D-U-N-S NUMBER: (if _____

HAS YOUR FIRM OR ANY OF ITS PRINCIPALS BEEN DEBARRED FROM SUBMITTING BIDS TO ARLINGTON COUNTY, VIRGINIA, OR ANY OTHER STATE OR POLITICAL SUBDIVISION WITHIN THE PAST THREE YEARS? YES NO

HAS YOUR FIRM DEFAULTED ON ANY PROJECT IN THE LAST THREE YEARS? YES NO

HAS YOUR FIRM HAD ANY TYPE OF BUSINESS, CONTRACTING OR TRADE LICENSE, REGISTRATION OR CERTIFICATION REVOKED OR SUSPENDED IN THE PAST THREE YEARS? YES NO

HAS YOUR FIRM AND ITS PRINCIPALS/OWNERS BEEN CONVICTED OF ANY CRIME RELATING TO ITS CONTRACTING BUSINESS IN THE PAST TEN YEARS? YES NO

HAS YOUR FIRM BEEN FOUND IN VIOLATION OF ANY LAW APPLICABLE TO ITS CONTRACTING BUSINESS (LICENSING LAWS, TAX LAWS, WAGE AND HOUR LAWS, PREVAILING WAGE LAWS, ENVIRONMENTAL) WHERE THE RESULT OF SUCH VIOLATION WAS THE PAYMENT OF A FINE, BACK PAY DAMAGES, OR ANY OTHER PENALTY IN THE AMOUNT OF \$5000 OR MORE? YES NO

IS YOUR FIRM PREQUALIFIED BY THE VIRGINIA DEPT. OF TRANSPORTATION? YES NO

BIDDER STATUS: MINORITY OWNED: WOMAN OWNED: NEITHER:

The undersigned certifies that (Bidder Name)_____ is currently registered with the Virginia State Board of Contractors as required by the Code of Virginia. Certificate Number_____ for a Class_____ License was issued on the_____ day of_____ 20____. The undersigned further certifies that the registration fee and all renewal fees required under law have been paid.

TIME LIMIT FOR PROJECT: FINAL COMPLETION – 300 CALENDAR DAYS

LIQUIDATED DAMAGES: FINAL COMPLETION - \$715.00 PER DAY

THE UNDERSIGNED UNDERSTANDS AND ACKNOWLEDGES THE FOLLOWING:

THE OFFICIAL COPY OF THE SOLICITATION DOCUMENTS, WHICH INCLUDES ANY ADDENDA, IS THE ELECTRONIC COPY THAT IS AVAILABLE FROM THE VENDOR REGISTRY WEBSITE AT:

<HTTPS://VRAPP.VENDORREGISTRY.COM/BIDS/VIEW/BIDSLIST?BUYERID=A596C7C4-0123-4202-BF15-3583300EE088>.

VENDORS ARE REQUIRED TO REGISTER ON [VENDOR REGISTRY](#) IN ORDER TO SUBMIT A RESPONSE TO THIS INVITATION TO BID. **NO RESPONSES WILL BE ACCEPTED AFTER THE BID DUE DATE AND TIME.**

POTENTIAL BIDDERS ARE RESPONSIBLE FOR DETERMINING THE ACCURACY AND COMPLETENESS OF ALL SOLICITATION DOCUMENTS THEY RECEIVE FROM ANY SOURCE, INCLUDING THE COUNTY.

The undersigned acknowledges receipt of the following Addenda:

ADDENDUM NO. 1 DATE: _____ INITIAL: _____

ADDENDUM NO. 2 DATE: _____ INITIAL: _____

ADDENDUM NO. 3 DATE: _____ INITIAL: _____

TRADE SECRETS OR PROPRIETARY INFORMATION:

Trade secrets or proprietary information submitted by a Bidder in connection with a procurement transaction will not be subject to public disclosure under the Virginia Freedom of Information Act. Pursuant to Section 4-111 of the Arlington County Purchasing Resolution, however, a Bidder seeking to protect submitted data or materials from disclosure must, before or upon submission of the data or materials, identify the data or materials to be protected and state the reasons why protection is necessary.

Please mark one:

No, the bid that I have submitted does not contain any trade secrets and/or proprietary information.

Yes, the bid that I have submitted does contain trade secrets and/or proprietary information.

If Yes, you must clearly identify below the exact data or materials to be protected and list all applicable page numbers, sections, and paragraphs, of the bid that contain such data or materials:

State the specific reason(s) why protection is necessary and why the identified information constitutes a trade secret or is proprietary:

If you fail above to identify the data or materials to be protected or to state the reason(s) why protection is necessary, you will not have invoked the protection of Section 4-111 of the Purchasing Resolution. Accordingly, upon the award of a contract, the bid will be open for public inspection consistent with applicable law.

CERTIFICATION OF NON-COLLUSION: The undersigned certifies that this proposal is not the result of or affected by (1) any act of collusion with another person engaged in the same line of business or commerce (as defined in Virginia Code §§ 59.1-68.6 *et seq.*) or (2) any act of fraud punishable under the Virginia Governmental Frauds Act (Virginia Code §§ 18.2-498.1 *et seq.*).

CONTACT PERSON AND MAILING ADDRESS FOR DELIVERY OF NOTICES

Provide the name and address of the person who is designated to receive notices and other communications regarding this solicitation. Refer to the "Notices" section in the draft Contract Terms and Conditions for information regarding delivery of notices.

NAME: _____

ADDRESS: _____

E-MAIL: _____

BIDDER NAME: _____

CONTRACTOR COMPLIANCE WITH COUNTY COVID-19 VACCINATION POLICY CERTIFICATION

I, _____ (hereinafter referred to as "Bidder"), certify that I will comply with the COVID-19 Vaccination Policy as a condition of contract award which requires that all contractor employees or subcontractors who will be working on the contract are fully vaccinated against COVID-19, being tested on a weekly basis, or are exempt pursuant to a valid reasonable accommodation under state or federal law.

Signed: _____ **Date:** _____

Name of Bidder: _____

REFERENCES

Bidders should provide two (2) references for similar goods that have been provided by the Bidder within the past seven (7) years. The County reserves the right to evaluate the quality of Contractor's work through site visits with Contractor's references.

REFERENCE 1: Contact Name: _____
Organization: _____
Phone Number: _____
E-mail Address: _____
Contract/Project Name: _____
Contract/Project Dates (from-to): _____
Contract/Project Description: _____

REFERENCE 2: Contact Name: _____
Organization: _____
Phone Number: _____
E-mail Address: _____
Contract/Project Name: _____
Contract/Project Dates (from-to): _____
Contract/Project Description: _____

BIDDER NAME: _____

INSURANCE CHECKLIST

CERTIFICATE OF INSURANCE MUST SHOW ALL COVERAGE AND ENDORSEMENTS MARKED "X".

COVERAGES REQUIRED

LIMITS (FIGURES DENOTE MINIMUMS)

- 1. Workers' Compensation..... Statutory limits of Virginia
- 2. Employer's Liability.....\$500,000/accident, \$500,000/disease, \$500,000/disease policy limit
- 3. Commercial General Liability.....\$1,000,000 CSL BI/PD each occurrence, \$2 Million annual aggregate
- 4. Premises/Operations.....\$500,000 CSL BI/PD each occurrence, \$ 1 Million annual aggregate
- 5. Automobile Liability.....\$1 Million BI/PD each accident, Uninsured Motorist
- 6. Owned/Hired/Non-Owned Vehicles.....\$1 Million BI/PD each accident, Uninsured Motorist
- 7. Independent Contractors.....\$1 Million CSL BI/PD each occurrence, \$1 Million annual aggregate
- 8. Products Liability.....\$1 Million CSL BI/PD each occurrence, \$1 Million annual aggregate
- 9. Completed Operations.....\$1 Million CSL BI/PD each occurrence, \$1 Million annual aggregate
- 10. Contractual Liability (Must be shown on Certificate).....\$1 Million CSL BI/PD each occurrence, \$ 1 Million annual aggregate
- 11. Personal and Advertising Injury Liability.....\$1 Million each offense, \$1 Million annual aggregate
- 12. Umbrella \ Excess Liability.....\$1 Million Bodily Injury, Property Damage and Personal Injury
- 13. Per Project Aggregate
- 14. Professional Liability
 - a. Architects and Engineers.....\$1 Million per occurrence/claim
 - b. Asbestos Removal Liability\$2 Million per occurrence/claim
 - c. Medical Malpractice.....\$1 Million per occurrence/claim
 - d. Medical Professional Liability.....\$1 Million per occurrence/claim
- 15. Miscellaneous E&O/ Professional Liability\$1 Million per occurrence/claim
- 16. Motor Carrier Act End. (MCS-90) \$1 Million BI/PD each accident, Uninsured Motorist
- 17. Motor Cargo Insurance
- 18. Garage Liability.....\$1 Million Bodily Injury, Property Damage per occurrence
- 19. Garagekeepers Liability.....\$500,000 Comprehensive, \$500,000 Collision
- 20. Inland Marine-Bailee's Insurance..... \$ _____
- 21. Moving and Rigging Floater..... Endorsement to CGL
- 22. Dishonesty Bond.....\$ _____
- 23. Builder's Risk..... Provide Coverage in the full amount of contract
- 24. XCU Coverage..... Endorsement to CGL
- 25. USL&H..... Federal Statutory Limits
- 26. Carrier Rating shall be Best's Rating of A-VII or better or its equivalent
- 27. Notice of Cancellation, nonrenewal or material change in coverage shall be provided to County at least thirty (30) days prior to action.
- 28. The County shall be named Additional Insured on all policies except Workers Compensation, Errors and Omissions/Professional Liability and Auto.
- 29. Certificate of Insurance shall show Bid Number and Bid Title.
- 30. Environmental Impairment Liability, including coverage of on-site clean up..... BI/PD \$3 Million per occurrence/\$6 Million Aggregate
 - a In addition to environmental impairment liability, if work requires clean up, remediation, and/or removal of bio-solids, bio-hazards waste, and any hazardous or toxic material via transportation request:
 - Business Auto Liability.....\$2 Million per occurrence with MCS-90 and CA9948 (or equivalent endorsements specifically referenced in the certificate of insurance)
- 31. Cyber insurance.....\$2 Million per occurrence/Aggregate
- 32. OTHER INSURANCE REQUIRED: _____

INSURANCE AGENT'S STATEMENT:

I have reviewed the above requirements with the bidder named below and have advised the bidder of required coverages not provided through this agency.

BID FORM, PAGE 8 OF 8

AGENCY NAME: _____

AUTH. SIGNATURE: _____

BIDDER'S STATEMENT:

If awarded the Contract, I will comply with all Contract insurance requirements.

BIDDER NAME: _____

AUTH. SIGNATURE: _____

Attachment B - Bid Specifications



Alcova Heights Park – Phase I

**901 S. George Mason Dr.
Arlington, Virginia**

Project Manual

Bid Set

**#21-DPR-ITB-291
September 21, 2021**

Prepared by:



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SECTION 01 2500 - SUBSTITUTION PROCEDURES

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 6000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests submitted during the bidding period: follow the instructions included in Section I. INSTRUCTIONS TO BIDDERS of the Invitation to Bid document.
- B. Substitution Requests submitted after the contract award: Submit one .pdf copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in at the end of this specification section.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and

- separate contractors that will be necessary to accommodate proposed substitution.
- c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later. With the submission of a Substitution Request, the contractor acknowledges and accepts that the review, approval or disapproval of a substitution request by the Architect shall grounds, under any circumstances or for any reason, for a delay or other claim by the contractor.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution offers Owner a substantial advantage in cost or, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

PART 4 - END OF SECTION 01 2500

Request For Substitution Form

CONTRACTOR'S REQUEST FOR SUBSTITUTION

1. Originally Specified Product: _____

a. Section of Specification to which this request applies: _____

b. Section No.: _____

c. Section Title: _____

d. Paragraph: _____

2. Product Proposed for Substitution:

a. Brand Name: _____

b. Manufacturer: _____

c. Model No.: _____

d. History: ___ New Product ___ 2 to 5 years old ___ 5 to 10 years old ___ More than 10 years old

3. Reasons for not providing the specified items:

B. _____

C. _____

D. _____

E. _____

1. Benefit to the Owner for the Substitution:

a. Cost Savings: \$ _____

b. Schedule Benefit: _____ Days

2. Supporting Documentation:

a. Product Data: ___ Yes ___ No

b. Drawings: ___ Yes ___ No

c. Samples: ___ Yes ___ No

d. Test Reports: ___ Yes ___ No

e. Product Comparison: ___ Yes ___ No

INTENTIONALLY OMITTED

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 01 2500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 10 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.

- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
- 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 01 2500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Unit-Price Adjustment: See Section 01 2200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

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

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

INTENTIONALLY OMITTED

SECTION 01 2900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than ten days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work, where applicable: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.
 3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
 5. Allowances, where applicable: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 6. Each item in the schedule of values and Applications for Payment shall be complete.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
 7. Schedule Updating: Update and resubmit the schedule of values 5 days before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

- B. Payment Application Times: Submit Application for Payment to Architect by the 25th day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
1. Submit draft copy of Application for Payment five days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments for all work complete through the applicable date covered by the Application for Payment.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. LEED submittal for project materials cost data.
 4. Contractor's construction schedule (preliminary if not final).
 5. Products list (preliminary if not final).
 6. LEED action plans.
 7. Schedule of unit prices.
 8. Submittal schedule (preliminary if not final).
 9. List of Contractor's staff assignments.
 10. List of Contractor's principal consultants.
 11. Copies of building permits.
 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 13. Initial progress report.
 14. Report of preconstruction conference.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. A signed letter from the contractor stating that all Project Closeout requirements and documentation has been submitted in accordance with the contract documents.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2900

INTENTIONALLY OMITTED

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project Web site.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 01 32 00 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 01 7700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
 - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 - 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components

- within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 2 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.
 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 3300 "Submittal Procedures."
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
 2. File Preparation Format: DWG Version 2010, operating in Microsoft Windows operating system.

3. File Submittal Format: Submit or post coordination drawing files using format same as file preparation format and Portable Data File (PDF) format.
4. Architect will furnish Contractor one set of digital data files of Drawings for the floor plans and reflected ceiling plan only for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCad 2010 format.
 - c. Contractor shall execute a data licensing agreement Agreement form acceptable to Owner and Architect.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow five work days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day. RFI received on Fridays after 1pm will be considered as received on the following Monday.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 2600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly. Use software log that is part of Project Web site. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 5 days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for testing and inspecting.
 - i. Procedures for processing Applications for Payment.
 - j. Distribution of the Contract Documents.
 - k. Submittal procedures.
 - l. Preparation of record documents.
 - m. Use of the premises and existing building.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.

- y. Security.
 - z. Progress cleaning.
4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Authorized representatives of Owner, Owner's testing and inspection agent, Architect, Architect's consultants as appropriate, Contractor and its superintendent, major subcontractors, installers, fabricators and other concerned parties involved in or affected by the installation, coordination or integration with other materials and installations that have preceded or will follow, shall attend the conference.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Possible conflicts.
 - i. Compatibility requirements.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written instructions.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Installation procedures.
 - u. Coordination with other work.
 - v. Required performance results.
 - w. Protection of adjacent work.
 - x. Protection of construction and personnel.
 - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 60 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - j. Coordination of separate contracts.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 4. Minutes: Contractor shall record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at biweekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority (when appropriate) and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule

revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
- b. Review present and future needs of each entity present, including the following:
- 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
4. Minutes: Contractor is responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Special reports.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting schedules and reports.
 - 2. Section 01 40 00 "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF electronic file.
 - 2. One paper and one .pdf copy of all final approved submittals shall be provided to the Owner at the completion of the project.
- B. Startup construction schedule.
 - 1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at monthly intervals.
- G. Material Location Reports: Submit monthly intervals.
- H. Site Condition Reports: Submit at time of discovery of differing conditions.
- I. Special Reports: Submit at time of unusual event.
- J. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion and Final completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 business days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. Primary Mechanical Equipment
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 3300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 15 business days for startup and testing.
 5. Punch List and Final Completion: Include no fewer than 15 business days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 1000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 01 1000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Use of premises restrictions.

- e. Provisions for future construction.
 - f. Seasonal variations.
 - g. Environmental control.
7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
- a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Hazardous Materials Abatement, Critical Phasing Objectives, Substantial Completion, and Final Completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- 1. See Section 01 2900 "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.

4. Notations on returned submittals.
 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 15 business days or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
1. Use Microsoft Project, Primavera, Meridian Prolog, or scheduling component of Project Web site software specified in Section 01 3100 "Project Management and Coordination," for Windows XP or Windows 7 operating systems. The scheduling component of the Project Web site software, if used, must comply with all CPM scheduling, reporting, and performance features and requirements outlined and required in the Contract Documents.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 20 calendar days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- B. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

- a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and commissioning.
 - j. Punch list and final completion.
 - k. Activities occurring following final completion.
2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Architect's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
 - a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
 - b. Total cost assigned to activities shall equal the total Contract Sum.
- C. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.
- D. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.

7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- E. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- F. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts 5 business days before each regularly scheduled progress meeting.

2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Accidents.
 8. Meetings and significant decisions.
 9. Unusual events (see special reports).
 10. Stoppages, delays, shortages, and losses.
 11. Meter readings and similar recordings.
 12. Emergency procedures.

13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
 1. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule 5 business days

before the regularly scheduled progress meeting immediately before the monthly submission date.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate final completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 4. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional

time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit all required submittals within the first 30 days the notice to proceed.
3. Submit concurrently with the first complete submittal of Contractor's construction schedule. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Include an updated submittal schedule with each Application for Payment.
5. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Retain three subparagraphs below if CPM construction schedules are required.
 - i. Scheduled dates for purchasing.
 - j. Scheduled dates for installation.
 - k. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
 1. Architect will furnish Contractor one set of digital data drawing files in the Contract Drawings for use in preparing Shop Drawings. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings. Digital Drawing Software Program: The Contract Drawings are available in AutoCad 2010. Contractor shall execute a data licensing agreement in the form provided by the Architect. The following digital data files will be furnished for each appropriate discipline:
 - 1) Floor plans.
 - 2) Reflected ceiling plans.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner and the Architect, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.

- k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
- 1. Project name.
 - 2. Number and title of appropriate Specification Section.
 - 3. Manufacturer name.
 - 4. Product name.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
- 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.

2. Submit Shop Drawings in the following format:

a. PDF electronic file.

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

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
5. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
6. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.

- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 01 3100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 01 3200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 2900 "Payment Procedures."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 7700 "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Section 01 7823 "Operation and Maintenance Data."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data, where applicable: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and service and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 7700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:

-
- 1. NO EXCEPTION**
Acceptable as submitted.
 - 2. MAKE CORRECTIONS NOTED**
If the items can be provided as noted, resubmission is not required; otherwise the items are rejected and resubmission is required.
 - 3. REVISE AND RESUBMIT**
Changes or modification to the items are substantial enough to require resubmission.
 - 4. REJECTED**
Items submitted do not meet design intent requirements.
 - 5. RETURNED WITHOUT REVIEW**

Review of this submittal is for the limited purpose of checking for general conformance with the design concept and the Contract Documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the project plans and specifications. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes and scheduling, for techniques of assembly, and for performing the work in a safe manner to achieve high quality results. Any substitutions or deviations from the Construction Documents are not accepted unless such are highlighted in the submittal and are specifically acknowledged in the comments below.

Reviewed by: <Name here>

- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

- F. Submittals requiring more than two reviews by the Architect and/or its Consultants, due to inaccurate, incomplete and/or non-compliant products and information will be reviewed and returned to the contractor. The Architect and its Consultants shall be entitled to full and timely compensation from the Contractor for all time and effort incurred to perform these additional submittal reviews.

END OF SECTION 01 3300

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not

Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 15 days of Notice to Proceed. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager shall not have other Project responsibilities.

- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
 - 3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 5. Obtain Architect's and Construction Manager's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.
- K. Integrated Exterior Mockup: Construct integrated exterior mockup and coordinate and review installation of exterior envelope materials, products, and quality for one full-height and full width section of exterior cavity wall construction, including, but not limited to doors, windows, and the designated exterior wall veneer, back-up, flashing, moisture barrier, etc. The integrated mock-up shall be the section of exterior wall located between Column Line 3 and Column Line 4 in Detail 1/A302. The Integrated Mock-up shall extend horizontally from existing column to existing column and vertically from grade to the underside of the existing structure above. Also refer to Detail 6/A401, 7/A401, and 7/A815 for additional information

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 Insert number hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 3300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences,

examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 6. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections applicable to this project and the approved Building Permit, and as follows:
- B. Special Tests and Inspections: Conducted by a qualified [testing agency] [special inspector] as required by authorities having jurisdiction, as indicated in individual Specification Sections[and in Statement of Special Inspections attached to this Section], and as follows:
 1. Notifying Architect, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority, with copy to Contractor and to authorities having jurisdiction.
 3. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's Commissioning Authority's, reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 7300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 01 4200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and

effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
 - 8. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 - 9. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 10. AF&PA - American Forest & Paper Association; www.afandpa.org.
 - 11. AGA - American Gas Association; www.aga.org.
 - 12. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 - 13. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 14. AI - Asphalt Institute; www.asphaltinstitute.org.
 - 15. AIA - American Institute of Architects (The); www.aia.org.
 - 16. AISC - American Institute of Steel Construction; www.aisc.org.
 - 17. AISI - American Iron and Steel Institute; www.steel.org.
 - 18. AITC - American Institute of Timber Construction; www.aitc-glulam.org.

19. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
20. ANSI - American National Standards Institute; www.ansi.org.
21. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
22. APA - APA - The Engineered Wood Association; www.apawood.org.
23. APA - Architectural Precast Association; www.archprecast.org.
24. API - American Petroleum Institute; www.api.org.
25. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
26. ARI - American Refrigeration Institute; (See AHRI).
27. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
28. ASCE - American Society of Civil Engineers; www.asce.org.
29. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
30. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
31. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
32. ASSE - American Society of Safety Engineers (The); www.asse.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
34. ASTM - ASTM International; (American Society for Testing and Materials International); www.astm.org.
35. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
36. AWEA - American Wind Energy Association; www.awea.org.
37. AWI - Architectural Woodwork Institute; www.awinet.org.
38. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
39. AWPA - American Wood Protection Association; (Formerly: American Wood-Preservers' Association); www.awpa.com.
40. AWS - American Welding Society; www.aws.org.
41. AWWA - American Water Works Association; www.awwa.org.
42. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
43. BIA - Brick Industry Association (The); www.gobrick.com.
44. BICSI - BICSI, Inc.; www.bicsi.org.
45. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
46. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
47. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
48. CDA - Copper Development Association; www.copper.org.
49. CEA - Canadian Electricity Association; www.electricity.ca.
50. CEA - Consumer Electronics Association; www.ce.org.
51. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
52. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
53. CGA - Compressed Gas Association; www.cganet.com.
54. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
55. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
56. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
57. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
58. CPA - Composite Panel Association; www.pbmdf.com.

59. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
60. CRRC - Cool Roof Rating Council; www.coolroofs.org.
61. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
62. CSA - Canadian Standards Association; www.csa.ca.
63. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
64. CSI - Construction Specifications Institute (The); www.csinet.org.
65. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
66. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
67. CWC - Composite Wood Council; (See CPA).
68. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
69. DHI - Door and Hardware Institute; www.dhi.org.
70. ECA - Electronic Components Association; (See ECIA).
71. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
72. ECIA ? Electronic Components Industry Association; www.eciaonline.org
73. EIA - Electronic Industries Alliance; (See TIA).
74. EIMA - EIFS Industry Members Association; www.eima.com.
75. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
76. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
77. ESTA - Entertainment Services and Technology Association; (See PLASA).
78. EVO - Efficiency Valuation Organization; www.evo-world.org.
79. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
80. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
81. FM Approvals - FM Approvals LLC; www.fmglobal.com.
82. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
83. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
84. FSA - Fluid Sealing Association; www.fluidsealing.com.
85. FSC - Forest Stewardship Council U.S.; www.fscus.org.
86. GA - Gypsum Association; www.gypsum.org.
87. GANA - Glass Association of North America; www.glasswebsite.com.
88. GS - Green Seal; www.greenseal.org.
89. HI - Hydraulic Institute; www.pumps.org.
90. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
91. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
92. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
93. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
94. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
95. IAS - International Accreditation Service; www.iasonline.org.
96. IAS - International Approval Services; (See CSA).
97. ICBO - International Conference of Building Officials; (See ICC).
98. ICC - International Code Council; www.iccsafe.org.
99. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
100. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.

101. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
102. IEC - International Electrotechnical Commission; www.iec.ch.
103. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
104. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
105. IESNA - Illuminating Engineering Society of North America; (See IES).
106. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
107. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
108. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
109. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
110. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
111. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
112. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
113. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
114. ISO - International Organization for Standardization; www.iso.org.
115. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
116. ITU - International Telecommunication Union; www.itu.int/home.
117. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
118. LMA - Laminating Materials Association; (See CPA).
119. LPI - Lightning Protection Institute; www.lightning.org.
120. MBMA - Metal Building Manufacturers Association; www.mbma.com.
121. MCA - Metal Construction Association; www.metalconstruction.org.
122. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
123. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
124. MHIA - Material Handling Industry of America; www.mhia.org.
125. MIA - Marble Institute of America; www.marble-institute.com.
126. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
127. MPI - Master Painters Institute; www.paintinfo.com.
128. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
129. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
130. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
131. NADCA - National Air Duct Cleaners Association; www.nadca.com.
132. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
133. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
134. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
135. NCMA - National Concrete Masonry Association; www.ncma.org.
136. NEBB - National Environmental Balancing Bureau; www.nebb.org.
137. NECA - National Electrical Contractors Association; www.necanet.org.
138. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
139. NEMA - National Electrical Manufacturers Association; www.nema.org.
140. NETA - InterNational Electrical Testing Association; www.netaworld.org.
141. NFHS - National Federation of State High School Associations; www.nfhs.org.

142. NFPA - NFPA; (National Fire Protection Association); www.nfpa.org.
143. NFPA - NFPA International; (See NFPA).
144. NFRC - National Fenestration Rating Council; www.nfrc.org.
145. NHLA - National Hardwood Lumber Association; www.nhla.com.
146. NLGA - National Lumber Grades Authority; www.nlga.org.
147. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
148. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
149. NRCA - National Roofing Contractors Association; www.nrca.net.
150. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
151. NSF - NSF International; (National Sanitation Foundation International); www.nsf.org.
152. NSPE - National Society of Professional Engineers; www.nspe.org.
153. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
154. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
155. NWFA - National Wood Flooring Association; www.nwfa.org.
156. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
157. PDI - Plumbing & Drainage Institute; www.pdionline.org.
158. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
159. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
160. RFCI - Resilient Floor Covering Institute; www.rfci.com.
161. RIS - Redwood Inspection Service; www.redwoodinspection.com.
162. SAE - SAE International; (Society of Automotive Engineers); www.sae.org.
163. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
164. SDI - Steel Deck Institute; www.sdi.org.
165. SDI - Steel Door Institute; www.steeldoor.org.
166. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.
167. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
168. SIA - Security Industry Association; www.siaonline.org.
169. SJI - Steel Joist Institute; www.steeljoist.org.
170. SMA - Screen Manufacturers Association; www.smainfo.org.
171. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
172. SMPTE - Society of Motion Picture and Television Engineers; www.smpete.org.
173. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
174. SPIB - Southern Pine Inspection Bureau; www.spib.org.
175. SPRI - Single Ply Roofing Industry; www.spri.org.
176. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.
177. SSINA - Specialty Steel Industry of North America; www.ssina.com.
178. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
179. STI - Steel Tank Institute; www.steeltank.com.
180. SWI - Steel Window Institute; www.steelwindows.com.
181. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
182. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
183. TCNA - Tile Council of North America, Inc.; (Formerly: Tile Council of America); www.tileusa.com.
184. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.

185. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
186. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
187. TMS - The Masonry Society; www.masonrysociety.org.
188. TPI - Truss Plate Institute; www.tpinst.org.
189. TPI - Turfgrass Producers International; www.turfgrassod.org.
190. TRI - Tile Roofing Institute; (Formerly: National Tile Roofing Manufacturing Association); www.tilerroofing.org.
191. UBC - Uniform Building Code; (See ICC).
192. UL - Underwriters Laboratories Inc.; www.ul.com.
193. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
194. USAV - USA Volleyball; www.usavolleyball.org.
195. USGBC - U.S. Green Building Council; www.usgbc.org.
196. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
197. WASTEC - Waste Equipment Technology Association; www.wastec.org.
198. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
199. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
200. WDMA - Window & Door Manufacturers Association; www.wdma.com.
201. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.
202. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
203. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
204. WPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up-to-date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; <http://dodssp.daps.dla.mil>.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov.

9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; <http://eetd.lbl.gov>.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeia; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's personnel, Architect, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Refer to Paragraph 3.2.B below for additional information.
- C. Electric Power Service: Electricity from the Owner's existing electrical power systems will be available for use by the Contractor without usage charges. Installation and permitting of temporary power and any associated distribution for use by the Contractor shall be by the Contractor.
- D. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1, as needed.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 8 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts.
- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- C. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.
- D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.
- B. Storage and Fabrication Facilities: Provide storage, staging and fabrication facilities equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2. All storage of material shall be within the limits of the project or must be located offsite. Arlington County may allow the short-term use of on-site parking for storage containers, but this is not included in the provision of this scope of work. It is the Contractor's responsibility to locate and confirm availability of storage and staging facilities outside of the limits of the project.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: As needed, provide vented, self-contained, liquid-propane-gas with individual space thermostatic control, as allowed and permitted by the local jurisdiction. Portable, self-contained air conditioning units vented directly to the outside shall be provided to maintain interior space temperature requirements, as required.
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run as required to maintain proper negative pressure and air filtration levels during construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 1. Under no circumstance are unauthorized effluents or runoff of any kind allowed to be disposed of through site or street accessible sanitary or storm sewers. This project is located within the Chesapeake Bay Watershed and there are significant legal and monetary consequences that may be incurred by the Contractor for failing to properly manage and dispose of project related runoff and effluents.

2. Discharge of effluents in to the public storm sewer may be allowed if the appropriate storage and pre-discharge dechlorination, filtration and diffusion measures are taken. The contractor is solely responsible for evaluating and complying with the specific requirements and securing approval from the appropriate Arlington County permitting authorities. Contractor shall provide written authorization from Arlington County permitting authorities to the Owner before any discharge activities are initiated.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
 - D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use. Refer to Paragraph 3.2.B above for additional information.
 - E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. The Owner will not allow the use of existing sanitary facilities by the Contractor.
 - F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. The use of existing or permanent HVAC systems for heating and cooling during construction is not allowed.
 - G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
 - H. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- I. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
1. Install electric power service overhead unless otherwise indicated.
 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 2. Install lighting for Project identification sign.
 3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Use of Permanent Roads and Paved Areas: Temporary use of project site permanent paved areas and hardscapes will be allowed. The contractor is to recondition or restore all permanent existing roadways, sidewalks, and hardscapes used on for temporary construction access to pre-use conditions upon attainment of Substantial Completion.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: No onsite parking shall be provided for the Contractor and construction personnel.

- E. Project Signs: Provide Project signs only as indicated. Unauthorized signs are not permitted.
 - 1. Temporary Signs: Provide other signs as needed and required to inform public and individuals seeking entrance to Project and for the identification of the project address.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction to secure on-street locations for portable dumpsters, if allowed. Comply with progress cleaning requirements in Section 01 7300 "Execution."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains. Refer the contract documents for detailed information.
- D. Tree and Plant Protection: Comply with requirements specified outlined in the contract documents.
- E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- F. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence as required to prevent people and animals from easily entering site except by entrance gates.

- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- J. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
 - 1. Construct covered walkways using scaffold or shoring framing.
 - 2. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 - 3. Paint and maintain appearance of walkway for duration of the Work.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. The construction site is a no smoking zone.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.
- M. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 2. Keep interior spaces reasonably clean and protected from water damage.
 3. Periodically collect and remove waste containing cellulose or other organic matter.
 4. Discard or replace water-damaged material.
 5. Do not install material that is wet.
 6. Discard, replace, or clean stored or installed material that begins to grow mold.
 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- N. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 2. Use permanent HVAC system to control humidity.
 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no

later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

END OF SECTION 015000

INTENTIONALLY OMITTED

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 01 2500 "Substitution Procedures" for requests for substitutions.
 - 2. Section 01 4200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 01 3300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

D. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

E. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

F. Submittal Time: Comply with requirements in Section 01 7700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: Unless explicitly stated that no substitutions will be allowed, equivalent product requests will be accepted in accordance with Section 012500.

B. Product Selection Procedures:

1. Product: Where Specifications name more than one manufacturer, provide a product by one of the named manufacturers that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered during the bidding period. Substitutions will be allowed after project award in accordance with the process identified in Section 012500.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered during the bidding period. Substitutions will be allowed after project award in accordance with the process identified in Section 012500.
3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered during the bidding period. Substitutions will be allowed after project award in accordance with the process identified in Section 012500.
 - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered during the bidding period. Substitutions will be allowed after project award in accordance with the process identified in Section 012500.

- b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
- 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers only (equivalent product requests will be accepted in accordance with the process identified in Section 012500). Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 2500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: In accordance with procedure identified in section 012500, the Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 01 7300 - EXECUTION

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner-installed products.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 01 1000 "Summary" for limits on use of Project site.
 - 2. Section 01 3300 "Submittal Procedures" for submitting surveys.
 - 3. Section 01 7700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 4. Section 02 4119 "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor, professional engineer.
- B. Certificates: Submit certificate signed by land surveyor, professional engineer certifying that location and elevation of improvements comply with requirements.

1. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit three copies signed by land surveyor or professional engineer as required by prevailing jurisdictional requirements.
- E. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.5 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Mechanical systems piping and ducts.
 - c. Control systems.
 - d. Communication systems.
 - e. Fire-detection and -alarm systems.
 - f. Electrical wiring systems.
 - g. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Equipment supports.

- d. Piping, ductwork, vessels, and equipment.
 - e. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 3100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.
 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

- D. Final Property Survey: Engage a land surveyor or professional engineer, depending on the prevailing jurisdictional requirements, to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor or professional engineer, depending on the prevailing jurisdictional requirements, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 84 inches in occupied spaces and 84 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
 - J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 1000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize or prevent, if possible, interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after all construction operations of all trades requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface or wall containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface or wall containing the patch. Provide additional coats until patch blends with adjacent surfaces.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning

materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 5000 "Temporary Facilities and Controls." Section 01 7419 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 01 9113 "General Commissioning Requirements."
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Section 01 4000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

INTENTIONALLY OMITTED

SECTION 01 7329 - CUTTING AND PATCHING

PART 1 -GENERAL

1.1 SUMMARY

- A. Section includes procedural requirements for cutting and patching.

1.2 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 QUALITY ASSURANCE

- A. General: Contractor shall take reasonable care prior to all cutting and drilling in order to minimize unintended damage to concealed conduits, cables, pipes, reinforcing steel, etc. In circumstances where the absence of such concealed elements is not established conclusively, utilize detection and mapping technology, e.g., X-ray or Sub-surface Interface Radar (SIR), to locate any such elements that may be present before proceeding with the cutting or drilling work.
- B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational Elements include the following:
 - 1 Air or smoke barriers.
 - 2 Fire-protection systems.
 - 3 Control systems.
 - 4 Communication systems.
 - 5 Conveying systems.
 - 6 Electrical wiring systems.
 - 7 Operating systems of special construction in Division 13 Sections.
- D. Miscellaneous Elements: Do not cut and patch elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous Elements include the following:
 - 1 Water, moisture, or vapor barriers.
 - 2 Membranes and flashings.
 - 3 Exterior curtain-wall construction.

- 4 Equipment supports.
- 5 Piping, ductwork, vessels, and equipment.
- 6 Noise-and vibration-control elements and systems.

E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.4 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 -PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing and In-Place Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, shall match the visual and functional performance of existing materials.

PART 3 -EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations to adjoining areas.

- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to prevent interruption of services to occupied areas.
 - 1. If existing services to occupied areas must be interrupted, coordinate and receive approval of the interruption of services prior to starting work.

3.2 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2 Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3 Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4 Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 - 5 Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6 Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that shall eliminate evidence of patching and refinishing.

- a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 7329

SECTION 01 7419 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- E. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.
- F. The following sources may be useful in developing the Waste Management Plan:
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1 Burning on the project site
 - 2 Burying on the project site
 - 3 Dumping or burying on other property, public or private
 - 4 Other illegal dumping or burying
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not

include burning, incinerating, or thermally destroying waste. Take back reusable items or unused products to vendors for credit.

- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 REQUIREMENTS

- A. General: Develop waste management plan that results in end-of-project rates for salvage/recycling of at least Seventy-Five percent (75%) by weight of total waste generated by the Work.

1. Demolition Waste:

- a. Asphaltic concrete paving.
- b. Concrete.
- c. Concrete reinforcing steel.
- d. Brick.
- e. Concrete masonry units.
- f. Wood studs.
- g. Wood joists.
- h. Plywood and oriented strand board.
- i. Wood paneling.
- j. Wood trim.
- k. Structural and miscellaneous steel.
- l. Rough hardware.
- m. Roofing.
- n. Insulation.
- o. Doors and frames.
- p. Door hardware.
- q. Windows.
- r. Glazing.
- s. Metal studs.
- t. Gypsum board.
- u. Acoustical tile and panels.
- v. Carpet.

- w. Carpet pad.
- x. Demountable partitions.
- y. Equipment.
- z. Cabinets.

- aa. Plumbing fixtures.
- bb. Piping.
- cc. Supports and hangers.
- dd. Valves.
- ee. Sprinklers.
- ff. Mechanical equipment.
- gg. Refrigerants.
- hh. Electrical conduit.
- ii. Copper wiring.
- jj. Lighting fixtures.
- kk. Lamps.
- ll. Ballasts.
- mm. Electrical devices.
- nn. Switchgear and panel boards.
- oo. Transformers.

2. Construction Waste:

- a. Site-clearing waste.
- b. Masonry and CMU.
- c. Lumber.
- d. Wood sheet materials.
- e. Wood trim.
- f. Metals.
- g. Roofing.
- h. Insulation.
- i. Carpet and pad.
- j. Gypsum board.
- k. Piping.
- l. Electrical conduit.
- m. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Plastic pails.

1.04 SUBMITTALS

- A. See Section 01 3300 Submittal Procedures, for submittal procedures.

1. Provide alternatives to landfill use for at least the following materials:
 - a. Aluminum and plastic beverage containers.
 - b. Corrugated cardboard.
 - c. Wood pallets.
 - d. Clean dimensional wood.
 - e. Concrete.
 - g. Bricks.
 - h. Concrete masonry units.
 - i. Asphalt paving.
 - j. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

B. Waste Management Plan: Include the following information:

- 1 Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
- 2 Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of.
- 3 Recycling: The name, address, and telephone number of the Recycler(s) where trash/waste will be delivered for reuse.
- 4 Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
- 5 Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
- 6 Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. See Section 012500 Substitution Procedures for substitution submission procedures.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 013100 and 01320 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 015200 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 016600 for waste prevention requirements related to delivery, storage, and handling.

- D. See Section 017329 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1 Pre-bid meeting
 - 2 Pre-construction
 - 3 Regular jobsite
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1 Provide containers as required
 - 2 Provide adequate space for pickup & delivery & convenience to subcontractors
 - 3 Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse offsite

END OF SECTION 01 7419

INTENTIONALLY OMITTED

SECTION 01 7823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, subsystems, and equipment.
 - 4. Product maintenance manuals.
 - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 3300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect and Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit all required operations and maintenance manuals in the following format:

1. One PDF (Portable Document Format) electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. Two paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return one copy.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
- E. Final Payment: Final Payment to the Contractor will not be released until Operation And Maintenance Manuals have been reviewed and approved in accordance with the requirements of this section.
1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Architect.
 - 8. Name and contact information for Commissioning Authority.
 - 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. Provide reduced scale facsimile versions in the binder and provide a reference pointing to the large scale drawings located at the rear of the manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUALS

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.

6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
 - F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
 - G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent, if applicable.
 - H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more

than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
 2. Separately, comply with requirements of newly prepared record Drawings in Section 01 7839 "Project Record Documents."
- G. Comply with Section 01 7700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 7823

INTENTIONALLY OMITTED

SECTION 01 7839 - PROJECT RECORD DOCUMENTS

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 7300 "Execution" for final property survey.
 - 2. Section 01 7700 "Closeout Procedures" for general closeout procedures.
 - 3. Section 01 7823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy set of marked-up record prints.
 - 2) Submit one PDF electronic file of scanned record prints.
 - 3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
- B. Record Specifications: Submit three paper copies and one scanned PDF copy of the paper mark-up for each submittal, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy and one scanned copy of the paper mark-up for each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy and one scanned PDF copy of each submittal.
- E. Reports: Submit written report monthly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
 4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 01 3300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 3. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as three paper copies and one scanned PDF copy of the paper copy.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
- B. Format: Submit record Product Data as one paper copy and one scanned PDF copy of the marked-up paper copy.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as one paper copy and one scanned copy of the marked-up paper copy miscellaneous record submittals.
1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction.

Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 01 7839

INTENTIONALLY OMITTED

SECTION 01 7900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For facilitator, instructor, and videographer.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module. Provide two electronic copies within seven days of each training module in electronic video format (MPEG).
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.

- b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.
2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
 3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
 4. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc or DVD.

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 4000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 1. Inspect and discuss locations and other facilities required for instruction.
 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 3. Review required content of instruction.
 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
 - 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.

- e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 7823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner through Architect with at least fifteen days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Cleanup: Collect used and leftover educational materials and give to the Owner, if requested or remove from Project Site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video: Provide minimum 640 x 480 video resolution converted to .mp4 format file type or a format file type acceptable to Owner with prior approval, on electronic media.
 - 1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.

2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
 3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.
 - e. E-mail address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
1. Furnish additional portable lighting as required.
- E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.
- F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 01 7900

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- C. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection and for dust control. Indicate proposed locations and construction of barriers.
- D. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
- E. Predemolition Photographs: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.
- F. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.10 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Survey of Existing Conditions: Record existing conditions by use of [preconstruction photographs].
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off utilities with utility companies.
 - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4. Disconnect, demolish, and remove plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

- b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
- c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
- d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Protect walls, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 3. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.

6. Maintain adequate ventilation when using cutting torches.
 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 10. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

- E. Roofing: Remove existing roofing. See Section 074113.16 Standing Seam Metal Roof Panels for new roofing requirements.
 - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
 - 2. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction. and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

INTENTIONALLY OMITTED

SECTION 033053 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Action Submittal:
 - 1. Design Mixtures: For each concrete mixture.

1.3 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Comply with ACI 301 (ACI 301M).
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to ACI 301 (ACI 301M).

2.2 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

- D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I or II.
 - a. Fly Ash: ASTM C 618, Class C or F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 - 2. Blended Hydraulic Cement: ASTM C 595
 - 3. Nominal maximum size of coarse aggregate in first paragraph below is common. Revise to smaller size if required. ACI 301 (ACI 301M) sets maximum sizes based on spacing of reinforcement, dimensions between sides of forms, and thicknesses of slabs.
- B. Normal-Weight Aggregate: ASTM C 33
- C. Water: ASTM C 94/C 94M.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 RELATED MATERIALS

- A. Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick; or plastic sheet, ASTM E 1745, Class C.

- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.7 CONCRETE MIXTURES

- A. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301 (ACI 301M), as follows:
 - 1. Minimum Compressive Strength: 3,000 PSI at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50
 - 3. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.2 VAPOR RETARDERS

- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
 - 1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended adhesive or joint tape.

3.3 STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

3.5 CONCRETE PLACEMENT

- A. Comply with ACI 301 (ACI 301M) for placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.

3.6 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/2 inch (13 mm).
 - 1. Apply to concrete surfaces not exposed to view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm).

3.7 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
 - 1. Do not further disturb surfaces before starting finishing operations.
- C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.
- D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
- E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
- F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

END OF SECTION 033053

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Polymer-modified, self-leveling, hydraulic cement underlayment for application below interior floor coverings.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Hydraulic cement underlayment.
 - 2. Primer.
 - 3. Surface sealer.
- B. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
 - 1. Place hydraulic cement underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F.

PART 2 - PRODUCTS

2.1 HYDRAULIC CEMENT UNDERLAYMENTS

- A. Hydraulic Cement Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. BASF Corporation.
 - b. Laticrete International, Inc.
 - c. MAPEI Corporation.
 - d. Schönox; HPS North America, Inc.
 - e. USG Corporation.
 - 2. Cement Binder: ASTM C150/C150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C219.
 - 3. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C109/C109M.
 - 4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- B. Water: Potable and at a temperature of not more than 70 deg F.
- C. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
- D. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

2.2 ACCESSORIES

- A. Sound Control Mat: As required to meet STC and IIC ratings, manufactured by gypsum cement underlayment manufacturer.
 - 1. Thickness: 3/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance of the Work.
- B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare and clean substrate according to manufacturer's written instructions.
 - 1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
 - 2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
- C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 INSTALLATION

- A. Mix and install underlayment components according to manufacturer's written instructions.
 - 1. Close areas to traffic during underlayment installation and for time period after installation recommended in writing by manufacturer.
 - 2. Coordinate installation of components to provide optimum adhesion to substrate and between coats.
 - 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Install underlayment to produce uniform, level surface.
 - 1. Install a final layer without aggregate to product surface.
 - 2. Feather edges to match adjacent floor elevations.
- D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during installation and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

- F. Apply surface sealer at rate recommended by manufacturer.
- G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 INSTALLATION TOLERANCES

- A. Finish and measure surface, so gap at any point between gypsum cement underlayment surface and an unlevelled, freestanding, 10-foot-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch in 2 feet.

3.5 PROTECTION

- A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035416

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.
 - 2. Pre-faced concrete masonry units.
 - 3. Mortar and grout.
 - 4. Steel reinforcing bars.
 - 5. Masonry joint reinforcement.
 - 6. Ties and anchors.
 - 7. Embedded flashing.
 - 8. Miscellaneous masonry accessories.
 - 9. Cavity-wall insulation.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement Retain subparagraph below for flashing material that is specially fabricated for corners, end dams, etc.
3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Verification: For each type and color of the following:

1. Pre-faced CMUs.
2. Colored mortar. Make Samples using same sand and mortar ingredients to be used on Project.
3. Weep holes and vents
4. Accessories embedded in masonry.

1.6 INFORMATIONAL SUBMITTALS

A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.

B. Qualification Data: For testing agency.

C. Material Certificates: For each type and size of the following:

1. Masonry units.
 - a. Include data on material properties, material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Grout mixes. Include description of type and proportions of ingredients.
3. Reinforcing bars.
4. Joint reinforcement.
5. Anchors, ties, and metal accessories.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

- E. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for typical exterior wall in sizes approximately 48 inches high by full thickness, including face and backup wythes and accessories.
 - a. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
 - b. Include air barrier, veneer anchors, flashing, cavity drainage material, and weep holes in exterior masonry-veneer wall mockup.
 - 2. Clean exposed faces of mockups with masonry cleaner as indicated.
 - 3. Protect accepted mockups from the elements with weather-resistant membrane.
 - 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
 - 5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

1.9 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C 90.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.
 2. Density Classification: Midweight
 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
- C. Pre-faced CMUs: Midweight hollow and solid concrete units complying with ASTM C 90, with manufacturer's standard smooth resinous facing complying with ASTM C 744.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Trenwyth Astra Glaz SW+ (Basis of Design)
 2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi
 3. Size: Actual facing dimension shall be 7-3/4" x 15-3/4" forming a 1/16" lip around the edges of a modular 7-5/8" x 15-5/8" block. Nominal 4" and 8" standard block thickness shall be used as required, as well as standard and special block shapes. Basic units may include stretchers, jambs, caps, coves bases. Semi-solid and solid units shall be used where specified and or shown on drawings.
 - a. Colors and Patterns: Ivory- by Trenwyth Astra Glaz SW+

2.3 CONCRETE AND MASONRY LINTELS

- A. General: Provide one of the following:
- B. Concrete Lintels: ASTM C 1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated.
- C. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

- D. See structural drawings for additional information.

2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C270.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Capital Materials Corporation; Flamingo Color Masonry Cement.
 - b. Glen-Gery
 - c. Lafarge North America Inc.;
 - d. Lehigh Cement Company;
 - e. National Cement Company, Inc.; Coosa Masonry Cement.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Davis Colors; True Tone Mortar Colors.
 - b. Lanxess Corporation; Bayferrox Iron Oxide Pigments.
 - c. Solomon Colors, Inc.; SGS Mortar Colors.
- F. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- G. Aggregate for Grout: ASTM C 404.
- H. Refractory Mortar Mix: Ground fireclay or non-water-soluble, calcium aluminate, medium-duty refractory mortar that passes ASTM C 199 test; or an equivalent product acceptable to authorities having jurisdiction.

- I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The); Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
 - c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.
- J. Water: Potable.

2.5 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60
- B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
 - 1. Interior Walls: Hot-dip galvanized, carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized, carbon steel.
 - 3. Gauge: 9
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 - 1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 641/A 641M, Class 1 coating.
 - 2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 - 3. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.
 - 4. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 zinc coating.
 - 5. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 6. Stainless-Steel Sheet: ASTM A 666, Type 304.
 - 7. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 8. Stainless-Steel Bars: ASTM A 276 or ASTM a 666, Type 304.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.

2.7 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

2.8 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 - 1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.
 - 2. Fabricate through-wall metal flashing embedded in masonry from stainless steel with ribs at 3-inch (76-mm) intervals along length of flashing to provide an integral mortar bond.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Cheney Flashing Company; Cheney Flashing
 - 2) Keystone Flashing Company, Inc.; Keystone 3-Way Interlocking Thruwall Flashing.
 - 3) Sandell Manufacturing Co., Inc.; Mechanically Keyed Flashing.
 - 3. Metal Drip Edge: Fabricate from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
- B. Flexible Flashing: Use one of the following unless otherwise indicated in non exposed wall cavities:
 - 1. Copper-Laminated Flashing: 5-oz./sq. ft. copper sheet bonded between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Advanced Building Products Inc.; Copper Fabric Flashing
 - 2) Dayton Superior Corporation, Dur-O-Wal Division; Copper Fabric Thru-Wall Flashing.
 - 3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
 - 4) Phoenix Building Products; Type FCC-Fabric Covered Copper.
 - 5) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 6) York Manufacturing, Inc.; Multi-Flash 500.
 - b. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

- D. Through-wall flashing membrane at windows (Self-Adhering) shall be Blueskin® TWF manufactured by Henry (or approved equal); an SBS modified bitumen, self-adhering sheet membrane complete with a yellow engineered thermoplastic film. Membrane shall have the following physical properties:
 - 1. Membrane Thickness: 0.0394 inches (40 mils),
 - 2. Film Thickness: 4.0 mils,
 - 3. Flow (ASTM D5147): Pass @ 212 degrees F,
 - 4. Puncture Resistance: 134 lbf to ASTM E 154,
 - 5. Tensile Strength (film): 5000 psi minimum ASTM D 882,
 - 6. Tear Resistance: 45lbs.-MD, 17lbs.-CD to ASTM D1004,
 - 7. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Weep/Vent Products: Use one of the following unless otherwise indicated:
 - 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Advanced Building Products Inc.; Mortar Maze weep vent.
 - 2) Blok-Lok Limited; Cell-Vent.
 - 3) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
 - 4) Heckmann Building Products Inc.; No. 85 Cell Vent.
 - 5) Hohmann & Barnard, Inc.; Quadro-Vent.
 - 6) Wire-Bond; Cell Vent.
 - 2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following]:
 - 1) Mortar Net USA, Ltd.; Mortar Net Weep Vents.

- B. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Advanced Building Products Inc.; Mortar Break
 - b. Archovations, Inc.; CavClear Masonry Mat.
 - c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
 - d. Mortar Net USA, Ltd.; Mortar Net.

2. Provide one of the following configurations:
 - a. Strips, full-depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent clogging with mortar droppings.

- C. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
 - b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
 - c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
 - d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.10 CAVITY-WALL INSULATION

- A. Extruded-Polystyrene Board Insulation with Increased R-Value: ASTM C 578, Type IV, but with an aged thermal resistance (R-value) for 1-inch thickness of 5.6 deg F x h x sq. ft./Btu at 75 deg F at 5 years; closed-cell product with a carbon-black filler and extruded with an integral skin.
- B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

2.11 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - a. Diedrich Technologies, Inc.
 - b. EaCo Chem, Inc.
 - c. ProSoCo, Inc.

2.12 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: Comply with ASTM C 270, Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For masonry below grade or in contact with earth, use Type M.
 - 2. For reinforced masonry, use Type S.
 - 3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 4. For interior non-load-bearing partitions, Type O may be used instead of Type N.
- B. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws;

provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

- 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
- 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.

B. Lines and Levels:

- 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
- 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet
- 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
- 5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
- 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
- 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

- 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch with a maximum thickness limited to 1/2 inch (12 mm).

2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 8-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 1. Install compressible filler in joint between top of partition and underside of structure above.
 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
 3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078446 "Fire-Resistive Joint Systems."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
 - 1. For pre-faced masonry units in toilet room areas, provide a tooled mortar joint with a minimum of 1/4" and tuckpoint with an approved water resistant grout equal to Bonsal Polymer Modified Sand Grout mixed with Bonsal B-7000 Epoxy. Do not add water or anything else in addition to the B-7000, which will make it a 100% solid enabling it to be acid and stain resistant.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
 - 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 - 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes
 - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement

3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 8 inches clear horizontally and 16 inches clear vertically.
- B. Bond wythes of composite masonry together using bonding system indicated on Drawings.
- C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
 1. Provide continuity with masonry joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
 1. Provide individual metal ties not more than 16 inches o.c.

3.7 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 3. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Bond wythes of cavity walls together using bonding system indicated on Drawings.
- C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- D. Parge cavity face of backup wythe in a single coat approximately 3/8 inch (10 mm) thick. Trowel face of parge coat smooth.

- E. Coat cavity face of backup wythe to comply with Section 071113 "Bituminous Dampproofing."
- F. Apply air barrier to face of backup wythe to comply with Section 072726 Fluid-Applied Membrane Air Barriers
- G. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
 - 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
 - 1. Space reinforcement not more than 16 inches (406 mm) o.c.
 - 2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY VENEERS

- 1. See structural notes.

3.10 LINTELS

- A. Install steel lintels where indicated.
- B. Provide concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.11 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches (50 mm) on interior face.
3. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and 1-1/2 inches (38 mm) into the inner wythe.
4. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches (200 mm); with upper edge tucked under building paper or building wrap, lapping at least 4 inches (100 mm).
5. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
6. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
7. Install metal drip edges with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
8. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal drip edge.
9. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall and adhere flexible flashing to top of metal flashing termination.
10. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

- B. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

- C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- D. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
- E. Place pea gravel in cavities as soon as practical to a height equal to height of first course above top of flashing, but not less than 2 inches (50 mm), to maintain drainage.
 - 1. Fill cavities full height by placing pea gravel in cavities as masonry is laid so that at any point masonry does not extend more than 24 inches (600 mm) above top of pea gravel.
- F. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- G. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products or open head joints to form vents.
 - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.12 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches

3.13 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

- B. Inspections: Level 1 special inspections according to the "International Building Code."
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.
- E. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.
- F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.14 CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 6. Do not power wash pre-faced cmu.
 - 7. Do not use acidic or abrasives on the pre-faced cmu surface.

3.15 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
 3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Wood blocking and nailers.
 - 3. Wood furring

1.3 DEFINITIONS

- A. Exposed Framing: Framing not concealed by other construction.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- C. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.
- D. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.
 - 3. RIS: Redwood Inspection Service.
 - 4. SPIB: The Southern Pine Inspection Bureau.
 - 5. WCLIB: West Coast Lumber Inspection Bureau.
 - 6. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece

3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

A. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade.

1. Species:

- a. Spruce-pine-fir; NLGA.
- B. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
 - 1. Application: Exposed exterior framing indicated to receive a stained or natural finish.
 - 2. Species and Grade: IPE – Clear Heartwood

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
 - 5. Furring.
 - 6. Grounds.
 - 7. Utility shelving.
- B. For items of dimension lumber size, provide Construction or No. 2 and the following species:
 - 1. Southern Pine
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel].

- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.6 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Cleveland Steel Specialty Co.
 - 2. KC Metals Products, Inc.
 - 3. Phoenix Metal Products, Inc.
 - 4. Simpson Strong-Tie Co., Inc.
 - 5. USP Structural Connectors.
- C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
 - 1. Use for interior locations unless otherwise indicated.
- E. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.
- F. Stainless-Steel Sheet: ASTM A 666, Type 304.
 - 1. Use for exterior locations and where indicated.
- G. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch) above base and with 2-inch- minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

- H. Rafter Tie-Downs (Hurricane or Seismic Ties): Metal tie for fastening rafters or roof trusses to wall below, 1 3/8 inches wide by 0.05 inch thick. Fasten tie to side of rafter or truss and edge of top plates.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- I. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
- L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- M. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
1. Comply with indicated fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
 3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preserved-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- D. Provide permanent grounds of dressed, pressure-preserved-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.4 CEILING JOIST AND RAFTER FRAMING INSTALLATION

- A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
 - 1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal- size or 2-by-4-inch nominal- size stringers spaced 48 inches o.c. crosswise over main ceiling joists.
- B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
- C. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.5 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061800 - GLUED-LAMINATED CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes framing using structural glued-laminated timber.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for dimension lumber items associated with structural glued-laminated timber.

1.3 DEFINITIONS

- A. Structural Glued-Laminated (Glulam) Timber: An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives and with the grain of the laminations approximately parallel longitudinally.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data on lumber, adhesives, fabrication, and protection.
 - 2. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
 - 3. For connectors. Include installation instructions.
- B. Shop Drawings:
 - 1. Show layout of structural glued-laminated timber system and full dimensions of each member.
 - 2. Indicate species and laminating combination.
 - 3. Include large-scale details of connections.
- C. Samples: Full width and depth, 24 inches long, showing the range of variation to be expected in appearance of structural glued-laminated timber including variations due to specified treatment.

1. Apply specified factory finish to three sides of half length of each Sample.
- D. Delegated-Design Submittal: For structural glued-laminated timber and timber connectors.

1.5 INFORMATIONAL SUBMITTALS

- A. Certificates of Conformance: Issued by a qualified testing and inspecting agency indicating that structural glued-laminated timber complies with requirements in AITC A190.1.
- B. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained.
- C. Research/Evaluation Reports: For structural glued-laminated timber and timber connectors, from ICC-ES.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: An AITC- or APA-EWS-licensed firm certified for chain of custody by an FSC-accredited certification body.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with provisions in AITC 111.
- B. Individually wrap members using plastic-coated paper covering with water-resistant seams.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Provide products as indicated on structural drawings.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Structural glued-laminated timber and connectors shall withstand the effects of structural loads shown on Drawings without exceeding allowable design working stresses listed in AITC 117 or determined according to ASTM D 3737 and acceptable to authorities having jurisdiction.

2.3 STRUCTURAL GLUED-LAMINATED TIMBER

- A. General: Provide structural glued-laminated timber that complies with AITC A190.1 and AITC 117 or research/evaluation reports acceptable to authorities having jurisdiction.
 - 1. Factory mark each piece of structural glued-laminated timber with AITC Quality Mark or APA-EWS trademark. Place mark on surfaces that are not exposed in the completed Work.
 - 2. Provide structural glued-laminated timber made from single species.
 - 3. Provide structural glued-laminated timber made from solid lumber laminations; do not use laminated veneer lumber.
 - 4. Provide structural glued-laminated timber made with wet-use adhesive complying with AITC A190.1.
- B. Species and Grades for Structural Glued-Laminated Timber: Southern pine in grades needed to comply with "Performance Requirements" Article.
- C. Species and Grades for Structural Glued-Laminated Timber: Southern pine that complies with structural properties indicated on structural drawings.
- D. Species and Grades for Beams:
 - 1. Species and Beam Stress Classification: Southern pine, 24F-1.8E
 - 2. Lay-up: Balanced.
 - 3. Species and Combination Symbol: 24F-E4 SP/SP.
- E. Appearance Grade: Architectural, complying with AITC 110.
 - 1. For Premium and Architectural appearance grades, fill voids as required by AITC 110.

2.4 PRESERVATIVE TREATMENT

- A. Preservative Treatment: Where preservative-treated structural glued-laminated timber is indicated, comply with AWWA U1, Use Category 3B.
 - 1. Use preservative solution without water repellents or substances that might interfere with application of indicated finishes.
 - 2. Do not incise structural glued-laminated timber or wood used to produce structural glued-laminated timber.
- B. Preservative: One of the following per manufacturer's specifications:
 - 1. Oxine copper (copper-8-quinolinolate) in a light petroleum solvent.
 - 2. Pentachlorophenol in light petroleum solvent.
 - 3. Copper naphthenate in a light petroleum solvent.
 - 4. Ammoniacal zinc copper arsenate (ACZA) in a water solution.
 - 5. Chromated copper arsenate (CCA) in a water solution.
 - 6. Ammoniacal copper quat Type A (ACQ-C) in a water solution.
 - 7. Propiconazole tebuconazole imidacloprid (PTI) in a water emulsion.

- C. After dressing members, apply a copper naphthenate field-treatment preservative to comply with AWP A M4 to surfaces cut to a depth of more than 1/16 inch.

2.5 TIMBER CONNECTORS

- A. Provide products as indicated on structural drawings.
- B. Provide bolts as indicated on structural drawings.
- C. Materials: Unless otherwise indicated, fabricate from the following materials:
 - 1. Structural-steel shapes, plates, and flat bars as indicated on structural drawings
- D. Finish steel assemblies and fasteners with rust-inhibitive primer, 2-mil dry film thickness.
- E. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A 123/A 123M or ASTM A 153/A 153M.

2.6 MISCELLANEOUS MATERIALS

- A. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
- B. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.7 FABRICATION

- A. Shop fabricate for connections to greatest extent possible, including cutting to length and drilling bolt holes.
 - 1. Dress exposed surfaces as needed to remove planing and surfacing marks.
- B. Camber: Fabricate horizontal and inclined members of less than 1:1 slope with either circular or parabolic camber equal to 1/500 of span.
- C. Where preservative-treated members are indicated, fabricate (cut, drill, surface, and sand) before treatment to greatest extent possible. Where fabrication must be done after treatment, apply a field-treatment preservative to comply with AWP A M4.
 - 1. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
 - 2. Use copper naphthenate treatment for members in contact with the ground or not continuously protected from liquid water.

- D. End-Cut Sealing: Immediately after end cutting each member to final length and after preservative treatment, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.
- E. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit except for preservative-treated wood where treatment included a water repellent.

2.8 FACTORY FINISHING

- A. Wiped Stain Finish: Manufacturer's standard, dry-appearance, penetrating acrylic stain and sealer; oven dried and resistant to mildew and fungus.
 - 1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates in areas to receive structural glued-laminated timber, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Erect structural glued-laminated timber true and plumb and with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
 - 1. Handle and temporarily support glued-laminated timber to prevent surface damage, compression, and other effects that might interfere with indicated finish.
- B. Framing Built into Masonry: Provide 1/2-inch clearance at tops, sides, and ends of members built into masonry; bevel cut ends 3 inches; and do not embed more than 4 inches unless otherwise indicated.
- C. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.
- D. Fit structural glued-laminated timber by cutting and restoring exposed surfaces to match specified surfacing and finishing.
 - 1. Predrill for fasteners using timber connectors as templates.
 - 2. Finish exposed surfaces to remove planing or surfacing marks and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.

3. Coat cross cuts with end sealer.
 4. Where preservative-treated members must be cut during erection, apply a field-treatment preservative to comply with AWPA M4.
 - a. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.
 - b. Use copper naphthenate treatment for members in contact with the ground or not continuously protected from liquid water.
- E. Install timber connectors as indicated.
1. Unless otherwise indicated, install bolts with same orientation within each connection and in similar connections.
 2. Install bolts with orientation as indicated or, if not indicated, as directed by Architect.

Insert specific erection tolerances and procedures here to suit Project.

3.3 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged structural glued-laminated timber if repairs are not approved by Architect.

3.4 PROTECTION

- A. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose, including protection from weather, sunlight, soiling, and damage from work of other trades.
 1. Coordinate wrapping removal with finishing work. Retain wrapping where it can serve as a painting shield.
 2. Slit underside of wrapping to prevent accumulation of moisture inside the wrapping.

END OF SECTION 061800

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Exterior wood, medium-density overlay (MDO) trim.
 - 2. Lumber siding and soffits

- B. Related Requirements:

- 1. Section 061000 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view and for framing exposed to view.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

- 1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
 - 2. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
 - 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.
 - 4. Include copies of warranties from chemical-treatment manufacturers for each type of treatment.

- B. Samples for Initial Selection: For each type of product involving selection of colors, profiles, or textures.

- C. Samples for Verification:

1. For each species and cut of lumber and panel products, with 1/2 of exposed surface finished; 50 sq. in. for lumber and 8 by 10 inches for panels.

1.4 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.
2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

C. Sample Warranties: For manufacturer's warranties.

1.5 QUALITY ASSURANCE

- ##### A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

- ##### A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

1.7 FIELD CONDITIONS

- ##### A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.

1. For exterior ornamental wood columns, comply with manufacturer's written instructions and warranty requirements.

- ##### B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. MDO Trim: Exterior Grade B-B, MDO plywood.

2.2 LUMBER SIDING

- A. Provide kiln-dried lumber siding complying with DOC PS 20.
- B. Species and Grade: Clear All Heart VG Ipe wood Rainscreen Siding and Soffit Boards
- C. Pattern: 5/4 x 4 Shiplap siding.

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
 - 1. For Ipe, provide stainless-steel fasteners. Use concealed stainless steel rain screen fasteners.
- B. Wood shall be finished with Cabot Australian Timber Oil. Finish shall be applied to all sides of wood material prior to installation. Seal all cut edges with same finish.

2.4 FABRICATION

- A. Back out or kerf backs of standing and running trim wider than 5 inches (125 mm), except members with ends exposed in finished work.
- B. Ease edges of lumber less than 1 inch (25 mm) in nominal thickness to 1/16-inch (1.5-mm) radius and edges of lumber 1 inch (25 mm) or more in nominal thickness to 1/8-inch (3-mm) radius.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Seal lumber and moldings to be including all faces and edges,. Cut to required lengths and seal ends.

3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
 - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
 - 1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 - 2. Install to tolerance of 1/8 inch in 96 inches or level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
 - 3. Install stairs with no more than 3/16-inch variation between adjacent treads and risers and with no more than 3/8-inch variation between largest and smallest treads and risers within each flight.
 - 4. Coordinate exterior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 SIDING INSTALLATION

- A. Install siding to comply with manufacturer's written instructions.
- B. Horizontal Lumber Siding: Apply starter strip along bottom edge of sheathing or sill. Install first course of siding with lower edge at least 1/8 inch below starter strip and subsequent courses lapped 1 inch over course below. Nail at each stud. Do not allow nails to penetrate more than one thickness of siding.
 - 1. Leave 1/8-inch (3-mm) gap at trim and corners unless otherwise recommended by manufacturer, and apply sealant.
 - 2. Butt joints only over framing or blocking, nailing top and bottom on each side and staggering joints in subsequent courses.
 - 3. Install prefabricated outside corners as recommended by manufacturer of siding materials.
- C. Flashing: Install metal flashing as indicated on Drawings and as recommended by siding manufacturer.

- D. Finish: Apply finish within two weeks of installation and prior to installation. Finish shall be applied in accordance with the manufacturer's instructions.

3.5 CLEANING

- A. Clean exterior finish carpentry on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.6 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

INTENTIONALLY OMITTED

SECTION 071113 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cold-applied, emulsified-asphalt dampproofing.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for bituminous vapor retarders under slabs-on-grade.
 - 2. Section 042000 "Unit Masonry" for mortar parge coat on masonry surfaces.

1.3 ACTION SUBMITTALS

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

1.4 FIELD CONDITIONS

- A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.
- B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide protection course and auxiliary materials recommended in writing by manufacturer of primary materials.

2.2 PERFORMANCE REQUIREMENTS

- A. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction unless otherwise indicated.

2.3 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. BASF Corporation.
 - 2. Euclid Chemical Company (The); an RPM company.
 - 3. Henry Company.
 - 4. W.R. Meadows, Inc.
- B. Trowel Coats: ASTM D1227, Type II, Class 1.
- C. Fibered Brush and Spray Coats: ASTM D1227, Type II, Class 1.
- D. Brush and Spray Coats: ASTM D1227, Type III, Class 1.

2.4 AUXILIARY MATERIALS

- A. Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.
- B. Emulsified-Asphalt Primer: ASTM D1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.
- C. Asphalt-Coated Glass Fabric: ASTM D1668/D1668M, Type I.
- D. Patching Compound: Epoxy or latex-modified repair mortar of type recommended in writing by dampproofing manufacturer.
- E. Protection Course: Extruded-polystyrene board insulation, unfaced, ASTM C578, Type X, 1/2 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for surface smoothness, maximum surface moisture content, and other conditions affecting performance of the Work.
- B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for dampproofing application.
- B. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.
- C. Clean substrates of projections and substances detrimental to dampproofing work; fill voids, seal joints, and remove bond breakers if any.
- D. Apply patching compound to patch and fill tie holes, honeycombs, reveals, and other imperfections.

3.3 APPLICATION, GENERAL

- A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless otherwise indicated.
 - 1. Apply dampproofing to provide continuous plane of protection.
 - 2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.
- B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches over outside face of footing.
 - 1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.
 - 2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where indicated as "reinforced," by embedding an 8-inch-wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.

3.4 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Concrete Foundations[and Parged Masonry Foundation Walls]: Apply [two brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat] [one fibered brush or spray coat at not less than 3 gal./100 sq. ft.] [or] [one trowel coat at not less than 4 gal./100 sq. ft.].
- B. Unparged Masonry Foundation Walls: Apply primer and one trowel coat at not less than 5 gal./100 sq. ft.

3.5 PROTECTION COURSE INSTALLATION

- A. Install protection course over completed-and-cured dampproofing. Comply with dampproofing-material and protection-course manufacturers' written instructions for attaching protection course.
 - 1. Support protection course over cured coating with spot application of adhesive type recommended in writing by protection-board manufacturer.
 - 2. Install protection course on same day of dampproofing installation (while coating is tacky) to ensure adhesion.

3.6 PROTECTION

- A. Protect installed insulation drainage panels from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where panels are subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- B. Correct dampproofing that does not comply with requirements; repair substrates, and reapply dampproofing.

END OF SECTION 071113

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Foam-plastic board insulation.
2. Glass-fiber blanket insulation.
3. Polyisocyanurate foam-plastic board insulation.

- B. Related Sections:

1. Section 042000 "Unit Masonry" for insulation installed in cavity walls and masonry cells.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- B. Research/Evaluation Reports: For foam-plastic insulation, from ICC-ES

1.5 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with

manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
2. Type IV, 25 psi (173 kPa).

2.2 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:

1. CertainTeed Corporation.
2. Guardian Building Products, Inc.
3. Johns Manville.
4. Knauf Insulation.
5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

2.3 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

- A. Polyisocyanurate Board Insulation, Glass-Fiber-Mat Faced: ASTM C1289, glass-fiber-mat faced, Type II, Class 2.
 - 1. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 - 2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.4 INSULATION FASTENERS

- A. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.
 - 1. Products: Subject to compliance with requirements, provide one of the following, or an approved equivalent:
 - a. AGM Industries, Inc.; TACTOO Adhesive.
 - b. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

- A. On vertical surfaces, set insulation units loosely laid according to manufacturer's written instructions.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
 - 1. If not otherwise indicated, extend insulation a minimum of 48 inches in from exterior walls.

3.4 INSTALLATION OF CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (610 mm) O.C. both ways on inside face, and as recommended by manufacturer. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.
 - 1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 "Unit Masonry."

3.5 PROTECTION

- A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072726 – NON PERMEABLE FLUID APPLIED AIR BARRIERS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.
- B. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

1.02 DESCRIPTION

- A. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
 - 1. Connections of the walls to the roof air barrier.
 - 2. Connections of the walls to the foundations.
 - 3. Openings and penetrations of window and door frames, store front, curtain wall.
 - 4. Piping, conduit, duct and similar penetrations.
 - 5. Masonry ties, screws, bolts and similar penetrations.
 - 6. All other air leakage pathways in the building envelope.
- B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.
- C. Materials and installation methods of through-wall flashing membranes.

1.03 RELATED SECTIONS

- A. Unit Masonry Section 04 20 00
- B. Standing Seam Metal Roof Panels Section 07 41 13.16

1.04 REFERENCES

- A. The following standards are applicable to this section:
 - 1. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
 - 2. ASTM E283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - 3. E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.
 - 4. ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

5. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
6. ASTM E96: Water Vapor Transmission of Materials.
7. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.

1.05 SUBMITTALS

- A. Submit documentation from an approved independent testing laboratory certifying the air leakage and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.
 1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.
- B. Submit copies of manufacturers' current ISO certification.
- C. Submit manufacturers' current product data sheets for the air barrier membrane system

1.06 QUALITY ASSURANCE

- A. Submit document stating the applicator of the primary air/vapor barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.
- B. Perform Work in accordance with manufacturer's written instructions and this specification.
- C. Maintain one copy of manufacturer's written instructions on site.
- D. Allow access to Work site by the air barrier membrane manufacturer's representative.
- E. Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.
- F. Single-Source Responsibility:
 1. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
 2. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.07 MOCK-UP

- A. Provide mock-up of air/vapor barrier materials under provisions of Section 01 33 30 - Shop Drawings, Product Data and Samples.
- B. Allow 48 hours for inspection of mock-up by architect before proceeding with air barrier work. Mock-up may remain as part of the Work.

1.08 PRE-INSTALLATION CONFERENCE

- A. Contractor shall convene one week prior to commencing Work of this section, under provisions of Section 01 31 00 – Project Meetings.

- B. Ensure all contractors responsible for creating a continuous plane of air tightness are present.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Refer to current Product MSDS for proper storage and handling.
- B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- C. Store roll materials on end in original packaging. Protect rolls from direct sunlight until ready for use.
- D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.
- E. Keep solvent away from open flame or excessive heat.
- F. Wasted Management and Disposal.
 - 1. Separate and recycle waste materials in accordance with Section 01355 - Waste Management and Disposal, and with the Waste Reduction Work Plan.

1.10 COORDINATION

- A. Ensure continuity of the air seal throughout the scope of this section.

1.11 ALTERNATES

- A. Submit request for alternates in accordance with Section 01 25 00 – Substitution Procedures.
- B. Submit requests for alternates a minimum of ten (10) working days prior to bid date.
- C. Alternate submission to include:
 - 1. Evidence that alternate materials meet or exceed performance characteristics of Product requirements as well as documentation from an approved independent testing laboratory certifying the air leakage rates and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.
 - 2. Copies of the manufacturer's current ISO certification.
 - 3. Ten (10) references clearly indicating the membrane manufacturer has successfully completed projects of similar scope and nature for a minimum of ten (10) years.
 - 4. Manufacturer's complete set of details for air barrier membrane system showing a continuous plane of air tightness throughout the building envelope.
- D. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to bid date shall not be permitted for use on this project.

1.12 WARRANTY

- A. Provide manufacturer's standard 10-year material warranty.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Air/vapor barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
1. Basis of design: Henry Company.
999 N Sepulveda Blvd, Suite 800
El Segundo, CA 90245
(800) 598-7663
www.Henry.com
 2. BASF
 3. Hohmann and Barhard

2.02 MEMBRANES (Basis-of-Design)

- A. Primary trowel applied liquid air/vapor barrier membrane shall be Air-Bloc 21,[21 FR] manufactured by Henry; a synthetic trowel grade rubber based adhesive, compatibility with substrates, transition membranes and insulation. Membrane shall have the following physical properties:
1. Meets the air leakage requirements of the Massachusetts Commercial Energy Code (780 CMR, Ch. 13) Energy Conservation Requirements for the Building Envelope.
 2. Air permeability: 0.0026 CFM/ft²@ 1.6 lbs/ft² to ASTM E2178 and ASTM E283 and have no increased air leakage when subjected to a sustained wind load of 10.5 lbs/ft² for 1 hour and gust wind load pressure of 62.8 lbs/ft² for 10 seconds when tested at 1.6 lbs/ft² to ASTM E331,
 3. Water vapor permeance: 0.03 perms to ASTM E96,
 4. Nominal wet film thickness: 120 mils,
 5. Meets CAN/CGSB-51-33 Type I Water Vapor Permeance requirements
 6. Long Term Flexible: CGSB 71-GP-24M,
 7. Chemical resistance: Mild acids, alkalis and salt
- B. Self-Adhered transition membrane as recommended by manufacturer shall be a SBS modified bitumen, self-adhering sheet membrane complete with a blue engineered thermoplastic film. Membrane shall have the following physical properties:
1. Air leakage: <0.0001 CFM/ft² @1.6 lbs/ft² to ASTM E2178,
 2. Vapor permeance: 0.03 perms to ASTM E96 (Desiccant Method),
 3. Membrane Thickness: 0.0394 inches (40 mils),
 4. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M

2.03 PRIMER

- A. Primer for self-adhering membranes at temperatures above 25 degrees F shall be a polymer emulsion based adhesive, quick setting. Primer shall have the following physical properties:

1. Color: Aqua,
 2. Weight: 8.7 lbs/gal,
 3. Solids by weight: 53%,
 4. Water based, no solvent odors,
 5. Drying time (initial set): 30 minutes at 50% RH and 70 degrees F
- B. Adhesive for self-adhering membranes at all temperatures shall be a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
 2. Weight: 6 lbs/gal,
 3. Solids by weight: 35%,
 4. Drying time (initial set): 30 minutes.
- C. Adhesive with low VOC content for self-adhering membranes at all temperatures shall be a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
 2. VOC: <240 g/L,
 3. Solids by weight: 40%,
 4. Drying time (initial set): 30 minutes

2.04 PENETRATION AND TERMINATION SEALANT

- A. Termination Sealant shall be a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,
 2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
 3. Complies with ASTM C 920, Type S, Grade NS, Class 25,
 4. Elongation: 450 – 550%,
 5. Remains flexible with aging,
 6. Seals construction joints up to 1 inch wide

2.05 INSULATION ADHESIVE

- A. Insulation adhesive shall be Air-Bloc 21 Insulation Adhesive manufactured by Henry; a synthetic, trowel applied, rubber based adhesive, having the following physical properties:
1. Compatibility: With air barrier membrane, substrate and insulation
 2. Air leakage: 0.0026 CFM/ft² @ 1.6 lbs/ft² to ASTM E283
 3. Water vapor permeance: 0.03 perms to ASTM E96
 4. Long term flexibility: CGSB 71-GP-24M

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify architect in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.
- B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
- C. Where curing compounds are used they must be clear resin based without oil, wax or pigments.
- D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.
- E. Condition materials to room temperature prior to application to facilitate handling.

3.02 SURFACE PREPARATION

- A. Synthetic trowel grade rubber based air/vapor barrier membrane: new concrete should be cured for a minimum of 14 days and must be dry before air barrier membranes are applied.
- B. Ensure all preparatory Work is complete prior to applying primary air/vapor barrier membrane.
- C. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

3.03 INSTALLTION OF AIR VAPOR BARRIER SYSTEM

A. JOINT TREATMENT

- 1. Seal joints between panels of exterior grade gypsum, gypsum sheathing, plywood, OSB or cementitious panels with a strip of self-adhered air/vapor transition membrane lapped a minimum of 1 1/2 inches on both sides of the joint.
 - a. Prime surfaces as per manufacturers' instructions and allow to dry.
 - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
 - c. Roll all laps and membrane with a counter top roller to ensure seal.
- 2. Alternately, joints not exceeding 1/8 inch can be sealed with yellow open weave glass fabric.
 - a. Apply yellow open weave glass fabric centered over joint followed by a 1/8 inch (120mils) thick trowel application of air/vapor barrier membrane.
 - b. Allow to dry prior to application of primary air/vapor barrier membrane.

B. INSIDE AND OUTSIDE CORNERS

- 1. Seal inside and outside corners of sheathing boards with a strip of self-adhering air/vapor transition membrane extending a minimum of 3 inches on either side of the corner detail.

- a. Prime surfaces as per manufacturers' instructions and allow to dry.
- b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
- c. Roll all laps and membrane with a counter top roller to ensure seal.

C. CRACK TREATMENT – MASONRY AND CONCRETE

- 1. Seal cracks over 1/16 inches in masonry and concrete with a strip of self-adhering transition membrane lapped a minimum of 1 1/2 inches on both sides of the crack.
 - a. Prime surfaces as per manufacturers' instructions and allow to dry.
 - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
 - c. Roll all laps and membrane with a counter top roller to ensure seal.
- 2. Alternately, static cracks 1/16 inch to 1/8 inch can be sealed with primary air/vapor barrier membrane.
 - a. Fill crack with primary air barrier membrane.
 - b. Allow to dry prior to application of primary air/vapor barrier membrane.

E. TRANSITION AREAS

- 1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhered air/vapor barrier transition membrane.
 - a. Prime surfaces as per manufacturers' instructions and allow to dry.
 - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
 - c. Ensure minimum 2 inch overlap at all end and side laps of membrane.
 - d. Roll all laps and membrane with a counter top roller to ensure seal.

F. WINDOWS AND ROUGH OPENINGS

- 1. Wrap rough openings with self-adhered membrane as detailed.
 - a. Prime surfaces as per manufacturers' instructions and allow to dry.
 - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
 - c. Roll all laps and membrane with a counter top roller to ensure seal.

G. THROUGH-WALL FLASHING MEMBRANE

1. Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.
 - a. Prime surfaces and allow to dry, press membrane firmly into place, overlap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
 - b. Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the back-up wall.
 - c. Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.
 - d. Install through-wall flashing membrane and extend 1/2 inch from outside edge of veneer. Provide end dam flashing as detailed.

H. PRIMARY AIR/VAPOR BARRIER

1. Apply by flat trowel or spray a complete and continuous unbroken film of liquid air/vapor and rain barrier membrane.
 - a. For trowel applied membranes apply one component elastomeric air/vapor barrier membrane at a rate of 13.5 sq.ft/gallon to a uniform wet film thickness of 120 mils.
 - b. For spray applied membranes apply one component elastomeric air/vapor barrier membrane at a rate of 18.6 sq.ft/gallon to 19 sq.ft/gallon to a uniform wet thickness of 85 mils to 90 mils.
2. Spray apply or trowel around all projections and penetrations ensuring a complete and continuous air barrier membrane.

3.04 INSTALLATION OF INSULATION

- A. Coordinate with Cavity Wall Insulation Section 042000 for insulating materials.
- B. Apply insulation adhesive in a serpentine pattern over the air barrier membrane.
 1. Dab Method: Apply walnut-sized dabs of insulation adhesive spaced 6 inches on center to substrate. Apply insulation using sufficient hand pressure to compress dabs up to 2 inches in diameter.
 2. Bead Method: Apply ¼ inch beads 6 inches on center in a serpentine pattern.
- C. Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.

3.05 FIELD QUALITY CONTROL

- A. Make notification when sections of Work are complete to allow review of air/vapor barrier system and insulation layer.

3.06 PROTECTION

- A. Damp substrates must not be inhibited from drying out. Do not expose the back-side of the substrate to moisture or rain.

- B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity. Protect air barrier Work against wet weather conditions for a minimum of 24 hours.
- C. Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible.

END OF SECTION 072726

INTENTIONALLY OMITTED

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Standing-seam metal roof panels.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review structural loading limitations of deck during and after roofing.
 - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 8. Review temporary protection requirements for metal panel systems during and after installation.
 - 9. Review procedures for repair of metal panels damaged after installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

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

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:
 1. Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
 2. Three-year, aged Solar Reflectance Index of not less than 64 when calculated according to ASTM E1980.
- B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: As indicated on Drawings.
 3. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- C. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:
 1. Test-Pressure Difference: 6.24 lbf/sq. ft.
- D. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
 1. Test-Pressure Difference: 6.24 lbf/sq. ft.'
- E. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E2140.
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 1. Uplift Rating: UL 90.
- G. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A90.
2. Hail Resistance: SH.

H. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces>.

2.2 STANDING-SEAM METAL ROOF PANELS

A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and [intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

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

- a. CENTRIA Architectural Systems.
- b. Englert, Inc.
- c. Fabral.
- d. MBCI.
- e. McElroy Metal, Inc.
- f. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

- a. Nominal Thickness: 0.022 inch.
- b. Exterior Finish: Two-coat fluoropolymer.
- c. Color: As selected by Architect from manufacturer's full range.

3. Clips: One-piece fixed] to accommodate thermal movement.

- a. Material: 0.028-inch nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
4. Joint Type: As standard with manufacturer.
5. Panel Coverage: 16 inches.
6. Panel Height: 1.5 inches .

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
 3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Carlisle WIP Products; a brand of Carlisle Construction Materials.
 - b. GCP Applied Technologies Inc.
 - c. Henry Company.
 - d. Owens Corning.

2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match roof fascia and rake trim.
- E. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot-long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- F. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

2.5 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 - 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 - 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF UNDERLAYMENT

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.
 - 1. Apply over the entire roof surface.

3.4 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless

otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
4. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Provide elbows at base of downspouts to direct water away from building.
 2. Connect downspouts to underground drainage system indicated.
- J. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113.16

SECTION 07 9200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Nonstaining silicone joint sealants.
 - 3. Urethane joint sealants.
 - 4. Mildew-resistant joint sealants.
 - 5. Latex joint sealants.
- B. Related Requirements:

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product. For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

- E. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.
- F. Laboratory Test Reports for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.
- C. Field-Adhesion-Test Reports: For each sealant application tested.
- D. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.7 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Final Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:
 - 1. Architectural sealants shall have a VOC content of 250 g/L or less.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.
 - 1. Sealant materials exposed to view shall match colors of adjacent surfaces.
 - 2. Manufacturer's standard colors may be used, providing color match can be attained. If manufacturer's standard color do not achieve suitable color match, provide custom blended colors.
 - 3. Architect/ Interior Designer shall make final color selection or determination.

2.2 SILICONE SEALANT

- A. Silicone Sealant: One-part, moisture curing, non-sag, low-modulus, silicone.
 - 1. Specification Compliance:
 - a. ASTM C920, Type S, Grade NS, Class 25
 - b. FS TT-S-001543A
 - c. FS TT-S-00230C
 - 2. Joint Movement Capability: ASTM C719
 - a. 100% max. total joint movement ($\pm 50\%$ joint movement)
 - 3. Joint Dimensions:

- a. Width: 1" maximum
 - b. Depth: 1/4" minimum; 3/8" maximum
4. Typical Applications: Exterior vertical and non-traffic horizontal surfaces
5. Provide one of the following products, or an approved equivalent:
- a. Dow-Corning - 790 Silicone Building Sealant
 - b. Dow-Corning - 795 Silicone Building Sealant
 - c. GE - SilPruf NB SCS9000
 - d. Pecora - 864
 - e. Tremco - Spectrem 1
 - f. Tremco - Spectrem 3

2.3. POLYURETHANE SEALANT.

A. Polyurethane Sealant: Two-part, cold applied, self-leveling

- 1. Specification Compliance:
 - a. ASTM C920, Type M, Class A, Grade P, Class 25, Use T
 - b. FS TT-S-00227E, Type I and Type II
- 2. Joint Movement Capability: ASTM C719
 - a. 50% max. total joint movement ($\pm 25\%$ joint movement)
- 3. Joint Dimensions:
 - a. Width: No limitation
 - b. Depth: 1/4" minimum; 1/2" maximum
- 5. Typical Applications: Exterior and interior horizontal and sloped traffic surfaces
- 6. Provide one of the following products or an approved equivalent:
 - a. Pecora - Urexpan NR-200
 - b. Sonneborn - SL2
 - c. Tremco - THC-900/901
 - d. Vulkem - 245

2.4. ACRYLIC SEALANT

A. Acrylic Sealant: One-part, acrylic latex; non-staining, non-bleeding, and paintable

- 1. Specification Compliance: ASTM C834
- 2. Joint Dimensions:
 - a. Width: 3/4" maximum
 - b. Depth: 1/4" minimum; 3/8" maximum

3. Typical Applications: Interior vertical and non-traffic horizontal surfaces
4. Provide one of the following products or an approved equivalent:
 - a. Pecora - AC-20
 - b. Sonneborn - Sonolac
 - c. Tremco - Tremflex 834

2.5. SANITARY SEALANTS

A. Sanitary Sealants: One-part, fungicidal, silicone rubber sealant

1. Specification Compliance:
 - a. ASTM C920, Type S, Grade NS, Class 25
 - b. FS TT-S-00230C
 - c. FS TT-S-001543C
2. Typical Applications: At plumbing fixtures, lavatory counters, and countertops
3. Provide one of the following products, or an approved equivalent:
 - a. Dow-Corning - 786
 - b. GE- 1700
 - c. Pecora - 898
 - d. Tremco - Tremsil 200

2.2 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C closed-cell material with a surface skin, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances

capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

- a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

- 1. Joint Locations:

- a. Construction joints in cast-in-place concrete.
- b. Control and expansion joints in unit masonry.
- c. Joints between metal panels.
- d. Joints between different materials listed above.
- e. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
- f. Control and expansion joints in ceilings and other overhead surfaces.
- g. Other joints as indicated on Drawings.

- 2. Joint Sealant: Polyurethane Sealant: Two-part, cold applied, self-leveling. Refer to Paragraph 2.3 above.

- 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

- 1. Joint Locations:

- a. Control and expansion joints on exposed interior surfaces of exterior walls.
- b. Tile control and expansion joints.
- c. Vertical joints on exposed surfaces of unit masonry, concrete, walls, and partitions.
- d. Other joints as indicated on Drawings.

1. Joint Sealant: Polyurethane Sealant: Two-part, cold applied, self-leveling. Refer to Paragraph 2.3 above.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Acrylic Sealant: One-part, acrylic latex; non-staining, non-bleeding, and paintable. Refer to Paragraph 2.4 above.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: One-part, fungicidal, silicone rubber sealant. Refer to paragraph 2.5 above.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 3.8 Separate and recycle waste materials to maximum extent economically feasible in compliance with Waste Management Plan for LEED Credit MR 2.1 and MR 2.2; refer to Section 01 7419, Construction Waste Management and Disposal.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes hollow-metal work.
- B. Related Requirements:
 - 1. Section 087100 "Door Hardware for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.

2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, joints, field splices, and connections.
 7. Details of accessories.
 8. Details of moldings, removable stops, and glazing.
 9. Details of conduit and preparations for power, signal, and control systems.
- C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.
- B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:
 1. Ceco Door Products; an Assa Abloy Group company.
 2. Curries Company; an Assa Abloy Group company.
 3. Mesker Door Inc.

4. Republic Doors and Frames.
5. Steelcraft; an Ingersoll-Rand company.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3.

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:

- a. Type: As indicated in the Door and Frame Schedule.
- b. Thickness: 1-3/4 inches (44.5 mm.)
- c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
- d. Edge Construction: Model 1, Full Flush.
- e. Core: Manufacturer's standard polyisocyanurate, or vertical steel-stiffener core at manufacturer's discretion.
- f. Core: Polyisocyanurate with vertical steel stiffener.

- 1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than R-11 when tested according to ASTM C 1363.

3. Frames:

- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
- b. Construction: Full profile welded.

4. Exposed Finish: Prime.

2.3 HOLLOW-METAL PANELS

A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less

than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
 - 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- I. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 2. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
 3. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
 4. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
 5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
 - 1) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.

6. Head Anchors: Two anchors per head for frames more than 42 inches (1067 mm) wide and mounted in metal-stud partitions.
 7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
 8. Terminated Stops: Terminate stops 6 inches above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

2.7 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.8 ACCESSORIES

- A. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 7. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
 8. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch
 - b. At Bottom of Door: 5/8 inch
 - c. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- E. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

- F. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

INTENTIONALLY OMITTED

SECTION 08 45 13 Structured Polycarbonate Panel Assemblies

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Translucent daylighting system.

1.2 REFERENCES

- A. ASTM D 635 - Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- B. ASTM D 1929 – Ignition Temperature of Plastics.
- C. ASTM D 2843 – Density of Smoke.
- D. ASTM E 84 - Surface Burning Characteristics of Building Materials.

1.3 DESIGN REQUIREMENTS

- A. Basic Wind Speed: 90 mph
- B. Exposure Category: designed to required category
- C. Maximum Allowable Deflection of Structural Members: Maximum of L/120 of clear span.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including materials, components, fabrication, finish, and installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating dimensions, tolerances, profiles, anchorage, connections, fasteners, hardware, provisions for expansion and contraction, drainage, aluminum flashing, finish, and attachments to supports of glazing, framing, and options.
- D. Samples: Submit manufacturer's samples for each glazing type, framing system, finish, and color specified.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Manufacturer's Project References: Submit list of completed projects including project name and location, name of architect, and type of daylighting manufactured.

G. Warranty: Submit manufacturer's standard warranty.

H. Testing Reports: Submit manufacturer's test reports.

- a. Fire tests.
- b. Air infiltration test.
- c. Water penetration test.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Continuously engaged in translucent insulated daylighting manufacturing with a minimum of 10 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Responsible for all components, including structural design.

B. Installer's Qualifications:

1. Authorized by manufacturer to install translucent glazing products.
2. Trained by manufacturer's standard training methods and policies.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and location of installation.

B. Storage:

1. Store materials in a clean, dry area indoors in accordance with manufacturer's instructions.
2. Keep temporary protective liners in place.
3. Do not expose panels to direct sunlight for extended periods.

1.7 WARRANTY

A. Warranty Period: Ten years on weatherization starting on date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Duo-Gard Industries Inc. Basis of Design

2.2 GLAZING

A. Product: Series 3000 Base plate, pressure plate and cap system glazed with polycarbonate structured sheet. Glass fiber reinforced thermoset resin (fiberglass)

faces are not acceptable.

- B. Panel Thickness: 16 mm.
- C. Profile: triple wall
- D. Color: manufacturer's standard – Opal
- E. U-Value, ASTM C 236: 0.40 (triple-wall)
- F. Light Transmission, ASTM D 1003:
triple wall configuration - 74 percent (clear)
- G. Fire Tests:
 - 1. Flame Spread, ASTM E 84: Class A.
 - 2. Smoke Density, ASTM E 84: Class A.
 - 3. Smoke Developed, ASTM D 635: CC1.
 - 4. Ignition Temperature, ASTM D1929.
 - 5. Density of smoke, ASTM D 2843.

2.3 STRUCTURAL FRAMING SYSTEM

- A. Framing System: Series 3000 BPC System.
 - 1. Alloy: 6063 T5.
- B. Combined Maximum Deflection: 1 inch.
- C. Provide additional aluminum structure where and if required.
- D. Glazing system required to span maximum 8 feet (vertical) without additional support.
- E. Air infiltration, ASTM E 283-1999: Leakage not to exceed 0.04 when tested at 1.57 psf and not to exceed 0.07 when tested at 6.24 psf.
- F. Water penetration, ASTM E 331-2000: No water leakage at 30 psf.
- G. Direct contact between polycarbonate system components is not acceptable including but not limited to polycarbonate battens.
- H. Framing system must allow polycarbonate panel to 'float' in the channel to accommodate for expansion and contraction.

2.4 MATERIALS

- A. Glazing Panel:
 - 1. Panel: Polycarbonate structured sheet.
 - 2. UV Stabilization: Coextruded into panel, not coated.
 - 3. Resist Yellowing: Maximum 10 delta for a minimum of 10 years.

4. Appearance: Uniform in color.
5. Expansion and Contraction: Design and install components with provisions based on temperature variations for specified geographic location.
6. Gaskets and Dry Seals: EPDM.
7. Produced: USA certificate of origin required. Panels produced outside of USA will not be allowed.

B. Joint Sealant:

1. Factory-Applied Sealant: Gunnable, nonhardening, elastomeric sealant. ASTM C 920, Type S, Class 12, Grade NS. Fed Spec TT-S-1657, Type 1.n.
2. Field-Applied Sealant: Approved by translucent insulated daylighting manufacturer. As specified elsewhere in specifications.

C. Field Fasteners:

1. Comply with translucent insulated daylighting manufacturer's instructions for fastener types, quantities, and usage.
2. Cadmium-plated or better. Prevent oxidation or electrolytic interaction with framing.
3. Aluminum-to-Aluminum Connections: Self-drilling screws, size and length as determined by manufacturer.

2.5 COLOR AND FINISH

A. Panel Color:

1. Manufacturer's standard – clear,

B. Aluminum Finish:

1. Manufacturer's standard - clear anodized.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive translucent insulated daylighting. Notify Architect of conditions that would adversely affect installation or subsequent utilization of daylighting. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Ensure supports to receive translucent insulated daylighting are clean, flat, level, plumb, square, accurately aligned, and correctly located.

3.3 INSTALLATION

- A. Install translucent insulated daylighting in accordance with manufacturer's instructions at locations indicated on the drawings.

- B. Install daylighting level, plumb, square, accurately aligned, correctly located, and without warp.
- C. Anchor daylighting securely in place to supports. Use attachment methods permitting adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.
- D. Install daylighting including aluminum flashing, fasteners, hardware, gaskets, joint sealants, and glazing materials required for a complete, weathertight installation.
- E. Sheet Metal Flashing: Install sheet metal flashing as specified elsewhere in specifications.
- F. Joint Sealants: Install joint sealants as specified elsewhere in specifications.
- G. Repair minor damages to metal finish or glazing in accordance with manufacturer's instructions and as approved by Architect. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. Clean translucent insulated daylighting in accordance with manufacturer's instructions.
- B. Clean inside and outside of daylighting immediately after installation and after joint sealants have cured.
- C. Remove temporary protective liners at time of installation (interior) and after installation is complete (exterior).
- D. Remove excess joint sealant in accordance with sealant manufacturer's instructions.
- E. Do not use harsh cleaning materials or methods that would damage metal finish or glazing.

3.5 PROTECTION

- A. Protect installed translucent insulated daylighting from damage during construction.
- B. Remove and replace damaged daylighting components as determined by Architect.

END OF SECTION 084513

INTENTIONALLY OMITTED

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section “Hollow Metal Doors and Frames”.
 - 2. Division 28 Section “Access Control”.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

- b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
- 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
 - F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
 - G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
 - H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
 - B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Twenty five years for manual surface door closer bodies.

3. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 1. Manufacturers:
 - a. Markar Products (MR).
 - b. Pemko Products (PE).
 - c. Select Products (SE).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Manufacturers:
 - a. Architectural Builders Hardware (AH) - PT1000-EZ Series.
 - b. Pemko Products (PE) - EL-CEPT Series.
 - c. Securitron (SU) - EL-CEPT Series.
- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products (MK) - Connector Hand Tool: QC-R003.
 2. Manufacturers:
 - a. McKinney Products (MK) - QC-C Series.

2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
1. Manufacturers:
 - a. Corbin Russwin Hardware (RU).
 - b. Sargent Manufacturing (SA).
 - c. Schlage (SC).
- C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Mortise cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 3. Keyway: Manufacturers High Security Keyway.
- D. High Security Cylinders: ANSI/BHMA A156.5, Grade 1, patterned high security cylinders and keys able to be used together under the same facility master or grandmaster key system. Provide UL437 certified high security cylinders, employing a patterned locking mechanism requiring the use of a patterned key and pick resistance; cylinders are to be factory keyed.
1. Manufacturers:
 - a. Corbin Russwin (RU) - Pyramid PHS Series.
 - b. Sargent Manufacturing (SA) - Signature UL Series.
 - c. Schlage Lock (SC) - UL-Primus Everest
- E. Keying System: Each type of lock and cylinders to be factory keyed.
1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. New System: Key locks to a new key system as directed by the Owner.
- F. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Three (3) each.
 2. Master Keys (per Master Key Level/Group): Five (5) each.
 3. Construction Keys: Ten (10) each.
- G. Construction Keying: Provide construction master keyed cylinders.
- H. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML2000 Series.
 - b. Sargent Manufacturing (SA) - 8200 Series.
 - c. Schlage (SC) - L9000 Series.

2.6 ELECTROMECHANICAL LOCKING DEVICES

- A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
 - 1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.
 - 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML20900 Series.
 - b. Sargent Manufacturing (SA) - 8200 Series.
 - c. Schlage (SC) - L9000 EL/EU/RX Series.

2.7 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.

2.8 ELECTROMAGNETIC LOCKING DEVICES

- A. Surface Electromechanical Magnetic Locks (Ultra High Security): Electromechanical magnetic locks to be surface mounted type with minimum holding force strength of 4,000 pounds. Locks to be capable of either 12 or 24 voltage and be UL listed for use on fire rated door assemblies. Electronics are to be fully sealed against tampering and allow exterior weatherproof applications. As indicated in Hardware Sets, provide specified mounting brackets and housings. Power supply to be by the same manufacturer as the lock with combined products having a lifetime replacement warranty.
 - 1. Manufacturers:
 - a. Securitron (SU) - MM15 Series.

2.9 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC6000 Series.
 - b. Norton Door Controls (NO) - 7500 Series.
 - c. Sargent Manufacturing (SA) - 351 Series.

2.10 ARCHITECTURAL TRIM

- A. Door Protective Trim
1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products (RO).
 - c. Trimco (TC).

2.11 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Manufacturers:
 - a. Rixson Door Controls (RF).
 - b. Rockwood Products (RO).
 - c. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.13 ELECTRONIC ACCESSORIES

- A. Key Switches: Key switches furnished standard with stainless steel single gang face plate with a 12/24VDC bi-color LED indicator. Integral backing bracket permits integration with any 1 1/4" or 1 1/2" mortise type cylinder. Key switches available as momentary or maintained action and in narrow face plate options.
 - 1. Manufacturers:
 - a. Security Door Controls (SD) - 800 Series.
 - b. Securitron (SU) - MK Series.
- B. Request-to-Exit Motion Sensor: Request-to-Exit Sensors motion detectors specifically designed for detecting exiting through a door from the secure area to a non-secure area. Include built-in timers (up to 60 second adjustable timing), door monitor with sounder alert, internal vertical pointability coverage, 12VDC or 24VDC power and selectable relay trigger with fail safe/fail secure modes.
 - 1. Manufacturers:
 - a. Alarm Controls (AK) - SREX Series.
 - b. Security Door Controls (SD) - MD-31D Series.
 - c. Securitron (SU) - XMS Series.
- C. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O

switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

- a. Security Door Controls (SD) - DPS Series.
- b. Securitron (SU) - DPS Series.

D. Switching Power Supplies: Provide switching power supplies that are dual voltage, UL listed, supervised units. Units shall be field selectable with a dedicated battery charging circuit that provide 4 Amp at 12VDC or 24VDC continuous, with up to 16 independently controlled power limited outputs. Units shall tolerate brownout or overvoltage input \pm 15% of nominal voltage and have thermal shutdown protection with auto restart. Circuit breaker shall protect against overcurrent and reverse battery faults and units shall be available with a single relay fire trigger or individually triggered relayed outputs. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Manufacturers:

- a. Securitron (SU) - AQ Series.

2.14 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.

Set: 1 – Exterior Toilet

Doors: 01, 02, 03

1	Continuous Hinge	MCK-25HD x 83"	Clear	MK
1	Power Transfer	EL-CEPT		SU
1	ElectroLynx Harness	QC-C1500P		MK
	<i>(Install between power transfer and junction box)</i>			
1	Electrified Privacy Set	49 RX 8265 LNL x 24VDC	630	RU
1	ElectroLynx Harness	QC-CXXX x required length		MK
	<i>(Install between power transfer and electrified privacy set)</i>			
1	Latch Protector	321	US32D	RO
1	Closer	DC6210 A13	689	RU
1	Kickplate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Overhead Stop	9-X36 x 90 deg	630	RF
1	Threshold	1715 AK x DOW x MS & ES25		PE
1	Gasketing (Set)	316 AS x DOW x DOH		PE
1	Door Bottom Seal	345 AV x DOW		PE
1	Drip Strip	346 C x DOW + 4"		PE
1	Electromagnetic Lock	MM15 x 24VDC		SU
1	Emergency Push Button	EEB2 x 24VDC		SU
1	Key Switch	MKA		SU
1	Mortise Cylinder	1020-114-A02 x MK	626	RU
1	Power Supply	BPS-24-1		SU
1	Digital Timer	DT-7		SU
1	Battery Back-up	B-24-5		SU
1	Wiring Diagram	WD-SYSPK		RU

Key switch to be used by authorized persons for manual activation and deactivation of the electromagnetic lock

Digital timer to deactivate the electromagnetic lock for normal operation and activate the electromagnetic lock for after hours operation

Request for exit switch in toilet side lever of the electrified privacy set to deactivate the electromagnetic lock and allow for immediate egress at all times

Emergency Push button to act as redundant back-up for release of the electromagnetic lock as required by code

Set: 2 – Exterior Storage

Doors: 04

1 Continuous Hinge	CFM83HD1		PE
1 Storeroom Lockset	ML2059 NSA x PHS x MK	626	RU
1 Latch Protector	321	US32D	RO
1 Closer	DC6210 A13	689	RU
1 Armor Plate	K1050 30" x 2" LDW 4BE CSK	US32D	RO
1 Overhead Holder	9-X26 x 90 deg	652	RF
1 Threshold	1715 AK x DOW x MS & ES25		PE
1 Gasketing (Set)	316 AS x DOW x DOH		PE
1 Door Bottom Seal	345 AV x DOW		PE
1 Drip Strip	346 C x DOW + 4"		PE
1 Door Position Switch	DPS-M-BK		SU

Set: 3 – Gate

Doors: 05

1 Cylinder	"As required" x MK	626	RU
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Balance of hardware furnished by gate manufacturer

END OF SECTION 087100

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SECTION 089516 - WALL VENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes wall vents.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of metal finish required.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain vents from single source from single manufacturer.

2.2 WALL VENTS

- A. Extruded-Aluminum Wall Vents:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:
 - a. Airolite Company, LLC (The).
 - b. Architectural Louvers; Harray, LLC.
 - c. Arrow United Industries; a division of Mestek, Inc.
 - d. Construction Specialties, Inc.
 - e. Greenheck Fan Corporation.
 - f. Reliable Products, Inc.
 - g. Ruskin Company; Tomkins PLC.
 - h. Sunvent Industries; Division of Sylro Sales Corp.
 - 2. Extruded-aluminum louvers and frames, not less than 0.125-inch nominal thickness, assembled by welding; with 18-by-14- mesh, aluminum insect

screening on inside face; incorporating weep holes, continuous drip at sill, and integral waterstop on inside edge of sill; of load-bearing design and construction.

3. Dampers: Aluminum blades and frames mounted on inside of wall vents; operated from exterior with Allen wrench in socket-head cap screw. Fabricate operating mechanism from Type 304 stainless-steel components.
4. Finish: Mill.

2.3 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Aluminum Castings: ASTM B 26/B 26M, Alloy 319.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 FINISHES

- A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 1. Color and Gloss: As selected by Architect from manufacturer's full range

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Locate and place vents level, plumb, and at indicated alignment with adjacent work.
- B. Protect unpainted surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- C. Build vents into masonry work as construction progresses; comply with requirements in Section 042000 "Unit Masonry."
- D. Provide perimeter reveals of uniform width for sealants and joint fillers, where indicated.
- E. Use concealed anchorages.

3.2 ADJUSTING AND CLEANING

- A. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- B. Restore vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

END OF SECTION 089516

INTENTIONALLY OMITTED

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.

1.3 ACTION SUBMITTALS

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

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equivalent:

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. USG Corporation.

- B. Abuse- Moisture and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and fiberglass surfaces.

1. Core: 5/8 inch
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc
2. Shapes:
 - a. Cornerbead.
 - b. Bullnose bead.
 - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - d. L-Bead: L-shaped; exposed long flange receives joint compound.
 - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - f. Expansion (control) joint.
 - g. Curved-Edge Cornerbead: With notched or flexible flanges.

- B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equivalent:

- a. Fry Reglet Corp.
 - b. Gordon, Inc.
 - c. Pittcon Industries.
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
 3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Exterior Gypsum Soffit Board: Paper.
 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Provide joint treatment products for use with mold resistant gypsum board products such as Pro Form XP by National Gypsum or Rapid Set by CTS Cement Manufacturers.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2- inch (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
- B. Moisture- and Mold-Resistant Type: As indicated on Drawings

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.5 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

INTENTIONALLY OMITTED

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Ceramic tile.
 - 2. Crack isolation membrane.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required
 - 2. Full-size units of each type of trim and accessory for each color and finish required.
 - 3. Stone thresholds in 6-inch lengths.
 - 4. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.
- D. Material Test Reports: For each tile-setting and -grouting product.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Crack isolation membrane.

- D. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.

- D. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Tile Type CT-1/ CT-2: Ceramic Tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, or an approved equivalent:
 - 2. Composition: Porcelain.
 - 3. Module Size: 12x24 inches
 - 4. Thickness: 3/8 inch
 - 5. Surface: Slip-resistant, with abrasive admixture.
 - 6. Finish: Mat, opaque
 - 7. Tile Color and Pattern: As indicated on drawings
 - 8. Grout Color: selected by Architect from manufacturer's full range

2.3 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
 - 1. Products: Subject to compliance with requirements, provide one of the following, or an approved equivalent:
 - a. Mapei, Mapelastic CI
 - b. Bostik, Inc.; Durabond D-222 Duraguard Membrane
 - c. C-Cure;CureLastic 949
 - d. Jamo Inc.; Waterproof.
 - e. Mer-Kote Products, Inc.; Fracture-Guard 5000.
 - f. Southern Grouts & Mortars, Inc.; Southcrete 1100 Crack Suppression and Waterproofing.
 - g. TEC; a subsidiary of H. B. Fuller Company; HydraFlex - Waterproofing Crack Isolation Membrane.

- C. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.
1. Products: Subject to compliance with requirements, provide one of the following or an approved equivalent:
 - a. C-Cure; UltraCure 971.
 - b. MAPEI Corporation; Mapelastic (PRP 315).
 - c. TEC; a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.

2.4 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:
 - a. Boiardi Products; a QEP company.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Mer-Kote Products, Inc.
 - j. Southern Grouts & Mortars, Inc.
 - k. Summitville Tiles, Inc.
 - l. TEC; a subsidiary of H. B. Fuller Company.
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

2.5 GROUT MATERIALS

- A. Polymer-Modified Tile Grout: ANSI A118.7.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equivalent:
 - a. Boiardi Products; a QEP company.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.

- g. Laticrete International, Inc.
- h. MAPEI Corporation.
- i. Southern Grouts & Mortars, Inc.
- j. Summitville Tiles, Inc.
- k. TEC; a subsidiary of H. B. Fuller Company.

- 2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.6 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F (49 to 60 deg C) per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.
 - 1. Products: Subject to compliance with requirements, provide one of the following or an approved equivalent:
 - a. Bonsal American; an Oldcastle company; Grout Sealer.
 - b. Bostik, Inc.; CeramaSeal Grout & Tile Sealer
 - c. MAPEI Corporation; KER 003
- E. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- F. Add materials, water, and additives in accurate proportions.
- G. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors composed of tiles 8 by 8 inches or larger.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
 - 1. Jointing Pattern: As indicated on drawings.
- E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Tile: 1/16 inch
- F. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- G. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.5 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove latex-portland cement grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.

- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.
 - 1. Tile Installation F125A: Thin-set mortar on crack isolation membrane; TCA F125A.
 - a. Tile Type: Porcelain.
 - b. Thin-Set Mortar: Latex portland cement mortar.
 - c. Grout: Polymer-modified unsanded grout.

END OF SECTION 093000

INTENTIONALLY OMITTED

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior substrates.
 - 1. Steel.
 - 2. Galvanized metal.
 - 3. Masonry - Brick.
- B. Related Requirements:
 - 1. Section 099123 "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.

- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - 3. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F .
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F .
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following or approved equivalent:
1. Benjamin Moore & Co.
 2. Duron, Inc.
 3. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- D. Colors: As indicated in a color schedule.

2.3 PRIMERS/SEALERS

- A. Primer, Bonding, Water Based: MPI #17.

2.4 METAL PRIMERS

- A. Primer, Galvanized, Water Based: MPI #134.

2.5 WATER-BASED PAINTS

- A. Latex, Exterior Semi-Gloss (Gloss Level 5): MPI #11.

2.6 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Paint entire exposed surface of window frames and sashes.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed to view:
 - a. Equipment, including panelboards and switch gear.
 - b. Uninsulated metal piping.

- c. Uninsulated plastic piping.
- d. Pipe hangers and supports.
- e. Metal conduit.
- f. Plastic conduit.
- g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
 - 1. Water-Based Light Industrial Coating System:
 - a. Prime Coat: Primer, alkyd, anti-corrosive for metal, MPI #79.
 - b. Prime Coat: Shop primer specified in Section where substrate is specified.
 - c. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - d. Topcoat: Light industrial coating, exterior, water based (Gloss Level 3), MPI #161.
 - e. Topcoat: Light industrial coating, exterior, water based, semi-gloss (Gloss Level 5[, MPI #163.

- f. Topcoat: Light industrial coating, exterior, water based, gloss (Gloss Level 6), MPI #164.
- 2. Alkyd System:
 - a. Prime Coat: Primer, alkyd, anticorrosive for metal, MPI #79.
 - b. Prime Coat: Shop primer specified in Section where substrate is specified.
 - c. Intermediate Coat: Exterior alkyd enamel matching topcoat.
 - d. Topcoat: Alkyd, exterior, semi-gloss (Gloss Level 5), MPI #94.
- B. Galvanized-Metal Substrates:
 - 1. Latex System:
 - a. Prime Coat: Primer, galvanized, water based, MPI #134.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Topcoat: Latex, exterior semi-gloss (Gloss Level 5), MPI #11.
- C. Clay Masonry Substrates:
 - 1. Latex System MPI EXT 4.1A:
 - a. Prime Coat: Latex, exterior, matching topcoat.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

END OF SECTION 099113

INTENTIONALLY OMITTED

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
 - 1. Concrete floors
 - 2. Concrete masonry units (CMU).
 - 3. Metal
 - 4. Gypsum board

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For each type of topcoat product.

- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
 - 3. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following or approved equivalent:

1. Benjamin Moore & Co.
2. Duron, Inc.
3. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:
 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24.)
 1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Dry-Fog Coatings: 400 g/L.
 4. Primers, Sealers, and Undercoaters: 200 g/L.
 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 7. Pretreatment Wash Primers: 420 g/L.
 8. Floor Coatings: 100 g/L.
- D. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Colors: As indicated on drawings

2.3 BLOCK FILLERS

- A. Block Filler, Latex, Interior/Exterior: MPI #4.

2.4 PRIMERS/SEALERS

- A. Primer Sealer, Latex, Interior: MPI #50.

2.5 METAL PRIMERS

- A. Primer, Rust-Inhibitive, Water Based: MPI #107.
- B. Primer, Alkyd, Anti-Corrosive, for Metal:[MPI #79.]
 - 1. Primer, Galvanized, Water Based: MPI #134.

2.6 WATER-BASED PAINTS

- A. Latex, Interior, Flat, (Gloss Level 1): MPI #53.
- B. Latex, Interior, Semi-Gloss, (Gloss Level 5): MPI #54.

2.7 FLOOR COATINGS

- A. Sealer, Water Based, for Concrete Floors: MPI #99.
 - 1. Sealer, Solvent Based, for Concrete Floors: MPI #104.

2.8 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
 2. Masonry (Clay and CMU): 12 percent.
 3. Wood: 15 percent.
 4. Gypsum Board: 12 percent.
 5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
1. SSPC-SP 2, "Hand Tool Cleaning."

2. SSPC-SP 3, "Power Tool Cleaning."
 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove loose surface oxidation.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in occupied spaces (toilet rooms):
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.

- d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. CMU Substrates:
 1. Latex System:
 - a. Block Filler: Block filler, latex, interior/exterior, MPI #4.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, flat, (Gloss Level 1), MPI #53.
- B. Steel Substrates:

1. Latex over Alkyd Primer System:
 - a. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, semi-gloss, Gloss Level 5, MPI #54.

C. Galvanized-Metal Substrates:

1. Latex over Waterborne Primer System:
 - a. Prime Coat: Primer, galvanized, water based, MPI #134.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

D. Gypsum Board Substrates:

1. Latex System:
 - a. Prime Coat: Primer sealer, latex, interior, MPI #50.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, flat, (Gloss Level 1), MPI #53.

END OF SECTION 099123

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cast dimensional characters.

1.3 DEFINITIONS

1.4 COORDINATION

- A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For dimensional letter signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 3. Show message list, tpestyles, graphic elements, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available tpestyles and graphic symbols.
- D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
 - 1. Dimensional Characters: Full-size Sample of dimensional character.

2. Exposed Accessories: Full-size Sample of each accessory type.

E. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

- a. Deterioration of finishes beyond normal weathering.
- b. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACE Sign Systems, Inc.
 - b. Allen Markings International.
 - c. APCO Graphics, Inc.
 - d. A. R. K. Ramos Signage Systems.
 - e. ASI Sign Systems, Inc.
 - f. Diskey Sign Company.
 - g. Gemini Incorporated.
 - h. Matthews International Corporation; Bronze Division.
 - i. Metal Arts; Division of L & H Mfg. Co.
 - j. Metallic Arts.
 - k. Seton Identification Products.
 - l. Southwell Company (The).
2. Character Material: Cast aluminum.
3. Character Height: 6" for park name, 4" for address
4. Thickness: Manufacturer's standard for size of character.
5. Finishes:
 - a. Integral Aluminum Finish: Clear anodized
6. Mounting: Projecting studs, stainless steel
7. Typeface: Arial

2.2 DIMENSIONAL CHARACTER MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
 1. Use concealed fasteners and anchors unless indicated to be exposed.
 2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
 3. Sign Mounting Fasteners:
 - a. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2.4 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 - 4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 5. Internally brace signs for stability and for securing fasteners.
 - 6. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
 - 7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.5 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.
- D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Verify that electrical service is correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
 - 1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
 - b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.
 - 2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
 - 3. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position so that signage is correctly located and aligned.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101419

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.
- B. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, timesteps, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available timesteps and graphic symbols.

- D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
 - 1. Room-Identification Signs: Full-size Sample .
 - 2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
 - 3. Exposed Accessories: Full-size Sample of each accessory type.
 - 4. Full-size Samples, if approved, will be returned to Contractor for use in Project.
- E. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materialsthat match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer of products.

1.10 FIELD CONDITIONS

- A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ASI Sign Systems, Inc.
 - b. Best Sign Systems, Inc.
 - c. Inpro Corporation.
 - d. Seton Identification Products; a Brady Corporation company.
 - e. Gemini
2. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
 - a. Basis of Design shall be Gemini, Style "B" with text, symbols, and a brushed aluminum border. Background to be manufacturers standard colors.
 - b. Composite-Sheet Thickness: 0.25 inch.
 - c. Subsurface Graphics: Reverse etch image.
 - d. Color(s): As selected by Architect from manufacturer's full range.
3. Sign-Panel Perimeter: Finish edges smooth.
4. Frame: Entire perimeter.
 - a. Material: Brushed Aluminum.
 - b. Material Thickness: 1/4".
 - c. Frame Depth: .

- d. Profile: Square.
 - e. Corner Condition in Elevation: Rounded.
 - f. Finish and Color: As selected by Architect from manufacturer's full range.
5. Mounting: Surface mounted to wall] with two-face VHB tape.
6. Text and Typeface: Accessible raised characters and Braille typeface as indicated by manufacturer's designation. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 SIGN MATERIALS

- A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- D. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters or images as indicated on Drawings and suitable for exterior applications.
- E. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Use concealed fasteners and anchors unless indicated to be exposed.
 - 2. For exterior exposure, furnish nonferrous-metal devices unless otherwise indicated.
 - 3. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened sign unless otherwise indicated.
 - b. Fastener Heads: Use flathead or oval countersunk screws and bolts with tamper-resistant spanner-head or one-way-head slots unless otherwise indicated.
- B. Two-Face Tape: Manufacturer's very high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
- B. Subsurface-Etched Graphics: Reverse etch back face of clear face-sheet material. Fill resulting copy with manufacturer's standard enamel. Apply opaque manufacturer's standard background color coating over enamel-filled copy.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.
- B. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.

3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls according to the accessibility standard.
 - C. Mounting Methods:
 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423.16

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
 - 5. Manufacturer's warranty.
- B. Samples: Full size, for each accessory item to verify design, operation, and finish requirements.
 - 1. Approved full-size Samples will be returned and may be used in the Work.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify products using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.8 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Final Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
- I. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. See Editing Instruction No.1 in the Evaluations for cautions about naming manufacturers. Retain one of first two paragraphs and list of manufacturers below. See Section 016000 "Product Requirements."
- B. Basis-of-Design Product: Borbrick Washroom Equipment, Inc. Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following or approved equivalent:
 - 1. A & J Washroom Accessories, Inc.
 - 2. American Specialties, Inc.
 - 3. Bobrick Washroom Equipment, Inc.
 - 4. Bradley Corporation.
- C. Toilet Tissue (Jumbo-Roll) Dispenser
 - 1. Basis-of-Design Product: Bobrick, B2892
 - 2. Description: Two-roll unit with sliding panel to expose other roll.
 - 3. Mounting: Surface mounted.
 - 4. Capacity: 9- or 10-inch - diameter rolls.
 - 5. Material and Finish: Stainless steel
 - 6. Lockset: Tumbler type.
 - 7. Refill Indicator: Pierced slots at front.
- D. Waste Receptacle
 - 1. Basis-of-Design Product: Bobrick, B3644
 - 2. Mounting: Semi recessed

3. Minimum Capacity: 12 gal. .
4. Material and Finish: Stainless steel

E. Liquid-Soap Dispenser

1. Basis-of-Design Product: Bobrick, B4112
2. Description: Designed for dispensing soap in liquid or lotion form.
3. Mounting: Horizontally oriented, surface mounted
4. Capacity: 40 oz.
5. Materials: Stainless Steel
6. Lockset: Tumbler type.
7. Refill Indicator: Window type.

F. Grab Bar

1. Basis-of-Design Product: Bobrick, B6806
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
4. Outside Diameter: 1-1/2 inches
5. Configuration and Length: As indicated on Drawings

G. Baby Changing Station

1. Basis of Design Product: Koala Care, KB 110 SSRE / WM
2. Mounting: Recessed & Surface Mounted (as indicated on drawings)
3. Finish: Stainless Steel

H. Frameless Mirror

1. Basis of Design Product: Bobrick, B1556
2. Size: 24"x 36"

I. Utility Hook

1. Basis-of-Design Product: Bobrick, B6707
2. Mounting: Concealed.
3. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).

2.3 WARM-AIR DRYERS

A. Basis-of-Design Product: Bobrick, Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following or approved equivalent:

1. A & J Washroom Accessories, Inc.
2. American Dryer, Inc.
3. American Specialties, Inc.
4. Bobrick Washroom Equipment, Inc.
5. Bradley Corporation.
6. Excel Dryer Corporation.
7. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
8. Tubular Specialties Manufacturing, Inc.
9. World Dryer Corporation.

B. Warm-Air Dryer

1. Basis-of-Design Product: Bobrick, B7128
2. Mounting: Surface mounted
3. Operation: Electronic-sensor activated with timed power cut-off switch.
 - a. Operation Time: 80 seconds.
4. Cover Material and Finish: Stainless steel, No. 4 finish (satin)
5. Electrical Requirements: 115 V, 15 A, 1725 W

2.4 UNDERLAVATORY GUARDS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following or approved equivalent:
 - 1. Plumberex Specialty Products, Inc.
 - 2. Truebro by IPS Corporation.
- B. Underlavatory Guard
 - 1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
 - 2. Material and Finish: Antimicrobial, molded plastic, white.

2.5 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf , when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

INTENTIONALLY OMITTED

SECTION 22 0500 - COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of Division 01, the General Conditions, Supplementary General Conditions, and Special Conditions apply to this and all Plumbing sections.
- B. This Section applies to all Plumbing specification Sections.

1.2 JOB CONDITIONS

- A. The drawings show the general scope and arrangement of the plumbing systems and shall be followed as closely as actual conditions allow.
- B. Give consideration to all other trades. Make arrangements to avoid conflicts and interference with other work. Fully coordinate all components of plumbing systems with minor adjustments as required, including provision of offsets, transitions, fittings, and accessories to meet actual conditions.

1.3 ELECTRICAL WORK

- A. Electrical equipment and electrical motor-driven equipment specified herein shall be provided complete with motors, integral motor starters where indicated, and controls.
- B. Electrical equipment and wiring shall conform to the requirements of Division 26 - Electrical. Manual or automatic control and protective or signal devices required for the operation specified herein, and any control wiring required for control devices but not shown on the electrical plans shall be provided under this Section.

1.4 CONFORMANCE TO REGULATIONS

- A. All work shall conform to the regulations of the applicable federal, state, and local laws, ordinances and codes.

1.5 REGULATORY REQUIREMENTS

- A. All products shall be listed by the Underwriters Laboratories, Inc. (UL), and shall bear the UL label. Where UL labels are not provided from the factory, the contractor shall be responsible for having the equipment or materials tested by a UL testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.6 QUALITY ASSURANCE

- A. Work shall meet or exceed minimum recommendations of:
 - 1. ANSI - American National Standards Institute
 - 2. ASME American Society of Mechanical Engineers
 - 3. ASPE - American Society of Plumbing Engineers
 - 4. ASTM - American Society for Testing and Materials
 - 5. AWS - American Welding Society
 - 6. USDOE - United States Department of Energy
 - 7. EPA - Environmental Protection Agency
 - 8. IBC - International Building Code (current adopted edition)
 - 9. IECC - International Energy Conservation Code (current adopted edition)
 - 10. IPC - International Plumbing Code (current adopted edition)
 - 11. NEMA - National Electrical Manufacturers Association
 - 12. NIOSH - National Institute for Occupational Safety and Health
 - 13. NSF - National Sanitation Foundation
 - 14. OSHA - Occupational Safety and Health Act

- 15. TIMA - Thermal Insulation Manufacturers Association
 - 16. UL - Underwriters' Laboratories
 - 17. VUSBC - Virginia Uniform Statewide Building Code (current adopted edition)
- B. Reference to the standards of any technical society, organization, or association, or to the laws, ordinances, or codes of governmental authorities shall mean the latest standard, code, or specification adopted, published, and effective at the date of taking bids.
 - C. The specifications, codes, and standards referenced in these specifications (including addenda, amendments, and errata) shall govern in all cases where references thereto are made. In case of conflict between the referenced specifications, the more stringent requirement shall govern unless otherwise permitted by the Architect/Engineer. Major conflicts shall be referred to the Engineer for resolution.
- 1.7 MATERIALS AND EQUIPMENT
- A. Unless specifically provided otherwise, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and be new, current design, unused, and undamaged.
 - B. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate equipment shall be interchangeable.
- 1.8 UTILITIES AND CONNECTIONS
- A. Verify location of all existing utilities before laying out and making connections. Report any inconsistencies to Engineer before commencing work. Contractor shall be responsible for any error resulting from failure to exercise these precautions.
- 1.9 WIRING DIAGRAMS
- A. All plumbing equipment shall be provided with complete wiring diagrams showing all power and control connections. The diagrams shall be placed in a clear plastic pouch that is permanently affixed to the equipment.
- 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Refer to Division 01 requirements.
 - B. Protect products from damage, marring, and soiling.
 - C. Any marring of factory finishes shall be touched up to match the original factory finish.
- 1.11 SUBMITTALS
- A. Refer to Division 01 requirements.
 - B. General: The Contractor shall submit information, for Architect/Engineer's review, to demonstrate compliance of proposed Products and/or installations with the Contract Documents. This information shall include, but not be limited to: catalog data; performance data; noise levels; etc. Proposed Products that are not in compliance with the Contract Documents may be rejected. Information must be submitted on all required Products, including proposed Products that appear to be in compliance with the Contract Documents.
 - C. Contractor preparation:
 - 1. The Contractor shall review and approve each submittal and coordinate all other related or affected Work before submitting for review. All copies of each submittal shall bear the Contractor's stamp, with signature or initials, certifying review and

- approval; verification of field dimensions; and coordination with adjacent Work are in compliance with the requirements of the Contract Documents.
2. The Contractor shall identify variations from the requirements of the Contract Documents on all copies of applicable submittals. No extra charges shall be paid for the providing of Products or furnishing of Work required as a result of failure to comply with this requirement.
- D. Submittal Format:
1. Each submittal shall be accompanied by a letter of transmittal listing Project Title, Contractor, Subcontractor or supplier, submitted Products, pertinent drawing and detail number, and specification section number, as appropriate.
 2. Product data shall be clearly marked to identify the applicable Products or models. Options or modifications required by the Contract Documents shall be clearly identified.
 3. Submittals shall be complete with all associated Products. Submittals on portions of a Product or system shall not be reviewed.
 4. Provide Manufacturer's start-up procedures, testing and checklists.
- E. Architect/Engineer Procedures: Submittals will be reviewed with reasonable promptness. The Contractor shall allow 15 days for review of each submittal. The Architect/Engineer's comments will be indicated on a Submittal Review Comments form, which will be attached to each copy of the submittal. Contractor shall be responsible for distributing copies of reviewed submittals as appropriate.
- F. Resubmission: Contractor shall change or correct submittals as required by the Architect/Engineer and resubmit until approved. The Contractor shall identify any changes other than those required by the Architect/Engineer on all copies of the resubmittal.
- G. Approval required: The ordering, fabrication and/or installation of Products before approval of all relevant submittals shall be at the Contractor's risk. Any damage to new or existing Work resulting from the installation of unapproved Products shall be repaired or replaced by the Contractor at no additional cost. Payment will not be recommended for any Work that does not have an approved submittal.
- 1.12 SUBSTITUTIONS
- A. Refer to Division 01 requirements.
 - B. For a Product specified by naming one or more manufacturer and model, and followed with the statement "or approved equal," the Contractor may submit a Product other than the Product specified by manufacturer and model, that Product shall be considered a Substitute Product and shall comply with the following conditions:
 1. The Contractor shall verify the Substitute Product is equal or superior in all respects to the Specified Product.
 2. The Contractor shall submit data on the Substitute Product in compliance with the "Submittals" paragraph herein.
 3. After the Substitute Product has been approved by the Architect/Engineer, the Contractor shall be responsible for coordinating the installation of the Substitute Product with all trades. The Contractor shall be responsible for any changes required to incorporate the Substitute Product into the Work.

4. The Contractor waives all claims for additional costs related to the Substitute Product that becomes apparent before, during or after installation.
- 1.13 OPERATING AND MAINTENANCE MANUAL
- A. Refer to Division 01 requirements.
 - B. General: The Contractor shall submit one copy of the Operation and Maintenance Manual to the Architect/Engineer for review a minimum of 60 days prior to Instruction and Training Sessions. This copy will be returned to the Contractor with Architect/Engineer's comments or approval. The Contractor shall revise and resubmit one copy of the O&M Manual as required. The Contractor shall provide four copies of the approved O&M Manual. Instruction and Training Sessions shall begin 30 days after receipt of the approved O&M Manuals. Refer to "Instruction and Training Sessions" paragraph herein.
 - C. Binders: Commercial quality, 8-1/2x11 inch, three ring binders with durable plastic covers; three inch maximum ring size. Attach printed labels to the front and side of each binder stating '[PROJECT NAME] OPERATION AND MAINTENANCE MANUAL'; applicable volume number; and project title. Provide tabbed dividers for each Product and system, with typed description or applicable Specification Section. Provide a table of contents for the entire manual and insert at the front of each binder.
 - D. Contents: The manual shall consist of three parts as follows:
 1. Part 1: Directory listing names, addresses, and telephone numbers of Architect, Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions including, but not limited to, the following:
 - a. General description and specifications of each component and of each system as a whole.
 - b. Manufacturer's catalog description of each component supplemented by approved equipment submittals.
 - c. Detailed electrical and logic descriptions.
 - d. Installation and start-up instructions, including complete calibration procedures for each component and for system as a whole.
 - e. Operating instructions including:
 - 1) Sequence of operation
 - 2) Shutdown procedure
 - 3) Emergency operating procedures
 - f. Trouble shooting guide with service instructions
 - g. Preventive maintenance schedules
 - h. Parts list with names, addresses, and telephone numbers of local parts suppliers.
 - i. Names, addresses, and phone numbers of nearest service organizations
 - j. Interface requirements and capabilities.
 - k. Detailed schematics of equipment.
 - l. Complete equipment schedules.
 3. Part 3: Project documents including, but not limited to, the following:
 - a. Certificates

- b. Copies of warranties.
- E. Quality: The manual will be reviewed by the Architect/Engineer to determine accuracy, completeness and quality of printing. Deficiencies will necessitate resubmittals by the Contractor. Refer to "Submittals" paragraph herein.
- 1.14 INSTRUCTION AND TRAINING SESSIONS
 - A. Refer to Division 01 requirements.
 - B. After all equipment and services are in operation and receipt of the approved Operation and Maintenance Manuals, Instruction and Training Sessions shall be conducted for representatives of the Owner.
 - C. Instruction Session shall be conducted during the Owner's normal working periods and at times satisfactory to the Owner.
 - 1. Session shall be sufficient to address all aspects of instruction and training for the installed systems.
 - D. The Training Session shall address the operation and maintenance of each piece of equipment and of the system as a whole. Preventative maintenance techniques shall be included.
 - E. Instructions and training shall be given by competent, factory-trained service and operating personnel from the appropriate manufacturer(s). The Contractor shall record the names of all personnel present at each Instruction and Training Session and shall forward a copy of the attendance log to the Architect/Engineer within seven days after each session.
- 1.15 RECORD DRAWINGS
 - A. Refer to Division 01 requirements.
- 1.16 PROJECT/SITE CONDITIONS
 - A. Install work in locations shown on Drawings, unless prevented by Project conditions.
 - B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.
- 1.17 WARRANTIES
 - A. Refer to Division 01 requirements.
 - B. Warranty periods shall begin from Date of Substantial Completion.
- 1.18 CONTRACTOR COORDINATION
 - A. Nomenclature for final room names and numbers may vary from the construction documents. Final names and numbers used in the shop drawings shall be coordinated with final room names and numbers assigned by the Owner and Architect.
 - B. Plumbing contractor(s) shall coordinate their work with all other trades prior to fabrication of systems and commencement of installation. It shall be the responsibility of each contractor to review the work of other trades (including, but not limited to civil, structural, architectural, HVAC, and electrical) as it affects their work, and as their work affects other trades, to insure that the construction documents are closely followed. Where discrepancies arise, they shall be referred to the Architect/Engineer for resolution before proceeding with the Work.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. Unless otherwise noted, install equipment in accordance with manufacturer's printed instructions for application indicated.
- B. Install, operate, and adjust systems in accordance with the plans and specifications.
- C. All work for this division shall conform to the regulations of the applicable federal, state, and local laws, ordinances, and codes.
- D. A Request For Information (RFI) shall be submitted to the Architect/Engineer for any portion of the Work that the Contractor determines a clarification is required. Prior to submitting a RFI the Contractor shall thoroughly research the Contract Documents to ensure information has not been overlooked. The RFI shall include references to the portion of the Contract Documents that requires a clarification. The Contractor shall allow a minimum of three business days for the Architect/Engineer to respond to the RFI. The Contractor shall not proceed with that portion of the Work until a response has been returned.
- E. All Products delivered to the site(s) shall be stored in accordance with the manufacturer's printed instructions. If a manufacturer does not have printed instructions then the Product shall be adequately housed and otherwise protected against damage or corrosion. If any Product stored at the site(s) is not protected as specified herein, the Contractor shall not receive payment for that Product. Any Product damaged as a result of failure to comply with this requirement shall be replaced by the Contractor at no additional cost to the Owner.

3.2 ACCESSIBILITY

- A. Locate all equipment, which must be serviced, operated, or maintained in fully accessible positions in accordance with manufacturer's recommendations and subject to approval of Architect. Provide a minimum of two feet of clearance in front of equipment access doors and components requiring service.

3.3 PROTECTION OF OPENINGS

- A. Openings in partially installed systems, including equipment and piping, shall be plugged, capped, or otherwise closed with approved methods and materials or devices until connections are made.

3.4 PROTECTION FROM MOVING PARTS

- A. Belts, shafts, couplings, and other rotating or moving parts, located so that any person may come in proximity thereto, shall be fully enclosed or properly guarded.

END OF SECTION

SECTION 22 0519 - METERS AND GAUGES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pressure gages and pressure gage taps.
- B. Thermometers and thermometer wells.

1.2 REFERENCE STANDARDS

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments 2013.

1.3 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.
- C. Project Record Documents: Record actual locations of components and instrumentation.

1.4 FIELD CONDITIONS

- A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 - PRODUCTS

2.1 PRESSURE GAGES

- A. Pressure Gages: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
 - 1. Case: Steel with brass bourdon tube.
 - 2. Size: 4-1/2 inch diameter.
 - 3. Mid-Scale Accuracy: One percent.
 - 4. Scale: Psi and kPa.

2.2 PRESSURE GAGE TAPPINGS

- A. Gage Cock: Tee or lever handle, brass for maximum 150 psi.

2.3 SELF POWERED THERMOMETERS

- A. Solar-powered digital thermometer with a ten Lux (one foot-candle) rating and a 10-second display update. The unit shall swivel and pivot to meet custom installation requirements. Capable of handling humidity up to 95% RH non-condensing.
 - 1. Size: 0.375 inch LCD display.
 - 2. Window: Clear glass.
 - 3. Hi-Impact plastic case and protective plastic digital display cover.
 - 4. Accuracy: 2 percent, per ASTM E 77.
 - 5. Calibration: Degrees F and Degrees C.

2.4 THERMOMETER SUPPORTS

- A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install pressure gages with pulsation dampers. Provide gage cock to isolate each gage. Extend nipples and siphons to allow clearance from insulation.

- C. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- D. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- E. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

END OF SECTION

SECTION 22 0523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Applications.
- B. General requirements.
- C. Ball valves.

1.2 RELATED REQUIREMENTS

- A. Section 22 0719 - Plumbing Piping Insulation.
- B. Section 22 1005 - Plumbing Piping.

1.3 REFERENCE STANDARDS

- A. ASME B1.20.1 - Pipe Threads, General Purpose (Inch) 2013 (Reaffirmed 2018).
- B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2018.
- C. ASME B16.34 - Valves — Flanged, Threaded, and Welding End 2020.
- D. ASME B31.9 - Building Services Piping 2020.
- E. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators 2021.
- F. MSS SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Service 2010a.
- G. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010.
- H. NSF 61 - Drinking Water System Components - Health Effects 2020.
- I. NSF 372 - Drinking Water System Components - Lead Content 2020.

1.4 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Obtain valves for each valve type from single manufacturer.
 - 2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect valve parts exposed to piped medium against rust and corrosion.
 - 2. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection and protect flanges and specialties from dirt.
 - 2. Store valves in shipping containers and maintain in place until installation.
 - a. Store valves indoors in dry environment.
 - b. Store valves off the ground in watertight enclosures when indoor storage is not an option.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. See drawings for specific valve locations.
- B. Provide the following valves for the applications if not indicated on drawings:
 - 1. Shutoff: Ball.

- C. Domestic, Hot and Cold Water Valves:
 - 1. 2 NPS and Smaller:
 - a. Ball: One piece, full port, bronze with brass trim.

2.2 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
- D. Valves in Insulated Piping: With 2 NPS stem extensions and the following features:
 - 1. Ball Valves: Extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
- E. Valve-End Connections:
 - 1. Threaded End Valves: ASME B1.20.1.
 - 2. Solder Joint Connections: ASME B16.18.
- F. General ASME Compliance:
 - 1. Building Services Piping Valves: ASME B31.9.
- G. Valve Materials for Potable Water: NSF 61 and NSF 372.
- H. Bronze Valves:
 - 1. Fabricate from dezincification resistant material.
 - 2. Copper alloys containing more than 15 percent zinc are not permitted.

2.3 BRASS BALL VALVES

2.4 BRONZE BALL VALVES

- A. One Piece, Reduced Port with Bronze Trim:
 - 1. Comply with MSS SP-110.
 - 2. SWP Rating: 400 psig.
 - 3. CWP Rating: 600 psig.
 - 4. Body: Bronze.
 - 5. Ends: Threaded.
 - 6. Seats: PTFE.
 - 7. Ball: Chrome plated brass.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.2 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.

- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

SECTION 22 0529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Support and attachment components for equipment, piping, and other plumbing work.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete equipment pads.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- D. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings 1999, with Editorial Revision (2018).
- E. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2019.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.
- H. MFMA-4 - Metal Framing Standards Publication 2004.
- I. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
2. Coordinate the work with other trades to provide additional framing and materials required for installation.
3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
5. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:

1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

PART 2 PRODUCTS

2.1 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:

1. Comply with MSS SP-58.
 2. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
1. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
 - b. Thomas & Betts Corporation: www.tnb.com/#sle.
 - c. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
 2. Comply with MFMA-4.
 3. Channel Material:
 - a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
 4. Minimum Channel Thickness: Steel sheet, 12 gage, 0.1046 inch.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch diameter.
 - b. Piping up to 1 inch (27 mm) nominal: 1/4 inch diameter.
 - c. Piping larger than 1 inch (27 mm) nominal: 3/8 inch diameter.
 - d. Trapeze Support for Multiple Pipes: 3/8 inch diameter.
- D. Thermal Insulated Pipe Supports:
1. Manufacturers:
 - a. Aeroflex USA, Inc: www.aeroflexusa.com/#sle.
 - b. Buckaroos, Inc: www.buckaroos.com/#sle.
 - c. KB Enterprises: www.snappitz.com/#sle.
 2. General Construction and Requirements:
 - a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
 - b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL

- 723.
- c. Pipe supports to be provided for nominally sized, 1/2 inch to 30 inch iron pipes.
- d. Insulation inserts to consist of rigid phenolic foam insulation surrounded by a 360 degree, PVC jacketing.
- 3. PVC Jacket:
 - a. Pipe insulation protection shields to be provided with a ball bearing hinge and locking seam.
 - b. Minimum Service Temperature: Minus 40 degrees F.
 - c. Maximum Service Temperature: 180 degrees F.
 - d. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
 - e. Thickness: 60 mil.
- E. Pipe Supports:
 - 1. Liquid Temperatures Up To 122 degrees F:
 - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
 - b. Support From Below: MSS SP-58 Types 35 through 38.
- F. Riser Clamps:
 - 1. Provide copper plated clamps for copper tubing support.
- G. Offset Pipe Clamps: Double-leg design two-piece pipe clamp.
- H. Strut Clamps: Two-piece pipe clamp.
- I. Insulation Clamps: Two bolt-type clamps designed for installation under insulation.
- J. Pipe Hangers: For a given pipe run use hangers of the same type and material.
 - 1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 - 2. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
- K. Anchors and Fasteners:
 - 1. Manufacturers - Mechanical Anchors:
 - a. Hilti, Inc: www.us.hilti.com/#sle.
 - b. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
 - c. Powers Fasteners, Inc: www.powers.com/#sle.
 - d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.
 - 2. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
- L. Pipe Installation Accessories:
 - 1. Copper Pipe Supports:
 - a. Manufacturers:
 - 1) HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.

- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect/Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect/Engineer, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Secure fasteners according to manufacturer's recommended torque settings.
- I. Remove temporary supports.

END OF SECTION

SECTION 22 0553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Pipe markers.

1.2 RELATED REQUIREMENTS

- A. Refer to Division 09 Identification Painting requirements.

1.3 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.
- F. Project Record Documents: Record actual locations of tagged valves.

PART 2 - PRODUCTS

2.1 IDENTIFICATION APPLICATIONS

- A. Piping: Pipe markers and tags.
- B. Equipment: Nameplates.
- C. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.2 NAMEPLATES

- A. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch.
 - 3. Background Color: Black.

2.3 TAGS

- A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.
- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- C. Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.4 PIPE MARKERS

- A. Comply with ASME A13.1.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- C. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, traceable, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Division 09 for stencil painting.

3.2 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- E. Use tags on piping 3/4 inch diameter and smaller.
- F. Pipe markers:
 - 1. Identify service, flow direction, and pressure.
 - 2. Install in clear view and align with axis of piping.
 - 3. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

SECTION 22 0719 - PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.2 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019.
- B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement 2007 (Reapproved 2013).
- C. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form 2020a.
- D. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation 2019.
- E. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation 2021.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.
- H. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.3 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with documented experience.
- B. Applicator Qualifications: Company specializing in manufacturing the Products specified in this section with documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.6 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or ASTM E84.

2.2 GLASS FIBER

- A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 - 1. 'K' Value: ASTM C177, 0.24 at 75 degrees F.

2. Maximum Service Temperature: 850 degrees F.
 3. Maximum Moisture Absorption: 0.2 percent by volume.
 - B. Vapor Barrier Jacket: White kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E 96/E 96M of 0.02 perm-inches. Factory prepared to receive paint.
 - C. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
 - D. Vapor Barrier Lap Adhesive: Compatible with insulation.
 1. Compatible with insulation.
 - E. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.
 1. ASTM C195; hydraulic setting on mineral wool.
- 2.3 FLEXIBLE ELASTOMERIC CELLULAR INSULATION
- A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 3; use molded tubular material wherever possible.
 1. Minimum Service Temperature: Minus 40 degrees F.
 2. Maximum Service Temperature: 220 degrees F.
 3. Connection: Waterproof vapor barrier adhesive.
 - B. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.
- 2.4 JACKETS
- A. PVC Plastic.
 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F.
 - b. Maximum Service Temperature: 150 degrees F.
 - c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil.
 - e. Connections: Brush on welding adhesive.
 - f. Factory prepared to receive paint.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.

2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. Glass fiber insulated pipes conveying fluids above ambient temperature:
1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- G. Inserts and Shields:
1. Application: Piping 1 inches diameter or larger.
 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and pipe insulation.
- H. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.
- 3.3 SCHEDULES
- A. Refer to drawings.
- END OF SECTION

- Q. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry Elements 2015.
 - R. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements 2015.
 - S. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018.
 - T. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2003.
 - U. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010.
 - V. NSF 61 - Drinking Water System Components - Health Effects 2020.
 - W. NSF 372 - Drinking Water System Components - Lead Content 2020.
- 2.4 SUBMITTALS
- A. Refer to Division 01 requirements.
 - B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
 - C. Project Record Documents: Provide minimum 18" x 24" drawing of building floor plan with all valves clearly labeled and shown in as-built locations. Provide two copies to Owner.
- 2.5 QUALITY ASSURANCE
- A. Valves: Manufacturer's name and pressure rating marked on valve body.
 - B. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.
- 2.6 DELIVERY, STORAGE, AND HANDLING
- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
 - B. Provide temporary protective coating on cast iron and steel valves.
 - C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
 - D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- 2.7 FIELD CONDITIONS
- A. Do not install underground piping when bedding is wet or frozen.
- PART 2 - PRODUCTS
- 3.1 GENERAL REQUIREMENTS
- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- 3.2 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING
- A. PVC Pipe: ASTM D 2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D 2564 low-VOC solvent cement. LEED compliant.
- 3.3 SANITARY SEWER PIPING, ABOVE GRADE
- A. Cast Iron Pipe: CISPI 301, hubless, service weight.

1. Fittings: Cast iron.
 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
- 3.4 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING
- A. Copper Pipe: ASTM B 42, Type K, 3/4" diameter and larger shall be hard drawn, 1/2" diameter shall be annealed.
 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
- 3.5 DOMESTIC WATER PIPING, ABOVE GRADE
- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 2. Joints: ASTM B32, alloy Sn95 solder.
- 3.6 STORM WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING
- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 1. Fittings: Cast iron.
 2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.
 - B. PVC Pipe: ASTM D 2665.
 1. Fittings: PVC.
 2. Joints: Solvent welded, with ASTM D 2564 low-VOC solvent cement. LEED compliant.
- 3.7 STORM WATER PIPING, ABOVE GRADE
- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 1. Fittings: Cast iron.
 2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.
 - B. PVC Pipe (non-plenum applications): ASTM D 2665.
 1. Fittings: PVC.
 2. Joints: Solvent welded, with ASTM D 2564 low-VOC solvent cement. LEED compliant.
- 3.8 FLANGES, UNIONS, AND COUPLINGS
- A. Unions for Pipe Sizes 3 Inches and Under:
 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
 - B. Flanges for Pipe Size Over 1 Inch:
 1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
 - C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- 3.9 PIPE HANGERS AND SUPPORTS
- A. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.

2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 4. Vertical Pipe Support: Steel riser clamp.
 5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.
- B. Plumbing Piping - Drain, Waste, and Vent:
1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 5. Vertical Support: Steel riser clamp.
 6. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 7. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 4. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
 5. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
1. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
 2. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
- 3.10 BALL VALVES
- A. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, full port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder ends with union.
- 3.11 SWING CHECK VALVES
- A. Up to 2 Inches:
1. {rs#1}, Class 125, bronze body and cap, bronze swing disc with rubber seat, solder ends.
- 3.12 STRAINERS
- A. Size 2 inch and Under:
1. Threaded brass body for 175 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.
 2. Class 150, threaded bronze body 300 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.

PART 3 - EXECUTION

4.1 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

4.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

4.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever joining dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.
- I. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- J. Excavate in accordance with Section 31 2316.
- K. Backfill in accordance with Division 31 requirements.
- L. Install valves with stems upright or horizontal, not inverted. Refer to Section 22 0523.
- M. Install water piping to ASME B31.9.
- N. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- O. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- P. Sleeve pipes passing through partitions, walls and floors.
- Q. Minimize quantity of soldered joints below concrete slab.
- R. Inserts:
 - 1. Provide inserts for placement in concrete formwork.
 - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- S. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
7. Provide copper plated hangers and supports for copper piping.
8. Support cast iron drainage piping at every joint.

4.4 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install ball valves for shut-off and to isolate equipment, part of systems.

4.5 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/8 inch per foot slope.
- B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

4.6 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system in accordance with IPC and Local Health Department requirements.
- B. Prior to starting work, verify system is complete, flushed and clean.

4.7 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

4.8 SCHEDULES

- A. Pipe Hanger Spacing: In accordance with the IPC or MSS SP-58 whichever is more stringent.

END OF SECTION

SECTION 22 1006 - PLUMBING PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Drains.
- B. Trap guards.
- C. Cleanouts.
- D. Hydrants.
- E. Water hammer arrestors.
- F. Thermostatic mixing valves.

1.2 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping.
- B. Section 22 3000 - Plumbing Equipment.
- C. Section 22 4000 - Plumbing Fixtures.

1.3 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ASME A112.6.3 - Floor and Trench Drains 2019.
- C. ASME A112.6.4 - Roof, Deck, and Balcony Drains 2008 (Reaffirmed 2012).
- D. ASSE 1011 - Performance Requirements for Hose Connection Vacuum Breakers 2017.
- E. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance 2011 (Reaffirmed 2016).
- F. NSF 61 - Drinking Water System Components - Health Effects 2020.
- G. NSF 372 - Drinking Water System Components - Lead Content 2020.
- H. PDI-WH 201 - Water Hammer Arresters 2017.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- C. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.
- D. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors and valves.
- E. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Loose Keys for Outside Hose Bibbs: Two.
 - 3. Extra Hose End Vacuum Breakers for Hose Bibbs: Two.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 - PRODUCTS

2.1 DRAINS

A. Roof Drain:

1. Assembly: ASME A112.6.4.
2. Body: Lacquered cast iron with sump.
3. Strainer: Removable polyethylene dome with vandal proof screws.
4. Accessories: Coordinate with roofing type and application:
 - a. Membrane flange and membrane clamp with integral gravel stop.
 - b. Top set deck plate.
 - c. Adjustable under deck clamp.
 - d. Roof sump receiver.
 - e. Waterproofing flange.
 - f. Controlled flow weir.
 - g. Leveling frame.
 - h. Adjustable extension sleeve for roof insulation.
 - i. Perforated stainless steel ballast guard extension.

B. Floor Drain:

1. ASME A112.6.3; lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable, heel-proof nickel-bronze strainer.

2.2 TRAP GUARDS

- A. Elastomeric, normally closed trap guard device utilizes a normally closed seal to prevent evaporation of the trap seal. It shall open with fluid and allow liquid drainage to flow into the building drain.

1. Device shall be installed in accordance with the manufacturer's instructions and the requirements of all applicable codes.

2.3 CLEANOUTS

- A. Cleanouts at Interior Unfinished Accessible Areas: Caulked or threaded type.

2.4 HYDRANTS

A. Wall Hydrants:

1. ASSE 1019; anti-siphon automatic draining wall hydrant for flush installation. Non-freeze type integral backflow preventer, bronze casing, all bronze interior parts, non-turning operating rod with free-floating compression closure valve, replaceable bronze seat and seat washer. Nickel bronze box and hinged cover with operating key lock and "WATER" cast on cover.

2.5 WATER HAMMER ARRESTORS

A. Water Hammer Arrestors:

1. Stainless steel construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range minus 100 to 300 degrees F and maximum 250 psi working pressure.

2.6 MIXING VALVES

- A. Thermostatic Mixing Valve - Point of Use type:

1. Lead-free bronze body, locked temperature adjustment cap (vandal resistant), copper encapsulated thermostat assembly with polymer thermoplastic shuttle, stainless steel springs, Buna-N O-rings, integral check valves on hot and cold inlets, compression fittings on inlets and outlet.
2. Ratings:
 - a. Minimum Flow: 0.5 gpm, or as scheduled.
 - b. Maximum Pressure: 125 psi
 - c. Maximum Hot Water temperature: 200 degree-F
 - d. Approach Temperature: 5 degree-F above set point
3. Mounting bracket.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.
- E. Install water hammer arrestors complete with accessible isolation valve on cold water supply piping between water closets and lavatory sinks.

END OF SECTION

SECTION 22 4000 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.
- C. Drinking fountains.

1.2 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping.
- B. Section 22 1006 - Plumbing Piping Specialties.
- C. Section 22 3000 - Plumbing Equipment.

1.3 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use 1997 (Reaffirmed 2017).
- C. ASME A112.18.1 - Plumbing Supply Fittings 2018, with Errata.
- D. ASME A112.19.2 - Ceramic Plumbing Fixtures 2018.
- E. ASME A112.19.5 - Flush Valves and Spuds for Water Closets, Urinals, and Tanks 2017.
- F. NSF 61 - Drinking Water System Components - Health Effects 2020.
- G. NSF 372 - Drinking Water System Components - Lead Content 2020.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.
- D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Refer to Division 01 requirements.
 - 2. Extra Faucet Washers: Two sets of each type and size.
 - 3. Extra Toilet Seats: One of each type and size.
 - 4. Flush Valve Service Kits: One for each type and size.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.7 WARRANTY

- A. Refer to Division 01 requirements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Fixtures shall be ADA compliant where scheduled on the plumbing drawings.

2.2 FLUSH VALVE WATER CLOSETS

- A. Water Closets: Vitreous china, ASME A112.19.2, elongated rim, wall hung, siphon jet flush action, china bolt caps. ADA compliant where scheduled.
 - 1. Flush Valve: Concealed (back spud).
 - 2. Flush Operation: As scheduled.
 - 3. Color: White.
- B. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
 - 1. Sensor-Operated Type: motorized actuator, low voltage hard-wired, infrared sensor and over-ride push button.
 - 2. Concealed Type: Rough brass, exposed parts chrome plated, wall escutcheon.
- C. Seats:
 - 1. Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.
- D. Water Closet Carriers:
 - 1. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.3 LAVATORIES

- A. Vitreous China Wall Hung Basin: ASME A112.19.2; vitreous china wall hung lavatory, 18 by 21 inch minimum, with 4 inch high back, rectangular basin with splash lip, and front overflow where scheduled.
- B. Sensor Operated Faucet: Cast brass, chrome plated, deck mounted with sensor located on neck of spout. ADA compliant.
 - 1. Spout Style: As scheduled.
 - 2. Power Supply: 24 VAC.
 - a. Cord and plug.
 - b. Provide transformer.
 - 3. Sensor range: Factory set at a minimum of 3 inch adjustable up to 24 inch.
 - 4. Sensor range: Automatically adjusts.
 - 5. Finish: Polished chrome.
 - 6. Accessory: 4 inch deck plate.
- C. Accessories:
 - 1. Chrome plated 17 gage, 0.0538 inch brass P-trap with clean-out plug and arm with escutcheon.
 - 2. Offset waste with perforated open strainer.
 - 3. Wheel handle stops.
 - 4. Rigid supplies.
 - 5. Protective PVC shield guard on ADA fixture supplies and trap.
 - 6. Carrier:

- a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

2.4 DRINKING FOUNTAINS

- A. Fountain: Dual level, stainless steel tops, stainless steel body and access panel, elevated anti-squirt bubbler with stream guard, automatic stream regulator, soft touch push buttons, 16 gauge stainless steel 14-inch circular receptors with 3/8-inch radius rolled edges. All water contact surfaces shall be lead-free, stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.

3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall carriers and bolts.
- E. Seal fixtures to wall and floor surfaces with sealant as specified in Division 07, color to match fixture.

3.4 CLEANING

- A. Clean plumbing fixtures and equipment.
- B. Adjust flow and temperatures, clean aerators.

3.5 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

3.6 SCHEDULES

- A. Refer to the drawings.

END OF SECTION

SECTION 23 0500 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of the General Conditions, Supplementary General Conditions, and Special Conditions apply to this and all HVAC sections.
- B. This Section applies to all HVAC specification Sections.

1.2 JOB CONDITIONS

- A. The drawings show the general scope and arrangement of the HVAC systems and shall be followed as closely as actual conditions allow.
- B. Give consideration to all other trades. Make arrangements to avoid conflicts and interference with other work. Fully coordinate all components of HVAC systems with minor adjustments as required, including provision of offsets, transitions, fittings, and accessories to meet actual conditions.

1.3 ELECTRICAL WORK

- A. Electrical equipment and electrical motor-driven equipment specified herein shall be provided complete with motors, integral motor starters where indicated, and controls.
- B. Electrical equipment and wiring shall conform to the requirements of Division 26 - Electrical.
- C. Manual or automatic control and protective or signal devices required for the operation specified herein, and any control wiring required for control devices but not shown on the electrical plans shall be provided under this Section.

1.4 CONFORMANCE TO REGULATIONS

- A. All work shall conform to the regulations of the applicable federal, state, and local laws, ordinances and codes.

1.5 REGULATORY REQUIREMENTS

- A. All products shall be listed by the Underwriters Laboratories, Inc. (UL), and shall bear the UL label. Where UL labels are not provided from the factory, the contractor shall be responsible for having the equipment or materials tested by a UL testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.6 QUALITY ASSURANCE

- A. Work shall meet or exceed minimum recommendations of:
 - 1. AGA - American Gas Association
 - 2. ANSI - American National Standards Institute
 - 3. ASME American Society of Mechanical Engineers
 - 4. ASPE - American Society of Plumbing Engineers
 - 5. ASTM - American Society for Testing and Materials
 - 6. AWS - American Welding Society
 - 7. USDOE - United States Department of Energy
 - 8. EPA - Environmental Protection Agency
 - 9. GAMMA - Gas Appliance Manufacturer's Association
 - 10. IBC - International Building Code (current adopted edition)
 - 11. IECC - International Energy Conservation Code (current adopted edition)
 - 12. IMC - International Mechanical Code (current adopted edition)
 - 13. NEMA - National Electrical Manufacturers Association

- 14. NIOSH - National Institute for Occupational Safety and Health
 - 15. NSF - National Sanitation Foundation
 - 16. OSHA - Occupational Safety and Health Act
 - 17. TIMA - Thermal Insulation Manufacturers Association
 - 18. UL - Underwriters' Laboratories
 - 19. VUSBC - Virginia Uniform Statewide Building Code (current adopted edition)
- B. Reference to the standards of any technical society, organization, or association, or to the laws, ordinances, or codes of governmental authorities shall mean the latest standard, code, or specification adopted, published, and effective at the date of taking bids.
 - C. The specifications, codes, and standards referenced in these specifications (including addenda, amendments, and errata) shall govern in all cases where references thereto are made. In case of conflict between the referenced specifications, the more stringent requirement shall govern unless otherwise permitted by the Architect/Engineer. Major conflicts shall be referred to the Engineer for resolution.
- 1.7 MATERIALS AND EQUIPMENT
- A. Unless specifically provided otherwise, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and be new, current design, unused, and undamaged.
 - B. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate equipment shall be interchangeable.
- 1.8 UTILITIES AND CONNECTIONS
- A. Verify location of all existing utilities before laying out and making connections. Report any inconsistencies to Engineer before commencing work. Contractor shall be responsible for any error resulting from failure to exercise these precautions.
- 1.9 WIRING DIAGRAMS
- A. All mechanical equipment shall be provided with complete wiring diagrams showing all power and control connections. The diagrams shall be placed in a clear plastic pouch that is permanently affixed to the equipment.
- 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Refer to Division 01 requirements.
 - B. Protect products from damage, marring, and soiling.
 - C. Any marring of factory finishes shall be touched up to match the original factory finish.
- 1.11 SUBMITTALS
- A. Refer to Division 01 requirements.
 - B. General: The Contractor shall submit information, for Architect/Engineer's review, to demonstrate compliance of proposed Products and/or installations with the Contract Documents. This information shall include, but not be limited to: catalog data; performance data; noise levels; etc. Proposed Products that are not in compliance with the Contract Documents may be rejected. Information must be submitted on all required Products, including proposed Products that appear to be in compliance with the Contract Documents.
 - C. Contractor preparation:

1. The Contractor shall review and approve each submittal and coordinate all other related or affected Work before submitting for review. All copies of each submittal shall bear the Contractor's stamp, with signature or initials, certifying review and approval; verification of field dimensions; and coordination with adjacent Work are in compliance with the requirements of the Contract Documents.
 2. The Contractor shall identify variations from the requirements of the Contract Documents on all copies of applicable submittals. No extra charges shall be paid for the providing of Products or furnishing of Work required as a result of failure to comply with this requirement.
- D. Submittal Format:
1. Each submittal shall be accompanied by a letter of transmittal listing Project Title, Contractor, Subcontractor or supplier, submitted Products, pertinent drawing and detail number, and specification section number, as appropriate.
 2. Provide a minimum of five copies of each submittal. Provide additional copies as required by Owner and/or Contractor. Each copy of a submittal shall be bound in a three-ring binder, and indexed to allow ready reference to each Product.
 3. Product data shall be clearly marked to identify the applicable Products or models. Options or modifications required by the Contract Documents shall be clearly identified.
 4. Submittals shall be complete with all associated Products. Submittals on portions of a Product or system shall not be reviewed.
 5. Provide Manufacturer's start-up procedures, testing and checklists.
 6. Contractor shall provide coordinated shop drawings of Division 23 systems. Provide 3-D shop drawings of major mechanical rooms indicating equipment, duct, piping, and service access clearances. Shop drawings shall be prepared in electronic format and submitted in electronic and printed form.
- E. Architect/Engineer Procedures: Submittals will be reviewed with reasonable promptness. The Contractor shall allow 15 days for review of each submittal. The Architect/Engineer's comments will be indicated on a Submittal Review Comments form, which will be attached to each copy of the submittal. Contractor shall be responsible for distributing copies of reviewed submittals as appropriate.
- F. Resubmission: Contractor shall change or correct submittals as required by the Architect/Engineer and resubmit until approved. The Contractor shall identify any changes other than those required by the Architect/Engineer on all copies of the resubmittal.
- G. Approval required: The ordering, fabrication and/or installation of Products before approval of all relevant submittals shall be at the Contractor's risk. Any damage to new or existing Work resulting from the installation of unapproved Products shall be repaired or replaced by the Contractor at no additional cost. Payment will not be recommended for any Work that does not have an approved submittal.
- 1.12 SUBSTITUTIONS
- A. Refer to Division 01 requirements.
 - B. For a Product specified by naming one or more manufacturer and model, and followed with the statement "or approved equal," the Contractor may submit a Product other

than the Product specified by manufacturer and model, that Product shall be considered a Substitute Product and shall comply with the following conditions:

1. The Contractor shall verify the Substitute Product is equal or superior in all respects to the Specified Product.
2. The Contractor shall submit data on the Substitute Product in compliance with the "Submittals" paragraph herein.
3. After the Substitute Product has been approved by the Architect/Engineer, the Contractor shall be responsible for coordinating the installation of the Substitute Product with all trades. The Contractor shall be responsible for any changes required to incorporate the Substitute Product into the Work.
4. The Contractor waives all claims for additional costs related to the Substitute Product that becomes apparent before, during or after installation.

1.13 OPERATING AND MAINTENANCE MANUAL

- A. Refer to Division 01 requirements.
- B. General: The Contractor shall submit one copy of the Operation and Maintenance Manual to the Architect/Engineer for review a minimum of 60 days prior to Instruction and Training Sessions. This copy will be returned to the Contractor with Architect/Engineer's comments or approval. The Contractor shall revise and resubmit one copy of the O&M Manual as required. The Contractor shall provide four copies of the approved O&M Manual. Instruction and Training Sessions shall begin 30 days after receipt of the approved O&M Manuals. Refer to "Instruction and Training Sessions" paragraph herein.
- C. Binders: Commercial quality, 8-1/2x11 inch, three ring binders with durable plastic covers; three inch maximum ring size. Attach printed labels to the front and side of each binder stating '(PROJECT NAME) OPERATION AND MAINTENANCE MANUAL'; applicable volume number; and project title. Provide tabbed dividers for each Product and system, with typed description or applicable Specification Section. Provide a table of contents for the entire manual and insert at the front of each binder.
- D. Contents: The manual shall consist of three parts as follows:
 1. Part 1: Directory listing names, addresses, and telephone numbers of Architect, Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions including, but not limited to, the following:
 - a. General description and specifications of each component and of each system as a whole.
 - b. Manufacturer's catalog description of each component supplemented by approved equipment submittals.
 - c. Detailed electrical and logic descriptions.
 - d. Installation and start-up instructions, including complete calibration procedures for each component and for system as a whole.
 - e. Operating instructions including:
 - 1) Sequence of operation
 - 2) Shutdown procedure
 - 3) Emergency operating procedures

- f. Trouble shooting guide with service instructions
 - g. Preventive maintenance schedules
 - h. Parts list with names, addresses, and telephone numbers of local parts suppliers.
 - i. Names, addresses, and phone numbers of nearest service organizations
 - j. Interface requirements and capabilities.
 - k. Detailed schematics of equipment.
 - l. Complete equipment schedules.
3. Part 3: Project documents including, but not limited to, the following:
- a. Testing, adjusting, and balancing report
 - b. Certificates
 - c. Copies of warranties.
- E. Quality: The manual will be reviewed by the Architect/Engineer to determine accuracy, completeness and quality of printing. Deficiencies will necessitate resubmittals by the Contractor. Refer to "Submittals" paragraph herein.
- 1.14 INSTRUCTION AND TRAINING SESSIONS
- A. Refer to Division 01 requirements.
 - B. After all equipment and services are in operation and receipt of the approved Operation and Maintenance Manuals, Instruction and Training Sessions shall be conducted for representatives of the Owner.
 - C. Instruction Session shall be conducted during the Owner's normal working periods and at times satisfactory to the Owner.
 - 1. Session shall be sufficient to address all instruction and training for the installed systems and shall last not less than one 8-hour working day.
 - D. The Training Session shall address the operation and maintenance of each piece of equipment and of the system as a whole. Preventative maintenance techniques shall be included.
 - E. Instructions and training shall be given by competent, factory-trained service and operating personnel from the appropriate manufacturer(s). The Contractor shall record the names of all personnel present at each Instruction and Training Session and shall forward a copy of the attendance log to the Architect/Engineer within seven days after each session.
- 1.15 RECORD DRAWINGS
- A. Refer to Division 01 requirements.
- 1.16 PROJECT/SITE CONDITIONS
- A. Install work in locations shown on Drawings, unless prevented by Project conditions.
 - B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.
- 1.17 WARRANTIES
- A. Refer to Division 01 requirements.
 - B. Warranty periods shall begin from Date of Substantial Completion.
 - C. All equipment shall be warranted for a minimum of one (1) year. Refer to individual Sections for other requirements.

1.18 COMMISSIONING

- A. Refer to Division 01 requirements.
- B. Start-up of all systems and sub-systems shall be coordinated by the Commissioning Agent. An experienced mechanic(s) shall be on site throughout the start-up and commissioning process to coordinate activities and insure that all equipment is functioning as intended.

1.19 CONTRACTOR COORDINATION

- A. Nomenclature for final room names and numbers may vary from the construction documents. Final names and numbers used in the shop drawings shall be coordinated with final room names and numbers assigned by the Owner and Architect.
- B. HVAC contractor(s) shall coordinate their work with all other trades prior to fabrication of systems and commencement of installation. It shall be the responsibility of each contractor to review the work of other trades (including, but not limited to civil, structural, architectural, plumbing, and electrical) as it affects their work, and as their work affects other trades, to insure that the construction documents are closely followed. Where discrepancies arise, they shall be referred to the Architect/Engineer for resolution before proceeding with the Work.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. Unless otherwise noted, install equipment in accordance with manufacturer's printed instructions for application indicated.
- B. Install, operate, and adjust systems in accordance with the plans and specifications.
- C. All work for this division shall conform to the regulations of the applicable federal, state, and local laws, ordinances, and codes.
- D. A Request For Information (RFI) shall be submitted to the Architect/Engineer for any portion of the Work that the Contractor determines a clarification is required. Prior to submitting a RFI the Contractor shall thoroughly research the Contract Documents to ensure information has not been overlooked. The RFI shall include references to the portion of the Contract Documents that requires a clarification. The Contractor shall allow a minimum of three business days for the Architect/Engineer to respond to the RFI. The Contractor shall not proceed with that portion of the Work until a response has been returned.
- E. All Products delivered to the site(s) shall be stored in accordance with the manufacturer's printed instructions. If a manufacturer does not have printed instructions then the Product shall be adequately housed and otherwise protected against damage or corrosion. If any Product stored at the site(s) is not protected as specified herein, the Contractor shall not receive payment for that Product. That Product shall be stored by the Owner at the expense of the Contractor. Any Product damaged as a result of failure to comply with this requirement shall be replaced by the Contractor at no additional cost to the Owner.

3.2 ACCESSIBILITY

- A. Locate all equipment, which must be serviced, operated, or maintained in fully accessible positions in accordance with manufacturer's recommendations and subject to approval of Architect. Provide a minimum of two feet of clearance in front of equipment access doors and components requiring service.

3.3 PROTECTION OF OPENINGS

- A. Openings in partially installed systems, including equipment and piping, shall be plugged, capped, or otherwise closed with approved methods and materials or devices until connections are made.

3.4 PROTECTION FROM MOVING PARTS

- A. Belts, shafts, couplings, and other rotating or moving parts, located so that any person may come in proximity thereto, shall be fully enclosed or properly guarded.

END OF SECTION

SECTION 23 0548 - VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Vibration isolators.

1.2 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide schedule of vibration isolator type with location and load on each.
- C. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
 - 1. Member of Vibration Isolation and Seismic Control Manufacturers Association (VISCMA).

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General:
 - 1. All vibration isolators, base frames and inertia bases to conform to all uniform deflection and stability requirements under all operating loads.
 - 2. Steel springs to function without undue stress or overloading.

2.2 VIBRATION ISOLATORS

- A. Non-Seismic Type:
 - 1. Restrained Steel Springs:
 - a. Housing: Rigid blocking during rigging prevents equipment installed and operating height from changing during temporary weight reduction.
 - b. Equipment Wind Loading: Adequate means for fastening isolator top to equipment and isolator base plate to supporting structure.
 - 2. Elastomeric Hangers:
 - a. Housing: Steel construction containing elastomeric isolation element to prevent rod contact with housing and short-circuiting of isolating function.
 - b. Incorporate steel load distribution plate sandwiching elastomeric element to housing.
 - 3. Spring Hanger:
 - a. Housing: Steel construction containing stable steel spring and integral elastomeric element preventing metal to metal contact.
 - b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.
 - 4. Combination Elastomeric-Spring Hanger:
 - a. Housing: Steel construction containing stable steel spring with elastomeric element in series isolating upper connection of hanger box to building structure.
 - b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.
 - 5. Neoprene Pad Isolators:
 - a. Hardness: 30 durometer.

- b. Thickness: Minimum 1/2 inch.
- c. Maximum Loading: 50 psi.
- d. Rib Height: Maximum 0.7 times width.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions.
- B. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.

3.2 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect isolated equipment after installation and submit report. Include static deflections.

END OF SECTION

SECTION 23 0553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.

1.2 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.
- F. Project Record Documents: Record actual locations of tagged valves.

PART 2 - PRODUCTS

2.1 IDENTIFICATION APPLICATIONS

- A. Air Handling Units: Nameplates.
- B. Automatic Controls: Tags. Key to equipment served.
- C. Control Panels: Nameplates.
- D. Ductwork: Stencilled painting.
- E. Heat Transfer Equipment: Nameplates.
- F. Major Control Components: Nameplates.
- G. Piping: Pipe markers stencil painting; tags for small diameters.
- H. Small-sized Equipment: Tags.

2.2 NAMEPLATES

- A. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch.
 - 3. Background Color: Black.

2.3 STENCILS

- A. Stencils: With clean cut symbols and letters of following size:
 - 1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
 - 2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
 - 3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
 - 4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
 - 5. Ductwork and Equipment: 2-1/2 inch high letters.
- B. Stencil Paint: As specified in Division 09, semi-gloss enamel, colors conforming to ASME A13.1.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Section 09 9123 for stencil painting.

3.2 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Apply stencil painting in accordance with Division 09.
- D. Install plastic pipe markers in accordance with manufacturer's instructions.
- E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- F. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
- G. Identify piping, concealed or exposed, as scheduled herein. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.
- H. Identify ducts with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.
- I. Install ductwork with stencilled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.
- J. Locate ceiling tacks to locate valves or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 23 3100 - HVAC DUCTS AND CASINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal ductwork.
- B. Casing and plenums.

1.2 REFERENCE STANDARDS

- A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- E. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems 2018.
- F. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2005 (Revised 2009).
- G. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual 2012.
- H. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors current edition, including all revisions.
- I. UL 1978 - Grease Ducts Current Edition, Including All Revisions.
- J. UL 2221 - Tests of Fire Resistive Grease Duct Enclosure Assemblies Current Edition, Including All Revisions.

1.3 PERFORMANCE REQUIREMENTS

- A. No variation of duct configuration or sizes permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide data for duct materials and duct connections.
- C. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for 1-inch pressure class and higher systems.
- D. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK).
- E. Project Record Documents: Record actual locations of ducts, dampers, and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with documented experience.

1.6 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

- B. Maintain temperatures within acceptable range during and after installation of duct sealants.
- C. All duct shall be stored and secured to prevent damage from precipitation and surrounding construction. Maintain duct section seals prior to installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - 2. VOC Content: Not more than 250 g/L, excluding water.
 - a. LEED compliant.
 - 3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
 - 4. For Use With Flexible Ducts: UL labeled.
- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- D. Ducts: Galvanized steel, unless otherwise indicated.
- E. Hanger Rod: ASTM A 36/A 36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.2 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE (FUND) Handbook - Fundamentals.
- C. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- D. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide air foil turning vanes of perforated metal with glass fiber insulation.
- E. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
- F. T's, bends, and elbows: Construct according to SMACNA (DCS).
- G. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- H. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).
- I. Provide standard 45 degree lateral wye takeoffs unless otherwise indicated where 90 degree conical tee connections may be used.

- J. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.3 MANUFACTURED DUCTWORK AND FITTINGS

- A. Manufacture in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. Transverse Duct Connection System: SMACNA "E" rated rigidly class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips in accordance with SMACNA (DCS).

2.4 CASINGS

- A. Fabricate casings in accordance with SMACNA (DCS) and construct for operating pressures indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- E. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- G. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of air flow.
- H. Use double nuts and lock washers on threaded rod supports.
- I. Connect diffusers or light troffer boots to low pressure ducts directly or with 3-5 ft length of flexible duct held in place with stainless steel strap or clamp.
- J. Seal all duct seams with mastic.
- K. At exterior wall louvers, seal duct to louver frame and install blank-out panels.

END OF SECTION

SECTION 23 3300 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Air turning devices/extractors.
- B. Backdraft dampers - metal.
- C. Flexible duct connections.

1.2 RELATED REQUIREMENTS

- A. Section 23 3100 - HVAC Ducts and Casings.

1.3 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- B. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2005 (Revised 2009).
- C. UL 33 - Safety Heat Responsive Links for Fire-Protection Service Current Edition, Including All Revisions.
- D. UL 555 - Standard for Fire Dampers Current Edition, Including All Revisions.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.
- D. Project Record Drawings: Record actual locations of access doors and test holes.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Fusible Links: Two of each type and size.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

PART 2 - PRODUCTS

2.1 AIR TURNING DEVICES/EXTRACTORS

- A. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

2.2 BACKDRAFT DAMPERS - METAL

- A. Gravity Backdraft Dampers, Size 18 by 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.
- B. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.3 FLEXIBLE DUCT CONNECTIONS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
 - a. Net Fabric Width: Approximately 2 inches wide.
 - 2. Metal: 3 inches wide, 24 gage, 0.0239 inch thick galvanized steel.

2.4 MISCELLANEOUS PRODUCTS

- A. Duct Opening Closure Film: Mold-resistant, self-adhesive film to keep debris out of ducts during construction.
 - 1. Thickness: 2 mils.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that electric power is available and of the correct characteristics.

3.2 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 3100 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- D. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

END OF SECTION

SECTION 23 3423 - HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

1.2 REFERENCE STANDARDS

- A. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program 2015.
- B. AMCA 99 - Standards Handbook 2016.
- C. AMCA 204 - Balance Quality and Vibration Levels for Fans 2005 (Reaffirmed 2012).
- D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating 2016.
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans 2014.
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data 2014.
- G. UL 705 - Power Ventilators Current Edition, Including All Revisions.

1.3 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.
- C. Manufacturer's Instructions: Indicate installation instructions.
- D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.5 FIELD CONDITIONS

- A. Permanent ventilators may not be used for ventilation during construction.

PART 2 - PRODUCTS

2.1 POWER VENTILATORS - GENERAL

- A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
- B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
- D. Fabrication: Conform to AMCA 99.
- E. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.
- F. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.2 CABINET AND CEILING EXHAUST FANS

- A. Centrifugal Fan Unit: V-belt or direct driven with galvanized steel housing, resilient mounted motor, gravity backdraft damper in discharge.
- B. Disconnect Switch: Cord and plug in housing for thermal overload protected motor.
- C. Grille: Aluminum with baked white enamel finish.
- D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide sheaves required for final air balance.
- C. Install backdraft dampers on inlet to roof and wall exhausters.
- D. Provide backdraft dampers on outlet from cabinet and ceiling exhausters fans and as indicated.

3.2 SCHEDULES

- A. Refer to the drawings.

END OF SECTION

SECTION 23 3700 - AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Registers/grilles.

1.2 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting: Painting of ducts visible behind outlets and inlets.

1.3 REFERENCE STANDARDS

- A. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating 2015.
- B. ARI 890 - Standard for Air Diffusers and Air Diffuser Assemblies; Air-Conditioning and Refrigeration Institute; 2008.
- C. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Inlets 2006 (Reaffirmed 2021).

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- C. Project Record Documents: Record actual locations of air outlets and inlets.

1.5 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.
- C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.

PART 2 - PRODUCTS

2.1 LOUVERS

- A. Type: 4 inch deep with blades on 45 degree slope with center baffle and return bend, heavy channel frame, 1/2 inch square mesh screen over exhaust and 1/2 inch square mesh screen over intake.
- B. Fabrication: 12 gage, 0.1046 inch thick extruded aluminum, welded assembly, with factory prime coat finish.
- C. Color: Custom to be selected by the A/E.
- D. Mounting: Furnish with interior flat flange for installation.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- E. Paint ductwork visible behind air outlets and inlets matte black. Refer to Division 09 requirements.

3.2 SCHEDULES

A. Refer to the drawings.

END OF SECTION

SECTION 23 8200 - CONVECTION HEATING AND COOLING UNITS

<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 SECTION INCLUDES

- A. Electric wall heaters.

2.2 RELATED REQUIREMENTS

- A. Section 23 0719 - HVAC Piping Insulation.
- B. Section 23 2113 - Hydronic Piping.

2.3 REFERENCE STANDARDS

- A. AHRI Directory of Certified Product Performance - Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Current Edition.
- B. AHRI 410 - Forced-Circulation Air-Cooling and Air-Heating Coils 2001, with Addendum (2011).

2.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Product Data: Provide typical catalog of information including arrangements.
- C. Shop Drawings:
 - 1. Indicate cross sections of cabinets, grilles, bracing and reinforcing, and typical elevations.
 - 2. Indicate air coil and frame configurations, dimensions, materials, rows, connections, and rough-in dimensions.
 - 3. Submit schedules of equipment and enclosures typically indicating length and number of pieces of element and enclosure, corner pieces, end caps, cap strips, access doors, pilaster covers, and comparison of specified heat required to actual heat output provided.
- D. Verification Samples: For each finish product specified, color chip representing actual product in color and texture.
- E. Manufacturer's Instructions: Indicate installation instructions and recommendations.
- F. Project Record Documents: Record actual locations of components and locations of access doors in radiation cabinets required for access or valving.
- G. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listings.
- H. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

2.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.6 WARRANTY

- A. Refer to Division 01 requirements.

PART 2 - PRODUCTS

3.1 ELECTRIC WALL HEATERS

- A. Assembly: UL listed and labelled assembly with terminal box and cover, and built-in controls.
- B. Heating Elements: Enclosed copper tube, aluminum finned element of coiled nickel-chrome resistance wire centered in tubes and embedded in refractory material.
- C. Cabinet: 0.0478 inch steel with easily removed front panel with integral air outlet and inlet grilles.
- D. Element Hangers: Quiet operating, ball bearing cradle type providing unrestricted longitudinal movement, on enclosure brackets.
- E. Fan: Direct drive propeller type, statically and dynamically balanced, with fan guard.
- F. Motor: Permanently lubricated, sleeve bearings for horizontal models, ball bearings for vertical models.
- G. Control: Separate fan speed switch and thermostat heat selector switch, factory wired, with switches built-in behind cover. Provide thermal overload.
- H. Electrical Characteristics:
 - 1. Refer to Equipment Schedules.

PART 3 - EXECUTION

4.1 EXAMINATION

- A. Verify that surfaces are suitable for installation.
- B. Verify that field measurements are as shown on the drawings.

4.2 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Install equipment exposed to finished areas after walls and ceilings are finished and painted.
- C. Do not damage equipment or finishes.
- D. Units with Electric Heating Elements:
 - 1. Install as indicated including electrical devices furnished by manufacturer but not factory installed.

4.3 CLEANING

- A. After construction and painting is completed, clean exposed surfaces of units.
- B. Vacuum clean coils and inside of units.
- C. Touch-up marred or scratched surfaces of factory-finished cabinets using finish materials furnished by the manufacturer.

4.4 PROTECTION

- A. Provide finished cabinet units with protective covers during the balance of construction.

END OF SECTION

SECTION 26 0500 - COMMON WORK RESULTS FOR ELECTRICAL
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Requirements of Division 01, the General Conditions, Supplemental General Conditions, and Special Conditions apply to this and all Electrical Specification Sections.
- B. This Section applies to all Electrical sections.

1.2 JOB CONDITIONS

- A. The Contract Documents specify the scope and arrangement of the Work and shall be followed as closely as actual conditions allow.
- B. The Contractor shall give consideration to all other trades, and make arrangements to avoid conflicts and interference with other Work, new or existing. Contractor shall coordinate all components of the Work, and provide minor adjustments as required, including offsets, transitions, fittings, and accessories to meet actual conditions.
- C. The Contractor shall visit the job site prior to bid date to examine the conditions under which the Work is to be performed. No extra charges shall be paid for providing of Products or furnishing of Work resulting from failure to comply with this requirement.

1.3 CONFORMANCE TO REGULATIONS

- A. All Work shall conform to the regulations of the applicable federal, state, and local laws, ordinances and codes.

1.4 REGULATORY REQUIREMENTS

- A. All applicable Work shall conform to the requirements of NFPA 70.
- B. All Products shall be listed by the Underwriters Laboratories, Inc. (UL), and shall bear the UL label. Where UL labels are not provided from the factory, the Contractor shall be responsible for having the equipment or materials tested by a UL testing firm, acceptable to authority having jurisdiction, to determine suitability of the Product for purpose specified.

1.5 MATERIALS AND EQUIPMENT

- A. Unless specifically noted otherwise, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards, be of a current design, new, unused, and undamaged.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect Products from damage, marring, and soiling.
- B. Any marring of factory finishes shall be repaired or replaced as necessary to match the original factory finish.

1.7 SUBMITTALS

- A. Contractor preparation:
 - 1. The Contractor shall review and approve each submittal and coordinated all other related or affected Work before submitting for review. All copies of each submittal shall bear the Contractor's stamp, with signature or initials, certifying review and approval; verification of field dimensions; and coordination with adjacent Work are in compliance with the requirements of the Contract Documents.

2. The Contractor shall identify variations from the requirements of the Contract Documents on all copies of applicable submittals. No extra charges shall be paid for the providing of Products or furnishing of Work required as a result of failure to comply with this requirement.
- B. Submittal Format:
1. Each submittal shall be accompanied by a letter of transmittal listing Project Title, Contractor, Subcontractor or supplier, submitted Products, pertinent drawing and detail number, and specification section number, as appropriate.
 2. Submittals shall be submitted electronically in PDF Format.
- C. Architect/Engineer Procedures: Submittals will be reviewed with reasonable promptness. The Contractor shall allow 15 days for review of each submittal. The Architect/Engineer's comments will be indicated on a Submittal Review Comments form, which will be attached to each copy of the submittal. Contractor shall be responsible for distributing copies of reviewed submittals as appropriate.
- D. Resubmission: Contractor shall change or correct submittals as required by the Architect/Engineer and resubmit until approved. The Contractor shall identify any changes other than those required by the Architect/Engineer on all copies of the resubmittal.
- E. Approval required: The ordering, fabrication and/or installation of Products before approval of all relevant submittals shall be at the Contractor's risk. Any damage to new or existing Work resulting from the installation of unapproved Products shall be repaired or replaced by the Contractor at no additional cost. Payment will not be recommended for any Work that does not have an approved submittal.
- 1.8 SUBSTITUTIONS
- A. For a Product specified by naming one or more manufacturer and model, and followed with the statement "or approved equal," the Contractor may submit a Product other than the Product specified by manufacturer and model, that Product shall be considered a Substitute Product and shall comply with the following conditions:
1. The Contractor shall verify the Substitute Product is equal or superior in all respects to the Specified Product.
 2. The Contractor shall submit data on the Substitute Product in compliance with the "Submittals" paragraph herein.
 3. The Contractor shall be responsible for coordinating the installation of the Substitute Product with all trades. The Contractor shall be responsible for any changes required incorporating the Substitute Product into the Work.
 4. The Contractor waives all claims for additional costs related to the Substitute Product that become apparent before, during or after installation.
- 1.9 OPERATING AND MAINTENANCE MANUAL
- A. General: The Contractor shall submit one copy of the Operation and Maintenance Manual to the Architect/Engineer for review a minimum of 60 days prior to Instruction and Training Sessions. This copy will be returned to the Contractor with Architect/Engineer's comments or approval. The Contractor shall revise and resubmit one copy of the O&M Manual as required. The Contractor shall provide four copies of the approved O&M Manual. Instruction and Training Sessions shall begin 30 days after

receipt of the approved O&M Manuals. Refer to "Instruction and Training Sessions" paragraph herein.

B. Contents: The manual shall consist of three parts as follows:

1. Part 1: Directory listing names, addresses, and telephone numbers of Architect, Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions including, but not limited to, the following:
 - a. General description and specifications of each component and of each system as a whole.
 - b. Manufacturer's catalog description of each component supplemented by approved equipment submittals.
3. Part 3: Project documents including, but not limited to, the following:
 - a. Testing report(s).
 - b. Certificates
 - c. Copies of warranties.

1.10 RECORD DRAWINGS

A. Refer to Division 01 requirements.

END OF SECTION

SECTION 26 0519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES (600 V & LESS)

PART 1 - GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.

1.2 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

1.3 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- B. Comply with NEMA WC 70.
- C. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- D. Conductor Material:
1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
- E. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
- F. Conductor Color Coding:
1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 2. Color Coding Method: Integrally colored insulation.
 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:

- 1) Phase A: Black.
- 2) Phase B: Red.
- 3) Phase C: Blue.
- 4) Neutral/Grounded: White.

2.3 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

2.4 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A, 486B or UL 486C as applicable.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Circuiting Requirements:
 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated and routing is not shown, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft of location shown.
 5. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- D. Installation in Raceway:
 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

- E. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- F. Terminate cables using suitable fittings.
- G. Install conductors with a minimum of 12 inches of slack at each outlet.
- H. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- I. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- J. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
- K. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
- L. Insulate ends of spare conductors using vinyl insulating electrical tape.
- M. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION

SECTION 26 0526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

PART 2 - PRODUCTS

3.1 GROUNDING AND BONDING REQUIREMENTS

- A. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- B. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- C. Grounding System Resistance:
 - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect/Engineer. Precipitation within the previous 48 hours does not constitute normally dry conditions.
 - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
- D. Grounding Electrode System:
 - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.
 - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 - 2. Metal Underground Water Pipe(s):
 - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
 - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
 - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
 - 3. Ground Rod Electrode(s):
 - a. Provide single ground electrode.
 - 4. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
- E. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as

indicated and in accordance with NFPA 70.

2. --CHOOSE ONE OF THE TWO SUBPARAGRAPHS BELOW--
3. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

3.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Connectors for Grounding and Bonding:

1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.

C. Ground Rod Electrodes:

1. Comply with NEMA GR 1.
2. Material: Copper-bonded (copper-clad) steel.
3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.

PART 3 - EXECUTION

4.1 INSTALLATION

A. Make grounding and bonding connections using specified connectors.

1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.

B. Identify grounding and bonding system components in accordance with Section 26 0553.

END OF SECTION

SECTION 26 0529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

<<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
2. Coordinate the work with other trades to provide additional framing and materials required for installation.
3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.

2.2 SUBMITTALS

- ###### A. Product Data:
- Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.

2.3 QUALITY ASSURANCE

- ###### A. Comply with NFPA 70.

PART 2 - PRODUCTS

3.1 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:

1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
3. Do not use products for applications other than as permitted by NFPA 70 and product listing.
4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

- ###### B. Conduit and Cable Supports:
- Straps, clamps, etc. suitable for the conduit or cable to be supported.

1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
2. Conduit Clamps: Bolted type unless otherwise indicated.

- ###### C. Outlet Box Supports:
- Hangers, brackets, etc. suitable for the boxes to be supported.

- ###### D. Metal Channel (Strut) Framing Systems:
- Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.

1. Comply with MFMA-4.

- ###### E. Hanger Rods:
- Threaded zinc-plated steel unless otherwise indicated.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- B. Unless specifically indicated or approved by Architect/Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- C. Unless specifically indicated or approved by Architect/Engineer, do not provide support from roof deck.
- D. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- E. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

END OF SECTION

SECTION 26 0533.13 - CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- B. Project Record Documents: Record actual routing for conduits installed underground and conduits 2 inch (53 mm) trade size and larger.

PART 2 - PRODUCTS

2.1 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Underground:
 - 1. Under Slab on Grade: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or rigid PVC conduit.
 - 2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit or rigid PVC conduit.
 - 3. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
 - 4. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows for bends.
- C. Connections to Vibrating Equipment:
 - 1. Dry Locations: Use flexible metal conduit.
 - 2. Maximum Length: 6 feet unless otherwise indicated.

2.2 CONDUIT REQUIREMENTS

- A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 3/4 inch (21 mm) trade size.
 - 2. Underground, Exterior: 1 inch (27 mm) trade size.

2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

2.5 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- B. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- C. Conduit Routing:
 - 1. Conceal all conduits unless specifically indicated to be exposed.
 - 2. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 3. Arrange conduit to provide no more than the equivalent of three 90 degree bends between pull points.
- D. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- E. Connections and Terminations:
 - 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 - 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 - 3. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 - 4. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 - 5. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- F. Provide grounding and bonding in accordance with Section 26 0526.

3.2 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.3 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 0533.16 - BOXES FOR ELECTRICAL SYSTEMS

<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for outlet and device boxes, junction and pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.

PART 2 - PRODUCTS

3.1 BOXES

- A. General Requirements:
 - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use raised covers suitable for the type of wall construction and device configuration where required.
 - 3. Do not use "through-wall" boxes designed for access from both sides of wall.
 - 4. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices: 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.
 - 5. Sheet Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 - 6. Boxes for supporting luminaires and ceiling fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 - 7. Boxes for ganged devices: use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
 - a. --CHOOSE ONE OF THE TWO PARAGRAPHS BELOW--
 - 8. Wall Plates: Comply with Section 26 2726.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- B. Box Supports:

1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
- C. Install boxes plumb and level.
- D. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- E. Provide grounding and bonding in accordance with Section 26 0526.
- 4.2 PROTECTION
- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

<<<<<<<<<< UPDATE NOTES

SPECIFYING STRATEGY

- 2.1 STEP 1: REVIEW "IDENTIFICATION REQUIREMENTS" ARTICLE UNDER PART 2.
- 2.2 STEP 2: REVIEW IDENTIFICATION PRODUCT ARTICLES UNDER PART 2.
 - A. Links for some products should already be activated according to selections made in "IDENTIFICATION REQUIREMENTS" article. Pay particularly close attention to optional paragraphs for format requirements. If any identification products need to be added or removed, revisit "IDENTIFICATION REQUIREMENTS" to see if additional changes are necessary.
- 2.3 STEP 3: REVIEW PART 3.
- 2.4 STEP 4: REVIEW PART 1.
 - A. Pay particularly close attention to "RELATED REQUIREMENTS" article for identification requirements that might need to be specified elsewhere.
- 2.5 STEP 5: COME BACK TO THIS SECTION AFTER ALL OTHER SECTIONS HAVE BEEN COMPLETED TO SEE IF ADDITIONAL CHANGES ARE NECESSARY.

2.6 -----

PART 1 - GENERAL

3.1 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

3.2 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

4.1 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - 2. --CHOOSE ONLY ONE OF THE TWO PARAGRAPHS BELOW--

4.2 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 - 3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
 - 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.

2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
 2. Text: All capitalized unless otherwise indicated.
 3. Minimum Text Height:
 - a. Equipment Designation: 1/2 inch.

PART 3 - EXECUTION

5.1 INSTALLATION

- A. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
- B. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- C. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- D. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION

SECTION 26 0923 - LIGHTING CONTROL DEVICES

<<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of lighting control devices with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate the placement of wall switch occupancy sensors with actual installed door swings.
3. Coordinate the placement of occupancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.

2.2 SUBMITTALS

A. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.

1. Occupancy Sensors: Include detailed motion detection coverage range diagrams.

2.3 WARRANTY

A. Provide five year manufacturer warranty for all occupancy sensors.

PART 2 - PRODUCTS

3.1 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

3.2 OCCUPANCY SENSORS

A. All Occupancy Sensors:

1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
2. Sensor Technology:
 - a. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval. Where indicated as manual-on, occupancy sensor to turn load on when occupant interacts with lighting control and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
5. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.

6. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
 7. Load Rating for Line Voltage Occupancy Sensors: As required to control the load indicated on drawings.
- B. Wall Switch Occupancy Sensors:
1. All Wall Switch Occupancy Sensors:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
 - b. Where indicated, provide two-circuit units for control of two separate lighting loads, with separate manual controls and separately programmable operation for each load.
 - c. Operation: Field selectable to operate either as occupancy sensor (automatic on/off) or as vacancy sensor (manual-on/automatic off).
 - d. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 2. Passive Infrared (PIR) Wall Switch Occupancy Sensors: Capable of detecting motion within an area of 900 square feet.
- C. Ceiling Mounted Occupancy Sensors:
1. All Ceiling Mounted Occupancy Sensors:
 - a. Description: Low profile occupancy sensors designed for ceiling installation.
 - b. Unless otherwise indicated or required to control the load indicated on drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - c. Occupancy sensor to be field selectable as either manual-on/automatic-off or automatic on/off.
 - d. Finish: White unless otherwise indicated.
 2. Passive Infrared/Ultrasonic Dual Technology Ceiling Mounted Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within an area of 450 square feet at a mounting height of 9 feet, with a field of view of 360 degrees.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of lighting control devices provided under this section.
- B. Occupancy Sensor Locations:
 1. Locate dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet from air supply ducts or other sources of heavy air flow and as

per manufacturer's recommendations, in order to minimize false triggers.

4.2 FIELD QUALITY CONTROL

- A. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
- B. Correct wiring deficiencies and replace damaged or defective lighting control devices.

4.3 ADJUSTING

- A. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect/Engineer.
- B. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

END OF SECTION

SECTION 26 2416 - PANELBOARDS

PART 1 - GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.

1.2 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1.3 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

PART 2 - PRODUCTS

2.1 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings or determined in coordination study.
- C. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- D. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- E. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
 - 2. Boxes: Galvanized steel unless otherwise indicated.

- a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- F. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- G. Load centers are not acceptable.
- H. Conductor Terminations:
 - 1. Main and neutral lug material: copper, suitable for terminating copper conductors only.
 - 2. main and neutral lug type: mechanical.
- I. Bussing:
 - 1. Phase and neutral bus material: Copper
 - 2. Ground bus material: Copper.

2.2 LIGHTING AND APPLIANCE PANELBOARDS

- A. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

2.3 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as specified on drawings or in coordination study.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Conductor Terminations:
 - a. Lug Material: Copper, suitable for terminating copper conductors only.
 - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 - 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- B. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.
- C. Provide grounding and bonding in accordance with Section 26 0526.
- D. Install all field-installed branch devices, components, and accessories.
- E. Provide filler plates to cover unused spaces in panelboards.

3.2 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

END OF SECTION

SECTION 26 2726 - WIRING DEVICES

PART 1 - GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.

1.2 SUBMITTALS

- ##### A. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

1.3 QUALITY ASSURANCE

- ##### A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.1 WIRING DEVICE FINISHES

- ##### A. Provide wiring device finishes as described below unless otherwise indicated.
- ##### B. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.
- ##### C. Wiring Devices Installed in Wet or Damp Locations: Gray with specified weatherproof cover.

2.2 RECEPTACLES

- ##### A. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498 and where applicable FS W-C-596; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 2. NEMA configurations specified are according to NEMA WD 6.
- ##### B. Convenience Receptacles:
1. Standard Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
 2. Weather Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
- ##### C. GFCI Receptacles:
1. All GFI Receptacles: Provide with integral protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
 - a. Provide test and reset buttons of same color as device.
 2. Standard GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.

3. Weather Resistant GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.

2.3 WALL PLATES

- A. Wall Plates: Comply with UL 514D.
 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 2. Size: Standard.
 3. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.
- C. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.
- D. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of wiring devices provided under this section.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- F. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- G. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- H. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

END OF SECTION

SECTION 26 5100 - INTERIOR LIGHTING

<<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the mounting system of luminaires with ceiling type and construction.

2.2 SUBMITTALS

A. Shop Drawings:

1. Provide photometric calculations where luminaires are proposed for substitution upon request.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

1. LED Luminaires:

- a. Include estimated useful life, calculated based on IES LM-80 test data.
- b. Include IES LM-79 test report upon request.

2.3 WARRANTY

A. Provide five year manufacturer warranty for all LED luminaires, including drivers.

PART 2 - PRODUCTS

3.1

3.2 SECTION 26 5013 (16503) - LUMINAIRE SCHEDULE CAN BE USED AS AN ALTERNATIVE TO A SCHEDULE ON DRAWINGS. USE THE FIRST ARTICLE BELOW TO INDICATE WHERE LUMINAIRE SCHEDULE CAN BE FOUND OR USE THE SECOND ARTICLE BELOW TO INCLUDE A LUMINAIRE SCHEDULE IN THIS SECTION.

3.3

3.4 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings.

3.5 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- E. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

3.6 LED LUMINAIRES AND DRIVERS

- A. General:
 - 1. Comply with IES LM-79-08 Approved Method for measuring lumen maintenance of LED light sources.
 - 2. Comply with IES LM-80-08 Approved Method for electrical and photometric measurement of SSL product.
 - 3. LED arrays shall be sealed, high performance, long life type; inimum 70% rated output at 50,000 hours.
 - 4. LED luminaires shall deliver a minimum of 60 lumens per watt.
 - a. LED's shall be "Bin No. 1" quality.
 - 5. Drivers shall be solid state and accept 120 through 277 VAC at 60 Hz input.
 - 6. The LED light source shall be fully dimmable with use of compatible dimmers switch designated for low voltage loads.
 - 7. Luminaires shall have internal thermal protection.
 - 8. LED drivers shall include the following features unless otherwise indicated.
 - a. Minimum efficiency: 85% at full load.
 - b. Minimum Operating Ambient Temperature: -4 degrees F (-20 degrees C).
 - c. Input Voltage: 120 - 277V ($\pm 10\%$) at 60 Hz.
 - d. Integral short circuit, open circuit, and overload protection.
 - e. Power Factor: > 0.95 .
 - f. Total Harmonic Distortion: $< 20\%$.
 - g. Comply with FCC 47 CFR Part 15.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- C. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- D. Install accessories furnished with each luminaire.
- E. Bond products and metal accessories to branch circuit equipment grounding conductor.

END OF SECTION

SECTION 26 5600 - EXTERIOR LIGHTING

<<<<<<<<<< UPDATE NOTES

PART 1 - GENERAL

2.1 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

2.2 SUBMITTALS

A. Shop Drawings:

1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
2. Provide photometric calculations where luminaires are proposed for substitution upon request.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
 - b. Include IES LM-79 test report upon request.
2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IESNA LM-63 standard format upon request.

2.3 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with documented experience.

2.4 WARRANTY

A. Provide five year manufacturer warranty for all LED luminaires, including drivers.

PART 2 - PRODUCTS

3.1 -----

3.2 SECTION 26 5013 (16503) - LUMINAIRE SCHEDULE CAN BE USED AS AN ALTERNATIVE TO A SCHEDULE ON DRAWINGS. USE THE FIRST ARTICLE BELOW TO INDICATE WHERE LUMINAIRE SCHEDULE CAN BE FOUND OR USE THE SECOND ARTICLE BELOW TO INCLUDE A LUMINAIRE SCHEDULE IN THIS SECTION.

3.3 -----

3.4 LUMINAIRES

- A. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
 - E. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
 - F. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
 - G. LED Luminaire Components: UL 8750 recognized or listed as applicable.
- 3.5 BALLASTS
- A. All Ballasts:
 - 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
 - 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Install products according to manufacturer's instructions.
- B. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA/IESNA 501 (exterior lighting).
- C. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- D. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- E. Install accessories furnished with each luminaire.
- F. Install lamps in each luminaire.

END OF SECTION

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Chain-link fences.
 - 2. Swing gates.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Fence and gates posts, rails, and fittings.
 - b. Chain-link fabric, reinforcements, and attachments.
 - c. Gates and hardware.
- B. Shop Drawings: For each type of fence and gate assembly.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include accessories, hardware, gate operation, and operational clearances.
- C. Samples for Initial Selection: For each type of factory-applied finish.
- D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of chain-link fence and gate.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.7 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
 - 1. Fabric Height: As indicated on Drawings.
 - 2. Steel Wire for Fabric: Wire diameter of 0.192 inch.
 - a. Mesh Size: 1-3/4 inches.
 - b. Zinc-Coated Fabric: ASTM A392, Type II, Class 1, 1.2 oz./sq. ft with zinc coating applied before weaving.
 - c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
 - 3. Selvage: Knuckled at both selvages.

2.2 FENCE FRAMEWORK

- A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 based on the following:
 - 1. Fence Height: As indicated on Drawings.
 - 2. Light-Industrial-Strength Material: Group II-L, roll-formed-steel C-section shapes.
 - a. End, Corner, and Pull Posts: 2.375 inches.
 - 3. Horizontal Framework Members: top and bottom rails according to ASTM F1043.
 - 4. Metallic Coating for Steel Framework:
 - a. Type A: Not less than minimum 2.0-oz./sq. ft. average zinc coating according to ASTM A123/A123M or 4.0-oz./sq. ft. zinc coating according to ASTM A653/A653M.

2.3 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch-diameter, marcelled tension wire according to ASTM A817 or ASTM A824, with the following metallic coating:
 - 1. Type II: Zinc coated (galvanized) by hot-dip process, with the following minimum coating weight:
 - a. Matching chain-link fabric coating weight.

2.4 SWING GATES

- A. General: ASTM F900 for gate posts and double swing gate types
 - 1. Gate Leaf Width: As indicated.
 - 2. Framework Member Sizes and Strength: Based on gate fabric height as indicated.
- B. Pipe and Tubing:
 - 1. Zinc-Coated Steel: ASTM F1043 and ASTM F1083; protective coating and finish to match fence framework.
- C. Frame Corner Construction: Welded.
- D. Hardware - Coordinate with 087100 Door Hardware:
 - 1. Hinges: 180-degree outward swing.
 - 2. Lock: Manufacturer's standard internal device.

2.5 FITTINGS

- A. Provide fittings according to ASTM F626.

- B. Rail and Brace Ends: For each gate, corner, pull, and end post.
- C. Tension and Brace Bands: Pressed steel
- D. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner.
- E. Tie Wires, Clips, and Fasteners: According to ASTM F626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
 - a. Hot-Dip Galvanized Steel: 0.148-inch- diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.
- F. Finish:
 - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated.

- C. Post Setting: Set posts in concrete at indicated spacing.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - a. Posts Set into Holes in Concrete: Form or core drill holes not less than 5 inches deep and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on Drawings.
- E. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
 - 1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- F. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch bottom clearance between surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- G. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.
- H. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.
- I. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.3 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.4 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 323113

Attachment C - Architectural Bid Plan

ALCOVA HEIGHTS PARK - PHASE II RESTROOM RENOVATION BID SUBMISSION

ARLINGTON
VIRGINIA

DEPARTMENT OF PARKS,
RECREATION AND
CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite
414
Arlington, VA 22201
Phone: 703.228.3323
Fax: 703.228.3328

GENERAL NOTES

1. DO NOT SCALE DRAWINGS. INDICATED DIMENSIONS GOVERN OVER SCALED DIMENSIONS. SHOULD A CONFLICT ARISE BETWEEN INDICATED DIMENSIONS AND FIELD CONDITION, NOTIFY THE OWNER IMMEDIATELY PRIOR TO PROCEEDING WITH THE WORK.
- 1a. DIMENSION INDICATED AS "CLEAR" SHALL MEASURE FROM FINISH FACE TO FINISH FACE OF REFERENCED SURFACES. ALLOW SUFFICIENT SPACE BETWEEN SUBSTRATES FROM FINISH MATERIAL THICKNESS AND MOUNTING SPACE.
- 1b. DIMENSIONS REFERENCED FROM CENTERLINE OR CL SHALL BE MEASURED FROM THE CENTER OF THE REFERENCED ITEM.
- 1c. "VIF" OR "+-" INDICATED DIMENSIONS SHALL BE FIELD VERIFIED. WHEN ACTUAL FIELD DIMENSION VARY IN SUCH A WAY AFFECT ELEMENTS WITHIN THE STRING, NOTIFY THE OWNER IMMEDIATELY.
- 1d. DIMENSIONS MAY BE APPROXIMATE. VERIFY ALL DIMENSIONS IN FIELD. SEE ALSO LAYOUT NOTES ON PLAN SHEET.
2. COORDINATE CONSTRUCTION OPERATIONS OF EACH TRADE INVOLVED SO WORK MAY BE CARRIED OUT SMOOTHLY AND WITHOUT DELAY. COORDINATE WORK THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND FUNCTION.
3. INSTALL MATERIALS, EQUIPMENT, HARDWARE, AND OTHER ELEMENTS IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS. COORDINATE LOCATION OF CONCEALED SUPPORTS FOR BLOCKING TO ENSURE PROPER INSTALLATION PRIOR TO CLOSING OF ALL WALLS AND CEILINGS.

4. PRIOR TO FABRICATION AND INSTALLATION OF MATERIALS, FIELD MEASURE AND RECHECK MEASUREMENTS FOR PROPER FIT.
5. PROTECT CONSTRUCTION ALREADY IN PLACE TO AVOID DAMAGE BY ONGOING CONSTRUCTION.
6. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR VISITING THE SITE AND EXAMINING IN DETAIL THE EXISTING CONDITIONS PRIOR TO SUBMITTING THE BID FOR THE WORK.
7. REQUIRED WORK OF A TRADE ME BE AFFECTED BY INFORMATION ON OTHER TRADE SHEETS. ALL BIDS SHALL BE BASED ON EXAMINATION OF A FULL SET OF DOCUMENTS.
8. THE INFORMATION CONTAINED HEREIN MAY REQUIRE ADJUSTMENT OR MODIFICATION TO CONFORM TO EXISTING CONDITIONS. IN CASES WHERE CHANGES IN DETAILS ARE NECESSARY, THESE DRAWINGS SHALL BE USED TO SHOW ONLY DESIGN INTENT.
9. ALL DAMAGE OF EXISTING CONSTRUCTION AND PROPERTY BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH NEW MATERIALS TO MATCH EXISTING.
10. MANUFACTURER'S NAMES, MODEL NUMBERS AND FINISHES ARE FOR IDENTIFICATION PURPOSES ONLY. THE LISTING IS NOT INTENDED TO LIMIT SELECTION OF TOTAL EQUIVALENT PRODUCTS FROM OTHER MANUFACTURER'S IF APPROVED BY OWNER.
11. A FULL AND COMPLETE JOB IS REQUIRED UNDER THIS CONTRACT. MATERIAL AND LABOR WHICH ARE RELATED TO THE WORK, BUT NOT NECESSARILY SPECIFICALLY INDICATED, AND WHICH ARE REASONABLY REQUIRED FOR A PROFESSIONALLY FINISHED JOB, SHALL BE PART OF THE WORK.
12. DIMENSION UNITS ARE ENGLISH UNITS, UNLESS NOTED OTHERWISE.

EXISTING BUILDING



PROPOSED MODIFICATIONS



21- DPR-ITB-291

Project Name and Location

Alcova Heights
Park
- Phase II
Restroom Renovation

Sheet Title

COVER SHEET

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

BID SET 9/21/21

Designed:

Drawn: **KN**

Checked: **BV**

Filename:

Plotted:

Scale: AS INDICATED

Date: 10/11/19

Seal



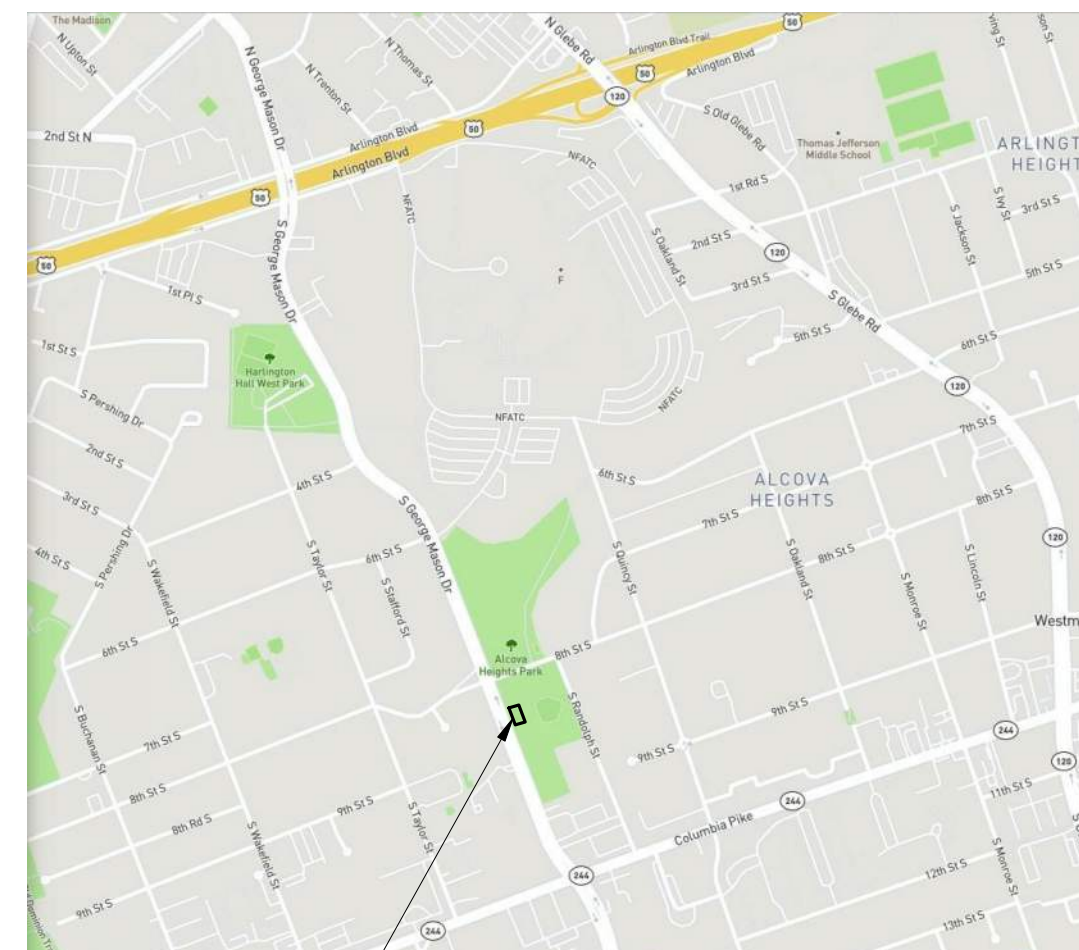
AERIAL VIEW



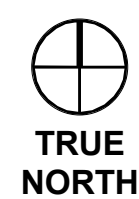
PROJECT LOCATION



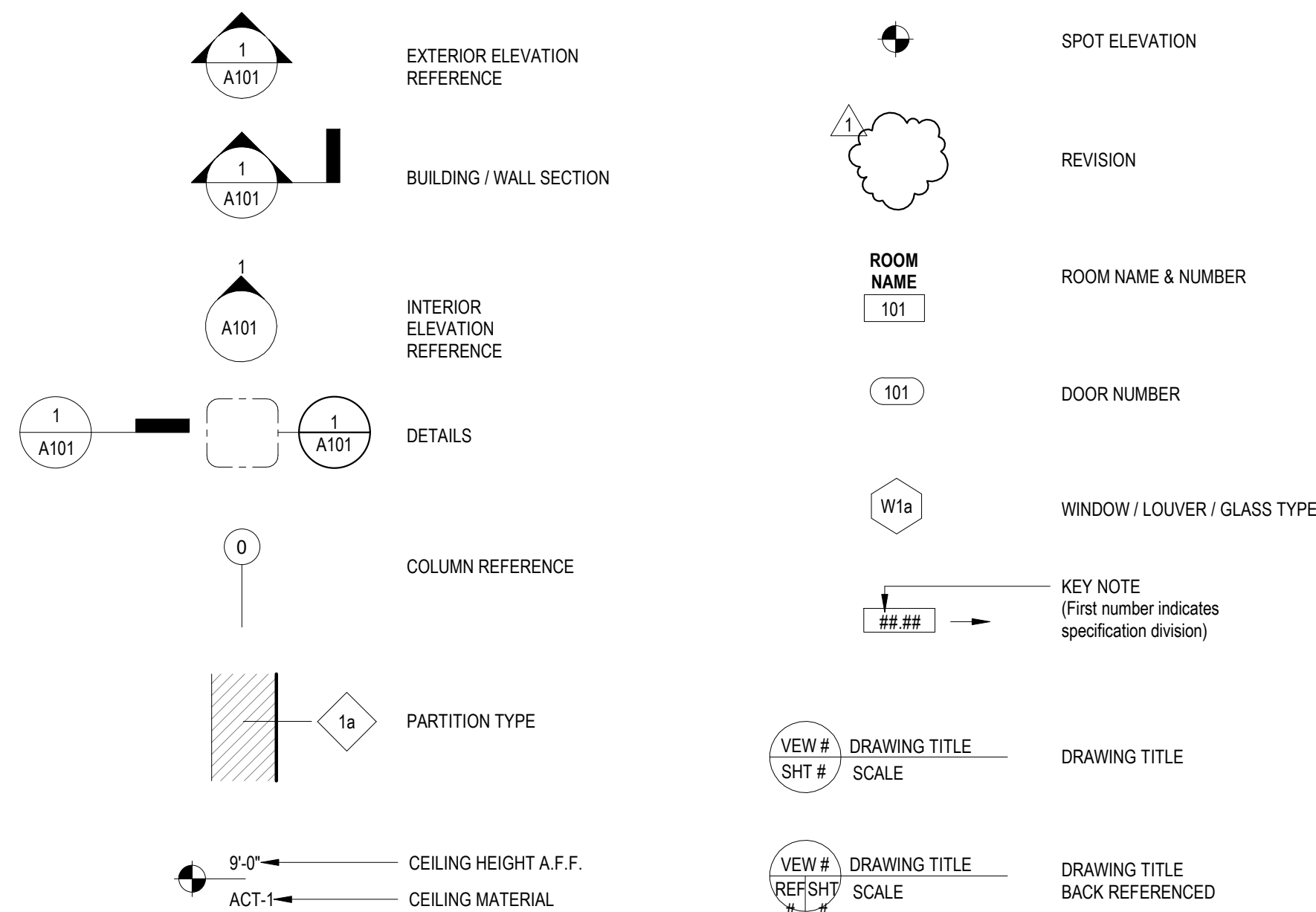
LOCATION MAP



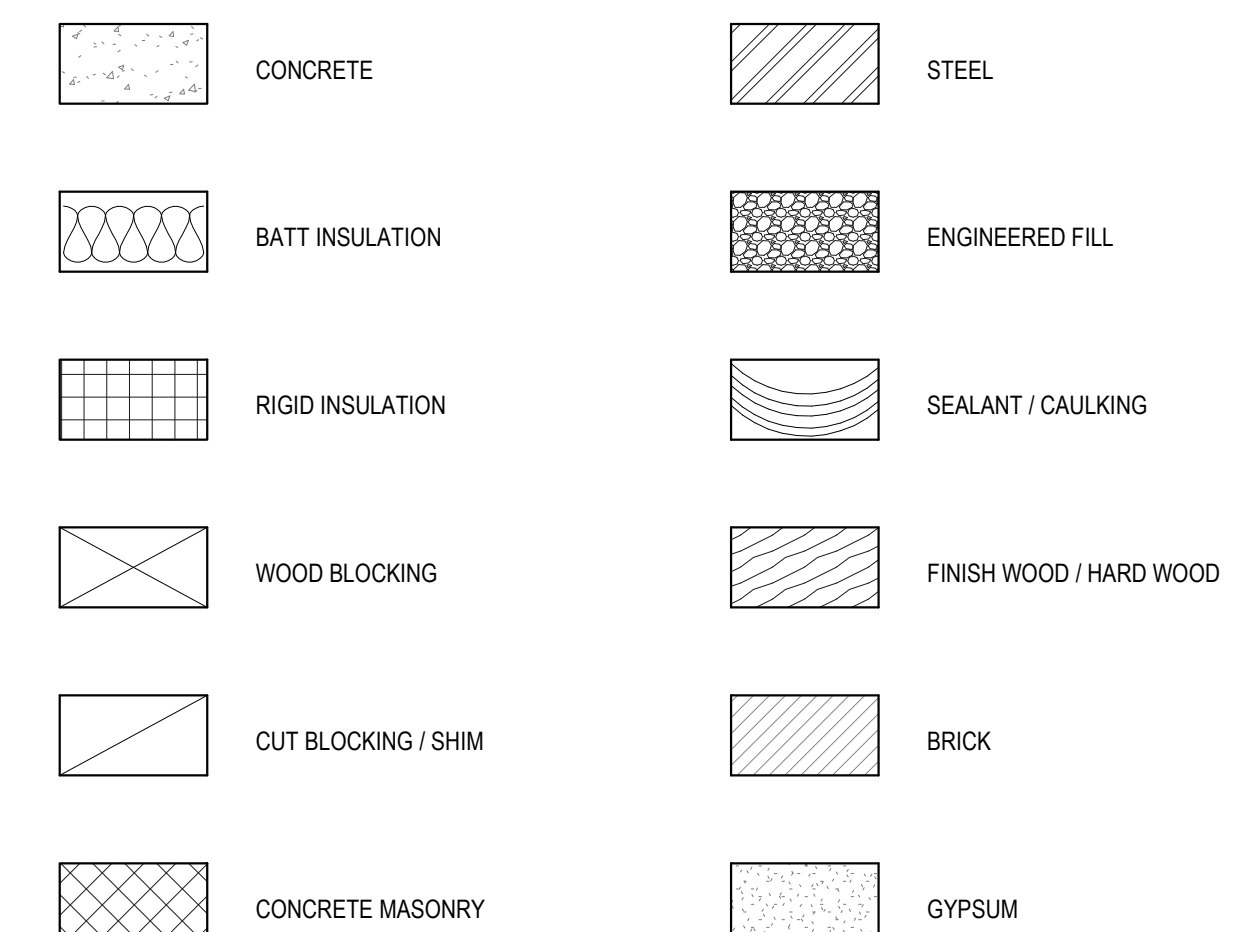
PROJECT LOCATION



DRAWING SYMBOLS



MATERIAL SYMBOLS



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: **A-001**



ABBREVIATIONS

AB ANCHOR BOLT	CF CUBIC FOOT (FEET)	DWGS DRAWINGS	GA GAUGE	KO KNOCK OUT	OA OVERALL	REF'G REFRIGERATOR	T&G TONGUE & GROOVE
ABV ABOVE	CI CAST IRON	DWR DRAWER	GALV GALVANIZED	LAM LAMINATED	OC ON CENTER	REINF REINFORCED (ING)	T.O.STL TOP OF STEEL
ACC ACCESS	CJ CONTROL JOINT		GB GYPSUM BOARD	LAV LAVATORY	OD OUTSIDE DIAMETER	REQ REQUIRED	TB TACK BOARD
ACOUS ACOUSTICAL	CL, CLO CLOSING	E EAST	GC GENERAL CONTRACTOR	LIN LINEAR	OFCl OWNER FURNISHED / CONTRACTOR INSTALLED	RES RESILIENT	TBR TO BE REMOVED
ACP ACOUSTICAL PANEL CEILING	CLG CEILING	EA EACH	GL GLASS	LP LOWPOINT	REV REVISE (REVISION)	RO ROUGH OPENING	TEL TELEPHONE
AD AREA DRAIN	CLR CONTRACT LIMIT LINE	EJ EXPANSION JOINT	GR GRADE	LT LIGHT	RTU ROOF TOP UNIT	TEMP TEMPERED	THK THICK
ADJ ADJUSTABLE	CLR CLEAR	EL ELEVATION	GWB GYPSUM WALLBOARD	LW LIGHTWEIGHT		THR THRESHOLD	TLT TOILET
AFF ABOVE FINISH FLOOR	CMU CONCRETE MASONRY UNIT	ELEC ELECTRICAL				TO TO	TOS TOP OF SLAB
AHU AIR HANDLING UNIT	CNR CORNER	ELEV ELEVATION	HB HOSE BIB	MACH MACHINE	SC SOLID CORE	TV TELEVISION	TYP TYPICAL
ALT ALTERNATE	CO CLEAN OUT	ENCL ENCLOSURE	HC HOLLOW CORE	MAINT MAINTENANCE	SCHED SCHEDULE		
ALUM ALUMINUM	COL COLUMN	ENT ENTRANCE	HD HEAVY DUTY	MATL MATERIAL	SCHWD SOLID CORE WOOD DOOR		
ANC ANCHORS	CONC CONCRETE	EQ EQUAL	HWDR HARDWARE	MAX MAXIMUM	SECT SECTION		
APPROX APPROXIMATE	CONST CONSTRUCTION	EQUIP EQUIPMENT	HWDR HARDWOOD	MB MARKER BOARD	SF SQUARE FOOT (FEET)		
ARCH ARCHITECT	CONT CONTINUOUS	ETR EXISTING TO REMAIN	HWDR HARDWARE	MDF MEDIUM DENSITY FIBERBOARD	SFPS STRETCHED FABRIC PNL. SYS		
AUTO AUTOMATIC	CPT CARPET	EWC ELECTRIC WATER COOLER	HM HOLLOW METAL	MDF MEDIUM DENSITY FIBERBOARD	SHR SHOWER	UL UNDERWRITER'S LABORATORIES	
AVG AVERAGE	CS COURSES	EX EXISTING	HORIZ HORIZONTAL	MECH MECHANICAL	SHT SHEET	UNO UNFINISHED	
	CT CERAMIC TILE	EXP EXPANSION	HP HIGH POINT	MEMB MEMBRANE	SIM SIMILAR	UNO UNFINISHED	
BA BATHROOM	CTR CENTER		HT HEIGHT	MEP MECHANICAL, ELECTRICAL, PLUMBING	SL SLIDING	UNO UNFINISHED	
BD BEAD	CTSK COUNTER SUNK	FD FLOOR DRAIN	HVAC HEATING, VENT, AIR CONDITIONING	PNL PANEL	SO SQUARE	UR URINAL	
BIT BITUMINOUS		FE(C) FIRE EXTINGUISHER		POL POLISH (POLISHED)	SS, S.STL. STAINLESS STEEL	UTL UTILITY	
BLDG BUILDING	DBL DOUBLE	FF FINISHED FLOOR		PR PAIR	SSK SERVICE SINK		
BLK BLOCK	DEPT DEPARTMENT	FF&E FIXTURE FURNITURE & EQUIPMENT	ID INSIDE DIAMETER	PREFAB PREFABRICATED	STA STATION		
BLKG BLOCKING	DET DETAIL		IGU INSULATED GLASS UNIT	PSF POUNDS PER SQUARE FOOT	STC SOUND TRANSMISSION CLASS	VCT VINYL COMPOSITE TILE	
BM BEAM	DF DRINKING FOUNTAIN		INST INSTALLATION	PSI POUNDS PER SQUARE INCH		VERT VERTICAL	
BO BY OWNER	DH DOUBLE HUNG	FIN FINISH	INSUL INSULATION	PT PAINT	STD STANDARD	VIF VERIFY IN FIELD	
BOT BOTTOM	DIA DIAMETER	FL FLOOR	INT INTERIOR	PTD PAINTED	STL STEEL		
BRD BOARD	DIFF DIFFUSER	FLEX FLEXIBLE		MO MASONRY OPENING	STN STAIN	W WEST	
BRKT BRACKET	DIM DIMENSION	FLSG FLASHING	JAN JANITOR	MOD MODIFIED	STOR STORAGE	W WITH	
BSL BUILDING SETBACK LINE	DISP DISPENSER	FLUOR FLUORESCENT	JBE JOIST BEARING ELEVATION	MTD MOUNTED	STRUCT STRUCTURAL	WO WITH OUT	
BSMT BASEMENT	DIV DIVISION (DIVIDED)	FR FRAME	JST JOIST		SUSP SUSPENDED	WD WOOD	
BU BUILT UP	DN DOWN	FRPF FIRE PROOFING	JT JOINT	N, NO NORTH	SW SWITCH	WH WATER HEATER	
	DR DOOR	FRPF FIRE PROOFING		NIC NOT IN CONTRACT	SYS SYSTEM	WP WATERPROOFING	
CAB CABINET	DS DOWN SPOUT	FRT FIRE RETARDANT TREATED	KD KNOCK DOWN	NRC NOISE REDUCTION COEFFICIENT		WR WATER RESISTANT	
CEM CEMENT	DW DISHWASHER	FUR FURRING	KIT KITCHEN	NTS NOT TO SCALE		WT WEIGHT	

DRAWING INDEX

[See overall Park Renovation Documents for Civil Drawings]

DRAWING INDEX			
BID SET	PERMIT SUBMISSION	SHEET #	SHEET NAME
01-General			
•	•	A-001	COVER SHEET
•	•	A-002	DRAWING INDEX
•	•	A-004	SITE PLAN/CODE ANALYSIS
01-General			
•	•	A-003	ENERGY COMPLIANCE FORM
04-Architectural			
•	•	A-110	EXISTING/ DEMOLITION PLANS
•	•	A-120	FLOOR PLAN
•	•	A-210	EXISTING/ DEMO ELEVATIONS
•	•	A-220	BUILDING ELEVATIONS
•	•	A-230	BUILDING SECTIONS
•	•	A-401	REFLECTED CEILING PLAN
•	•	A-501	WALL SECTIONS
•	•	A-502	WALL SECTIONS
•	•	A-601	ENLARGED PLANS, ELEVATIONS, AND DETAILS
•	•	A-701	SCHEDULES
•	•	A-801	DETAILS
05-Structural			
•	•	S-001	DESIGN NOTES
•	•	S-100	FOUNDATION AND ROOF FRAMING PLANS
•	•	S-201	SECTIONS AND DETAILS
06-Mechanical			
•	•	M-000	LEGEND, DETAILS
•	•	M-001	SCHEDULES
•	•	M-201	FLOOR PLANS - DEMOLITION-NEW WORK
07-Electrical			
•	•	E-000	LEGEND, SCHEDULES, DETAILS
•	•	E-001	POWER RISER DIAGRAMS AND SCHEDULES
•	•	E-101	FLOOR PLAN - DEMOLITION
•	•	E-201	FLOOR PLANS - NEW WORK
08-Plumbing			
•	•	P-000	LEGEND, DETAILS
•	•	P-001	SCHEDULES
•	•	P-201	FLOOR PLANS AND RISER DIAGRAMS - DEMOLITION-NEW WORK

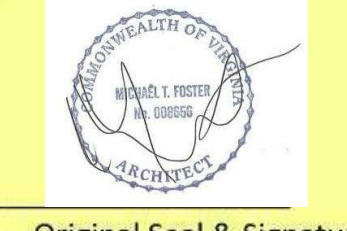
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: **A-002**

ASHRAE 90.1-2013 Mandatory Provision Checklist v1 In order to comply with the Virginia Energy Code, Arlington County requires the design team to complete the following table:																																																																																																																										
Requirement Number	Check this box to indicate the submitted design meets the requirement	Mandatory Provision Requirements (* new requirement)																																																																																																																								
1	✓	The thermal envelope of the building design is compliant with the following sections of ASHRAE 90.1-2013: - 5.1 (General) - 5.2 (Compliance Paths) - 5.4 (Mandatory Provisions) - 5.4.1 (Insulation) - 5.4.2 (Fenestration and Doors) - 5.4.3.1 (Continuous Air Barrier) - 5.4.3.2 (Fenestration and Doors) - 5.4.3.3 (Loading Dock Weatherseals) - 5.4.3.4 (Vestibules) - 5.7 (Submittals) - 5.8 (Product Information and Installation Requirements)																																																																																																																								
2	✓	The building design is compliant with the following sections of ASHRAE 90.1-2013: - 6.1 (General) - 6.2 (Compliance Paths) - 6.4 (Mandatory Provisions) - 6.4.1 (Equipment Efficiencies, Verification and Labeling Requirements) - 6.4.2 (Load Calculations) - 6.4.3 (Controls) - 6.4.4 (HVAC System Construction and Insulation) - 6.4.5 (Walk-in Coolers and Freezers) - 6.4.6 (Refrigerated Display Case) - 6.5 (Prescriptive Path) - 6.6.1 (Computer Rooms Systems) - 6.7 (Submittals) - 6.7.2.1 (Drawings) - 6.7.2.2 (Manuals) - 6.7.2.3 (System Balancing) - 6.7.2.4 (System Commissioning)																																																																																																																								
3	N/A	INSTRUCTIONS FOR REQUIREMENT NUMBER 3: List the lowest efficiency of each HVAC system used in this project design in this table (Requirement Number 3). Choose the unit of measure of efficiency (such as SEER, EER, or COP) based on the requirement listed in the referenced tables 6.8.1-1 through 6.8.1-13 in ASHRAE 90.1-2013. In addition, the mechanical schedules state the efficiency of all applicable systems. Electrically Operated Unitary Air Conditioners and Condensing Units (ASHRAE 90.1-2013 Table 6.8.1-1) <table border="1"> <tr><th>SEER</th><th>EER</th><th>IEER</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Electrically Operated Unitary and Applied Heat Pumps (ASHRAE 90.1-2013 Table 6.8.1-2) <table border="1"> <tr><th>SEER</th><th>EER</th><th>IEER</th><th>HSPF</th><th>COP</th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Water-Chilling Packages (ASHRAE 90.1-2013 Table 6.8.1-3) <table border="1"> <tr><th>EER</th><th>kW/ton</th><th>COP</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Electrically Operated Packaged Terminal Room Air Conditioners, Packaged Terminal Heat Pumps, Single-Package Vertical Air Conditioners, Single-Package Vertical Heat Pumps, Room Air Conditioners, and Room Air-Conditioner Heat Pumps (ASHRAE 90.1-2013 Table 6.8.1-4) <table border="1"> <tr><th>EER</th><th>COP</th><th>SEER</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Warm Air Furnaces and Combination Warm Air Furnaces/Air-Conditioning Units, Warm-Air Duct Furnaces, and Unit Heaters (ASHRAE 90.1-2013 Table 6.8.1-5) <table border="1"> <tr><th>AJUE</th><th>Thermal Efficiency</th><th>Combustion Efficiency</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Gas- and Oil-Fired Boilers (ASHRAE 90.1-2013 Table 6.8.1-6) <table border="1"> <tr><th>AJUE</th><th>Thermal Efficiency</th><th>Combustion Efficiency</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Heat Rejection Equipment (ASHRAE 90.1-2013 Table 6.8.1-7) <table border="1"> <tr><th>gpm/hp</th><th>BTU/h*hp</th><th></th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Electrically Operated Variable Refrigerant Flow Air Conditioner (ASHRAE 90.1-2013 Table 6.8.1-9) <table border="1"> <tr><th>SEER</th><th>EER</th><th>IEER</th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Electrically Operated Variable Refrigerant Flow Air to Air and Applied Heat Pumps (ASHRAE 90.1-2013 Table 6.8.1-10) <table border="1"> <tr><th>SEER</th><th>EER</th><th>IEER</th><th>COP</th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Air Conditioners and Condensing Units Serving Computer Rooms (ASHRAE 90.1-2013 Table 6.8.1-11) <table border="1"> <tr><th>SCOP-127 Downflow</th><th>SCOP-127 Upflow</th><th></th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Commercial Refrigerator and Freezers (ASHRAE 90.1-2013 Table 6.8.1-12) <table border="1"> <tr><th>volume</th><th>kWh/day</th><th></th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table> Commercial Refrigeration (ASHRAE 90.1-2013 Table 6.8.1-13) <table border="1"> <tr><th>TDA or volume per table</th><th>kWh/day</th><th></th><th></th><th></th></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>	SEER	EER	IEER								SEER	EER	IEER	HSPF	COP						EER	kW/ton	COP								EER	COP	SEER								AJUE	Thermal Efficiency	Combustion Efficiency								AJUE	Thermal Efficiency	Combustion Efficiency								gpm/hp	BTU/h*hp									SEER	EER	IEER								SEER	EER	IEER	COP							SCOP-127 Downflow	SCOP-127 Upflow									volume	kWh/day									TDA or volume per table	kWh/day								
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TDA or volume per table	kWh/day																																																																																																																									
4	N/A	All ducts and plenums insulation levels in the project design meet or exceed the requirements of Section 6.4.4.1.2 (Duct and Plenum Insulation) of ASHRAE 90.1-2013.																																																																																																																								
5	✓	All piping insulation levels in the project design meet or exceed the insulation requirements of Section 6.4.4.1.3 (Piping Insulation) of ASHRAE 90.1-2013.																																																																																																																								
6	N/A	All sensible heating panels and radiant floor heating in the project design meets or exceeds the insulation requirements listed in the following sections of ASHRAE 90.1-2013: - 6.4.4.1.4 (Sensible Heating Panel Insulation) - 6.4.4.1.5 (Radiant Floor Heating)																																																																																																																								
7	N/A	All ducts and plenums in the project design meet or exceed the leakage requirements of Section 6.4.4.2.1 (Duct Sealing) of ASHRAE 90.1-2013.																																																																																																																								
8	N/A	All ducts in the project design will be leak-tested in accordance with the requirements of Section 6.4.4.2.2 (Duct Leakage Tests) of ASHRAE 90.1-2013.																																																																																																																								
9*	N/A	All walk-in coolers and freezers comply with the requirements of Section 6.4.5 (Walk-in Coolers and Freezers) of ASHRAE 90.1-2013.																																																																																																																								
10*	✓	All refrigerated display cases comply with the requirements of Section 6.4.6 (Refrigerated Display Cases) of ASHRAE 90.1-2013.																																																																																																																								
11	✓	The HVAC control systems on this project are specified to be tested to ensure that control elements are calibrated, adjusted, and in proper working condition per the requirements of Section 6.7.2.4 (System Commissioning) of ASHRAE 90.1-2013. Provide an outline of commissioning on the plans. Fill in the commissioning information below. Name of commissioning agent company: _____ Contact information for commissioning agent: _____																																																																																																																								
12	✓	The lighting control systems on this project are specified to be tested to ensure that lighting control devices and control systems are calibrated, adjusted, programmed, and in proper working condition per the requirements of Section 9.4.3 (Functional Testing) of ASHRAE 90.1-2013. Provide an outline of the functional testing on the plans. Fill in the commissioning information below. Name of commissioning agent company: _____ Contact information for commissioning agent: _____																																																																																																																								
13	✓	The service water heating systems of the building design are compliant with the following sections of ASHRAE 90.1-2013: - 7.1 (General) - 7.2 (Compliance Paths) - 7.4 (Mandatory Provisions) - 7.4.1 (Load Calculations) - 7.4.2 (Equipment Efficiency) - 7.4.3 (Service Hot-Water Piping Insulation) - 7.4.4 (Service Water Heating System Controls) - 7.4.5 (Pools) - 7.4.6 (Heat Traps) - 7.7 (Submittals)																																																																																																																								
14	✓	The power systems of the building design are compliant with the following sections of ASHRAE 90.1-2013: - 8.1 (General) - 8.2 (Compliance Paths) - 8.4 (Mandatory Provisions) - 8.4.1 (Voltage Drop) - 8.4.2 (Automatic Recapture Control) * 8.4.3 (Electrical Energy Monitoring) - 8.7 (Submittals)																																																																																																																								
15	✓	The lighting systems of the building design are compliant with the following sections of ASHRAE 90.1-2013: - 9.1 (General) - 9.2 (Compliance Paths) - 9.4 (Mandatory Provisions) - 9.4.1.1 (Interior Lighting Control) - 9.4.1.2 (Parking Garage Lighting Control) - 9.4.1.3 (Special Applications) - 9.4.1.4 (Exterior Lighting Control) - 9.4.2 (Exterior Building Lighting Power) - 9.4.3 (Functional Testing) - 9.5 or 9.6 (Building Area Method or Space By Space Method) - 9.7 (Submittals) * 9.7.3 Daylighting Documentation (daylight areas are outlined and called out on the drawings)																																																																																																																								
16	N/A	The building design is compliant with the following sections of ASHRAE 90.1-2013: - 10.1 (General) - 10.2 (Compliance Paths) - 10.4 (Mandatory Provisions) - 10.4.1 (Electric Motors) * 10.4.4 (Escalators and Moving Walks) * 10.4.5 (Whole-building Energy Monitoring)																																																																																																																								

ASHRAE 90.1-2013 Prescriptive Requirements Checklist v1 In order to comply with the Virginia Energy Code, Arlington County requires the design team to complete the following table:		
Requirement Number	Check this box to indicate the submitted design meets the requirement	Prescriptive Requirements
17	✓	The total vertical fenestration of the design does not exceed 40% of the gross wall area for each space-conditioning category. If 40% is exceeded then the Prescriptive Compliance Path may not be used. The total skylight fenestration of the design does not exceed 3% of the gross roof area for each space-conditioning category. If 3% is exceeded then the Prescriptive Compliance Path may not be used.
18	✓	The thermal envelope of the building design is compliant with the following sections of ASHRAE 90.1-2013: - 5.5 (Prescriptive Building Envelope Option) - 5.5.3 (Opaque Areas) - 5.5.3.1 (Roof Insulation) - 5.5.3.1.1 (Solar Roof Reflectance and Thermal Emittance) - 5.5.3.2 (Above-Grade Wall Insulation) - 5.5.3.3 (Below-Grade Wall Insulation) - 5.5.3.4 (Floor Insulation) - 5.5.3.5 (Slab-on-Grade Floor Insulation) - 5.5.3.6 (Opaque Doors) - 5.5.4 (Fenestration) - 5.5.4.1 (Vertical Fenestration Area) - 5.5.4.2 (Maximum Skylight Fenestration Area) - 5.5.4.2.3 (Minimum Skylight Fenestration Area) - 5.5.4.3 (Fenestration U-Factor) - 5.5.4.4 [Fenestration Solar Heat Gain Coefficient (SHGC)] - 5.5.4.4.1 (SHGC of Vertical Fenestration) - 5.5.4.4.2 (SHGC of Skylights) - 5.5.4.5 (Fenestration Orientation) - 5.5.4.6 (Visible Transmittance/SHGC Ratio)
19	✓	INSTRUCTIONS FOR REQUIREMENT NUMBER 19: In the table below (Requirement Number 19), indicate the U-Factor, SHGC, and R-value of the building thermal envelope elements that are part of this project design. Where multiple elements of the same type are in the design, indicate the highest U-factor, the highest SHGC and the lowest R-value. For example, if there are two types of above grade walls, both wood frame but one utilizes an R-19 batt and another uses an R-13 batt, list the R-13 insulation under "Insulation R-Value Between Framing." If the envelope component or construction type is not part of the design leave the cell blank. Under the prescriptive path, non-residential spaces must be insulated to at least the minimum prescriptive requirements of Table 5.5-4 non-residential column in ASHRAE 90.1-2013. Residential spaces must be insulated to at least the minimum prescriptive requirements of Table 5.5-4 residential column in ASHRAE 90.1-2013. Mixed use buildings containing both space types must design the non-residential spaces to meet or exceed the minimum non-residential requirements of Table 5.5-4, and the residential spaces to meet or exceed the minimum residential requirements of Table 5.5-4. ELEMENT
20	N/A	The HVAC systems of the building design are compliant with the following sections of ASHRAE 90.1-2013: - 6.5.1 (Economizers) - 6.5.2 (Simultaneous Heating and Cooling Limitation) - 6.5.3 (Air System Design and Control) - 6.5.4 (Hydronic System Design and Control) - 6.5.5 (Heat Rejection Equipment) - 6.5.6 (Energy Recovery) - 6.5.7 (Exhaust Systems) - 6.5.8 (Radiant Heating Systems) - 6.5.9 (Hot Gas Bypass Limitation) * 6.5.10 (Door Switches) * 6.5.11 (Refrigeration Systems)
21	N/A	The service water heating systems of the building design are compliant with the following sections of ASHRAE 90.1-2013: - 7.5.1 (Space Heating and Water Heating) - 7.5.2 (Service Water Heating Equipment)
22	✓	COMCHECK LIGHTING: On a full size sheet, provide a stamped and signed "COMcheck" lighting certificate for both interior and exterior lighting design on a full size sheet on the drawings. The report must be completed using the current version of COMcheck and it must compare the design to "ASHRAE 90.1-2013" using either the "building area method" or the "space by space" method. The light fixture designation must be coordinated with the designation given in the lighting schedule and plans.
23		I hereby certify that the proposed building has been designed to meet the requirements of ASHRAE 90.1-2013 using the "Prescriptive" compliance path, as outlined in the Standard.  MICHAEL FOSTER 11/17/2020 Name of Design Professional of Record & Date Original Seal & Signature

ARLINGTON
VIRGINIA

DEPARTMENT OF PARKS,
RECREATION AND
CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite
414
Arlington, VA 22201
Phone: 703.228.3323
Fax: 703.228.3328

21- DPR-ITB-291

Project Name and Location

Alcova Heights
Park
- Phase II

Restroom Renovation

TYPICAL ENVELOPE ENERGY NOTES

- PROVIDE CONTINUOUS FLUID APPLIED VAPOR PERMEABLE AIR BARRIER ACROSS ALL EXTERIOR BUILDING ENVELOPE ASSEMBLIES: WRAP, SEAL, CAULK, GASKET, OR TAPE AIR BARRIER IN AN APPROVED MANNER PER MANUFACTURERS RECOMMENDATIONS. ASSEMBLIES OF MATERIALS AND COMPONENTS WITH AN AVERAGE AIR LEAKAGE NOT TO EXCEED 0.04 CFM/F² UNDER A PRESSURE DIFFERENTIAL OF 3 INCHES OF WATER GAUGE WHEN TESTED IN ACCORDANCE WITH ASTM E 2357, ASTM E 1677 OR ASTM E 283.
- PROVIDE CONTINUOUS RIGID INSULATION ON THE EXTERIOR CAVITY MASS WALL. MINIMUM R VALUE IS 9.5 CI
- PROVIDE R-30 CI MINIMUM FIBER BATT INSULATION IN ROOF RAFTERS.
- ALL INSULATION IN CONTACT WITH GRADE IS TO HAVE <0.3% WATER ABSORPTION RATE PER ASTM C272.
- PROVIDE R-15 RIGID INSULATION ON INTERIOR FACE OF WALLS AT SLAB ON GRADE FOR 24"
- FENESTRATION PRODUCTS ARE TO HAVE A PERMANENT NAMEPLATE, INSTALLED BY THE MANUFACTURER, LISTING THE U FACTOR, SHGC, AND AIR LEAKAGE RATE. IF FENESTRATION DOES NOT HAVE SUCH A NAMEPLATE, THE INSTALLER OR PROVIDER OF THE FENESTRATION SHALL PROVIDE A SIGNED AND DATED CERTIFICATION FOR THE INSTALLED FENESTRATION LISTING THE U FACTOR, SHGC, AND AIR LEAKAGE RATE.
- FENESTRATION PRODUCTS ARE TO BE RATED IN ACCORDANCE WITH NFRC.
- OPAQUE DOORS ASSOCIATED WITH THE BUILDING THERMAL ENVELOPE ARE TO HAVE A U FACTOR OF 0.50 FOR SWINGING DOORS.
- FIXED FENESTRATIONS ARE TO HAVE A MINIMUM U VALUE OF .35 AND SHGC OF .40.
- ALL SOURCES OF AIR LEAKAGE IN THE BUILDING THERMAL ENVELOPE ARE TO BE SEALED TO MINIMIZE AIR LEAKAGE.

Sheet Title

ENERGY COMPLIANCE FORM

Approvals Date

Department Director _____

Park Development Division Chief _____

Design Unit Supervisor _____

Revisions Date


BID SET **9/21/21**

Designed: _____
Drawn: **Author**
Checked: _____

Filename: _____
Plotted: _____

Scale: AS INDICATED
Date: **10/11/19**

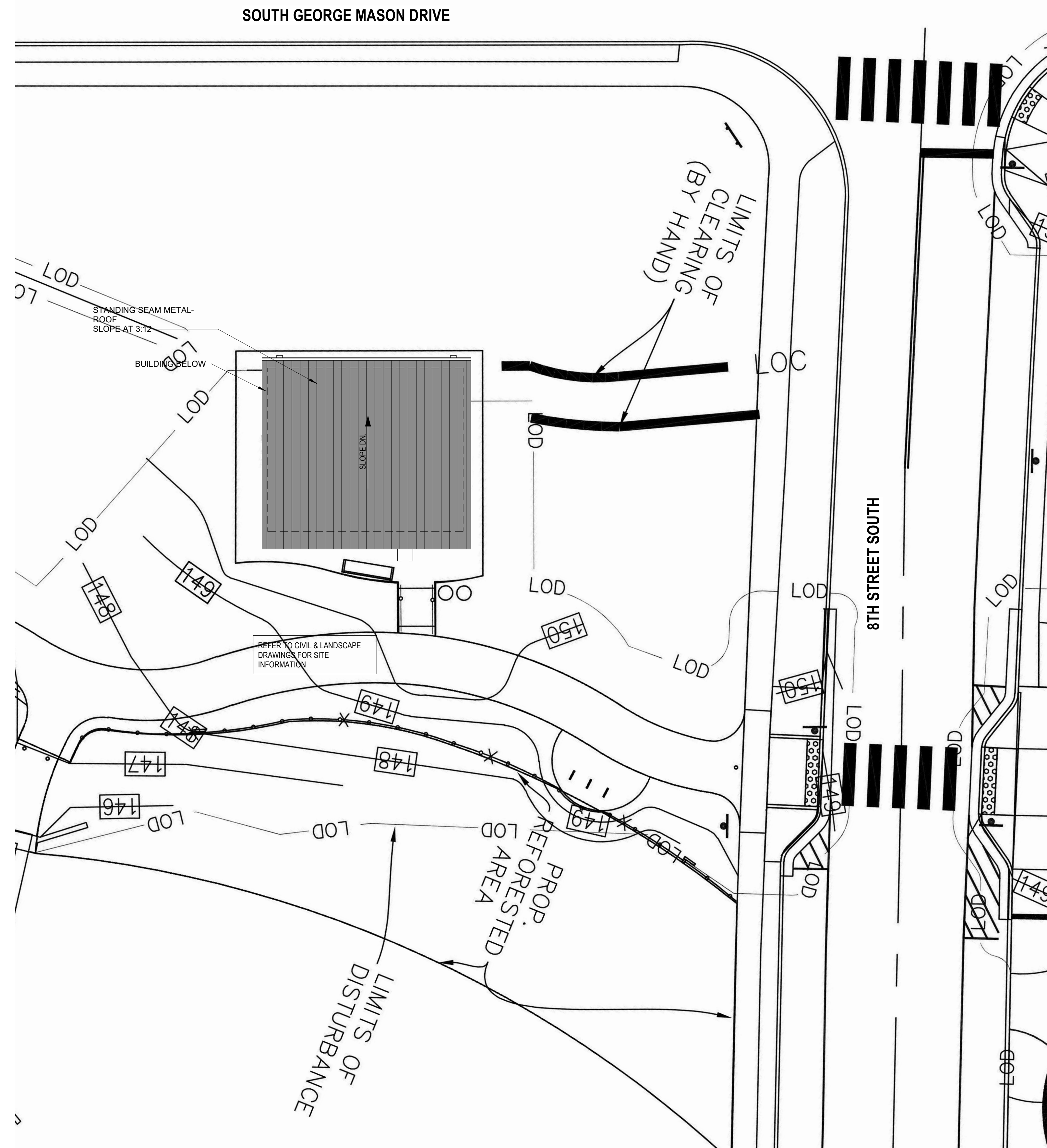
Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED SHEET: **A-003**



PROJECT DATA

ARLINGTON COUNTY
 ADDRESS: 901 S GEORGE MASON DR.
 ARLINGTON, VA 22204

PROJECT DESCRIPTION

THE PROJECT INCLUDES THE RENOVATION OF PUBLIC RESTROOMS AND STORAGE. ALL ROOMS ARE INDEPENDENTLY SECURED WITH DIRECT ACCESS TO THE EXTERIOR OF THE BUILDING.

APPLICABLE CODES

THE PROJECT IS DESIGNED UNDER THE FOLLOWING RULES AND REGULATIONS:

- 2015 VIRGINIA CONSTRUCTION CODE (WITH 2009 ANSI A117.1 FOR ACCESSIBILITY)
- 2015 ICC INTERNATIONAL BUILDING CODE
- 2011 NFPA NATIONAL ELECTRIC CODE
- 2015 ICC INTERNATIONAL MECHANICAL CODE
- 2015 ICC INTERNATIONAL PLUMBING CODE
- 2015 ICC INTERNATIONAL ENERGY CONSERVATION CODE

ZONING INFORMATION

ZONING DISTRICT: S-3A
 ALLOWABLE BUILDING HEIGHT: 45 FT (17'-4" TO RIDGE, 13'-6 1/2" TO MIDPOINT OF SLOPE)
 ACTUAL AREA: 828 SF
 SETBACK: THE LARGER OF EITHER R 50' FROM CENTERLINE OF ANY STREET OR 25' FROM STREET RIGHT OF WAY.
 NO CHANGE TO THE EXISTING BUILDING SETBACK

USE AND OCCUPANCY CLASSIFICATION

U USE GROUP

TYPE OF CONSTRUCTION

TYPE VB - COMBUSTIBLE

SPRINKLER PROVIDED

NO. NOT REQUIRED.

BUILDING HEIGHTS AND AREA CALCULATIONS

ALLOWABLE AREA PER FLOOR: 5,500 (TABLE 503, TYPE U) (828 SF ACTUAL)
 ALLOWABLE HEIGHT: TYPE V-B, 1 STORIES (TABLE 503)
 ACTUAL HEIGHT: 17'-8"

FIRE RESISTANCE RATING (IN HOURS)

TYPE V-B CONSTRUCTION	REQUIRED	PROVIDED
STRUCTURAL FRAME*	0	0
EXTERIOR BEARING WALLS	0	0
INTERIOR BEARING WALLS	0	0
EXTERIOR NON-BEARING WALLS	0	0
<5'	0	0
>5' <10'	0	0
>10' <30'	0	0
>30'	0	0
INTERIOR NON-BEARING WALLS	0	0
FLOOR CONSTRUCTION	0	0
ROOF CONSTRUCTION	0	0

* REQUIRED TO COMPLY WITH TYPE V-B PER SECTION 403.2.1.1

INTERIOR FINISHES

INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY, TABLE 803.9, BASED ON NON-SPRINKLER RATING:

ROOMS & ENCLOSED SPACES: CLASS C

MEANS OF EGRESS

BASED ON A NON-SPRINKLERED BUILDING:

EXIT ACCESS TRAVEL DISTANCE, TABLE 1016.1 GROUP S-2 OCCUPANCY: 200 FEET
 COMMON PATH OF EGRESS TRAVEL: 75 FEET
 EXIT COMPONENTS: OTHER ELEMENTS .2 INCHES PER OCCUPANT

NUMBER OF EXITS	REQUIRED	PROVIDED
	1	1

ACCESSIBILITY

ADA ACCESSIBLE ENTRANCES AND ROUTES ARE TO BE PROVIDED TO BUILDING.

ALL TOILETS ROOMS ARE TO BE FULLY ACCESSIBLE AS DEFINED BY ANSI 117.1 AND ADA GUIDELINES.

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL REQUIRED ACCESSORIES, FIXTURES AND DOORS TO MEET THE ACCESSIBILITY REQUIREMENTS AS DEFINED BY ANSI 117.1 AND ADA GUIDELINES.

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES

Park Development Division
 2100 Clarendon Boulevard, Suite 414
 Arlington, VA 22201
 Phone: 703.228.3323
 Fax: 703.228.3328

21- DPR-ITB-291

Project Name and Location

Alcova Heights Park
 - Phase II

Restroom Renovation

Sheet Title

SITE PLAN/CODE ANALYSIS

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

BID SET 9/21/21

Designed:

Drawn: BV

Checked: BV

Filename:

Plotted:

Scale: AS INDICATED

Date: 10/11/19

Seal



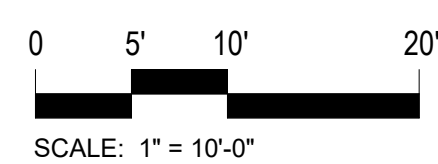
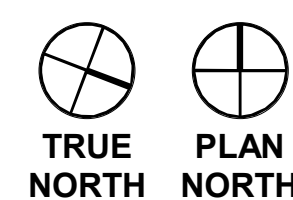
ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
 901 S George Mason Dr.
 Arlington County, Virginia

SCALE: AS INDICATED

SHEET: A-004

1 SITE PLAN
 SCALE: 1" = 10'-0"



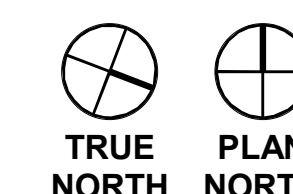
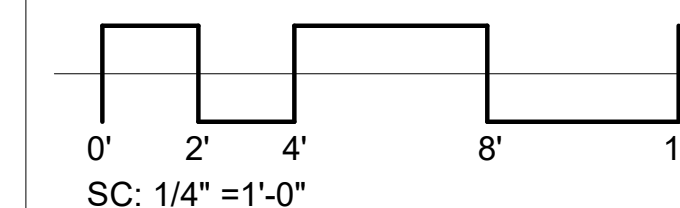


GENERAL NOTES (DEMO PLANS)

1. VERIFY ALL DIMENSIONS DESCRIBING EXTENTS OF DEMOLITION WITH ARCHITECT IN FIELD.
2. DIMENSIONS DEMONSTRATE DESIGN INTENT AND SHALL BE COORDINATED WITH ACTUAL CONDITIONS. NOTIFY PROJECT OFFICER & ARCHITECT IMMEDIATELY OF ANY CONFLICTS WITH EXISTING CONDITIONS.
3. COORDINATE ALL DEMOLITION WITH NEW WORK. NOTIFY PROJECT OFFICER & ARCHITECT IMMEDIATELY OF ANY CONFLICT.
4. REFER TO STRUCTURAL DRAWINGS FOR REMOVAL OF EXISTING STRUCTURAL BUILDING ELEMENTS INCLUDING BUT NOT LIMITED TO SLAB, WALL AND ROOF.
5. REFER TO MEP DRAWINGS FOR REMOVAL OF EXISTING MECHANICAL, ELECTRICAL AND PLUMBING FIXTURES AND EQUIPMENT.
6. REFER TO CIVIL DRAWINGS FOR REMOVAL OF EXISTING SITE ELEMENTS.
7. REMOVE ALL EXISTING CEILING SYSTEMS AND ALL ASSOCIATED FIXTURES, UNO.
8. REMOVE ALL EXISTING FINISH FLOORING AND BASE, UNLESS NOTED OTHERWISE (UNO).
9. SEE ENLARGED PLANS FOR DETAILED SCOPE OF WORK.
10. REMOVE ALL EXISTING INTERIOR AND EXTERIOR BUILDING MOUNTED WAYFINDING SIGNAGE.
11. REMOVE ALL EXISTING WALL MOUNTED EQUIPMENT.
12. REMOVE ALL EXISTING CASEWORK.
13. REMOVE ALL EXISTING HOLLOW METAL DOORS AND FRAMES. UNO. PREPARE EXISTING OPENINGS TO RECEIVE NEW WORK; REFER TO NEW WORK PLAN.
14. DIMENSIONS TO AREAS OF DEMOLITION ARE TO NEW FINISH OPENINGS/CONDITIONS. CONTRACTOR SHALL ACCOUNT FOR THE TOOTHING OR TYING IN OF NEW WORK WHEN DETERMINING EXTENTS OF DEMOLITION FOR NEW OPENINGS IN EXISTING CONSTRUCTION.
15. REMOVE ALL EXISTING TOILET ACCESSORIES AND TOILET PARTITIONS IN AND OUTSIDE EXISTING TOILET ROOMS, INCLUDING, BUT NOT LIMITED TO, SOAP AND PAPER TOWEL DISPENSERS, GRAB BARS, MIRRORS, ETC.
16. UNUSED OPENINGS IN WALLS, FLOORS, AND ROOFS CAUSED BY THE REMOVAL OF M.E.P. OR OTHER EQUIPMENT THAT IS NOT REPLACED SHALL BE INFILLED TO MATCH ADJACENT CONSTRUCTION AND COORDINATE WITH NEW WORK.
17. FOR CLARITY, NOT ALL ELEMENTS REQUIRING DEMOLITION ARE SHOWN ON PLANS, V.I.F.
18. REMOVE PAINT FROM EXISTING BRICK WALL BEFORE APPLYING NEW PAINT FINISH.

LEGEND (DEMOLITION PLAN)

- EXISTING CONSTRUCTION TO REMAIN
- EXISTING CONSTRUCTION TO BE REMOVED

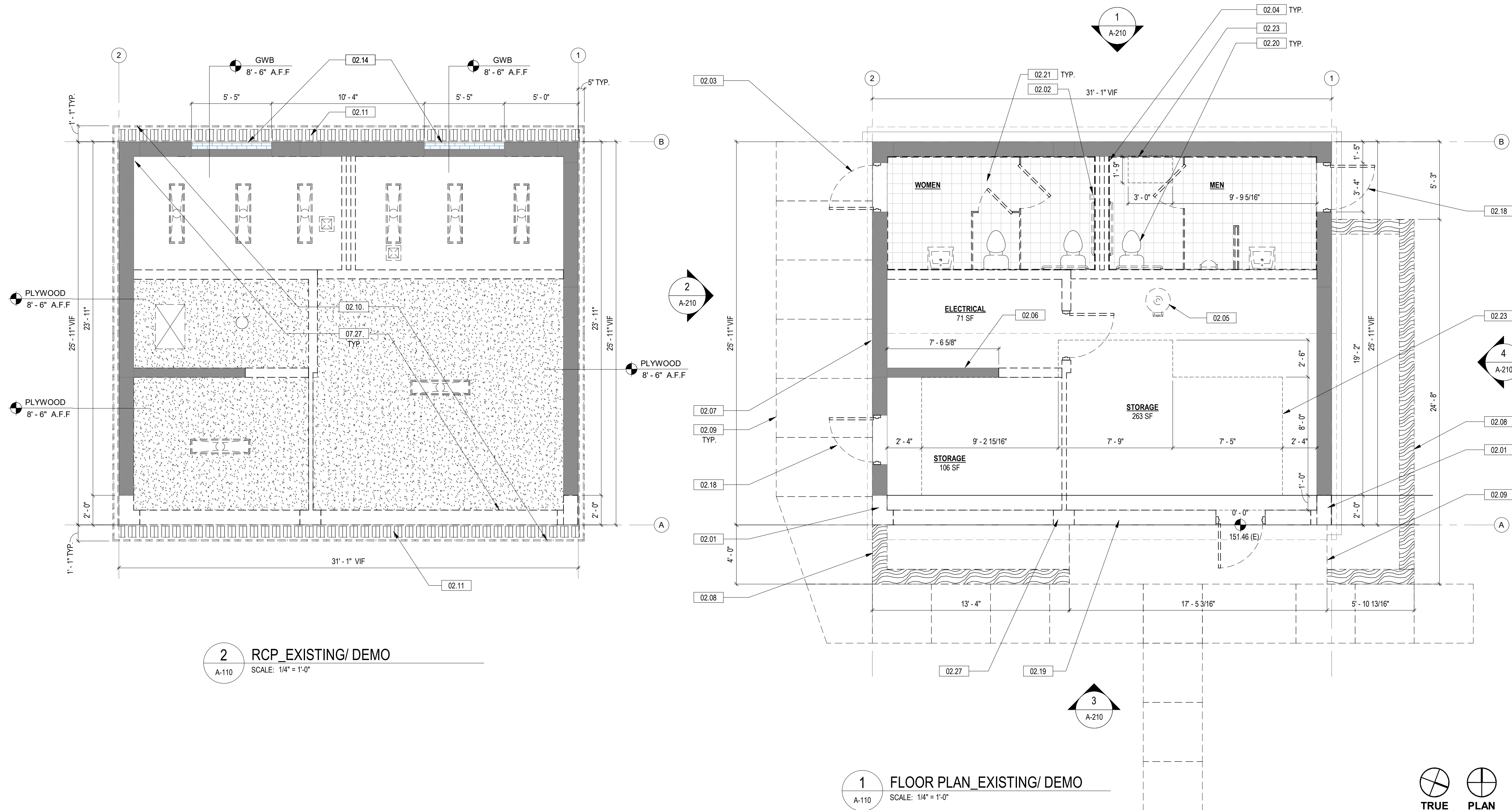


1 FLOOR PLAN_EXISTING/ DEMO
SCALE: 1/4" = 1'-0"

2 RCP_EXISTING/ DEMO
SCALE: 1/4" = 1'-0"

KEYNOTES	
02.01	REMOVE EXISTING BRICK COLUMN. PREPARE TO INSTALL NEW COLUMN PER STRUCTURAL DETAILS. PROVIDE INFILL WITH NEW CMU TO MATCH EXISTING WIDTH AND TIED IN WITH EXISTING
02.02	EXISTING FLOOR DRAIN TO REMAIN. CAP OFF IF NOT REQUIRED FOR USE IN NEW WORK. SEE PLUMBING
02.03	REMOVE DOOR AND FRAME. PREPARE TO RECEIVE NEW DOOR AND FRAME. SEE NEW WORK PLAN
02.04	REMOVE EXISTING WALL AND TILE
02.05	EXISTING WATER HEATER TO BE REMOVED, SALVAGED AND REUSED AT NEW LOCATIONS. SEE NEW WORK LAYOUT
02.06	EXISTING PORTION OF WALL TO REMAIN. SEE MEP DWGS FOR ADDITIONAL INFO
02.07	CUT BRICK SILL FLUSH AT EXISTING INFILLED WINDOW. PREPARE FOR NEW FURRING FINISH SYSTEM
02.08	REMOVE EXISTING WOOD PLANTERS
02.09	REMOVE EXISTING CONCRETE SIDEWALK. REFER TO CIVIL/LANDSCAPE DWGS FOR ADDITIONAL INFO AND SCOPE

KEYNOTES	
02.10	REMOVE EXISTING ROOF AND ROOF STRUCTURE. REFER TO STRUCTURAL DWGS FOR ADDITIONAL INFO
02.11	REMOVE EXISTING SOFFIT VENTS
02.14	EXISTING INFILL WINDOW TO REMAIN
02.18	REMOVE DOOR AND FRAME
02.19	REMOVE EXISTING WALL
02.20	REMOVE ALL FIXTURES AND ACCESSORIES. SEE PLUMBING FOR ADDITIONAL INFO
02.21	REMOVE FLOOR TILE TO SUBSTRATE. PREPARE CONCRETE FLOOR, PATCH, TO RECEIVE NEW FLOOR LEVELING AND FINISH
02.23	SAW CUT EXISTING CONCRETE SLAB FOR NEW FOUNDATION AND PLUMBING BELOW GRADE
02.27	REMOVE EXISTING BRICK COLUMN. PREPARE TO INSTALL NEW COLUMNS AT NEW LOCATIONS PER STRUCTURAL DETAILS
07.27	SEALANT





GENERAL NOTES (PLANS)

- CONTRACTOR TO VERIFY IN FIELD FOR EXISTING CONDITIONS AND DIMENSIONS. IF ANY DISCREPANCY EXISTS BETWEEN THE ARCHITECTURAL & CIVIL DRAWINGS, NOTIFY THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
- ALL DIMENSIONS ARE TO FACE OF FINISH U.N.O. ALL DIMENSIONS NOTED AS CLEAR MUST MAINTAIN NOTED DIMENSION FROM FINISH FACE.
- REFER TO STRUCTURAL AND MEP DRAWINGS FOR ADDITIONAL INFORMATION
- REFER TO CIVIL/LANDSCAPE DRAWINGS BY ARLINGTON COUNTY FOR ADDITIONAL INFORMATION.
- PROJECT REFERENCE ELEVATION 0'-0" = 151.46. EXISTING INTERIOR FIRST FLOOR ELEVATION. REFER TO CIVIL DRAWINGS FOR MORE INFO.
- PROVIDE FLOOR LEVELING THROUGHOUT OVER INTERIOR FLOOR SPACE

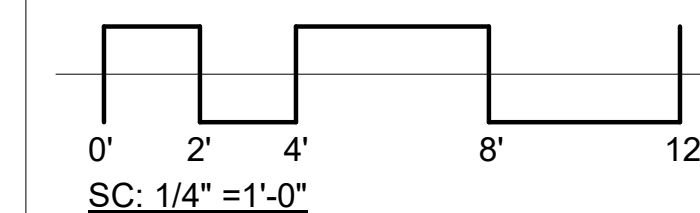
KEYNOTES

03.08	PREPARE EXISTING CONCRETE FLOOR TO RECEIVE NEW PAINT
03.09	CONCRETE SPLASH BLOCK
04.11	NEW CMU WALL WITH IPE WOOD FURRING SYSTEM
04.15	16" X 16" SOLID MASONRY PIER, SEE STRUCTURAL
04.16	8" X 8" SOLID MASONRY PIER, SEE STRUCTURAL
05.09	FENCE-LINK PARTITION WITH STEEL FRAMING 8' HIGH
05.12	METAL GUTTER, COLOR TO MATCH THE ROOF
05.13	METAL DOWNSPOUT, COLOR TO MATCH THE ROOF
07.19	STANDING SEAM METAL ROOFING
08.02	HOLLOW METAL DOOR AND FRAME
08.13	CHAIN LINK FENCE DOOR
08.14	NEW IN-FILL AT REMOVED DOOR/WINDOW TO MATCH EXISTING WALL WIDTH AND FINISHES BOTH EXTERIOR AND INTERIOR
09.21	Division 09
10.12	RECESSED WALL MOUNTED BABY CHANGING STATION
10.14	SURFACE WALL MOUNTED BABY CHANGING STATION
22.04	NEW FLOOR DRAIN
22.05	ACCESSIBLE DRINKING FOUNTAIN
22.06	PLUMBING VENT, PAINT TO MATCH METAL ROOF

LEGEND (PLANS)

EXISTING CONSTRUCTION TO REMAIN

NEW CONSTRUCTION

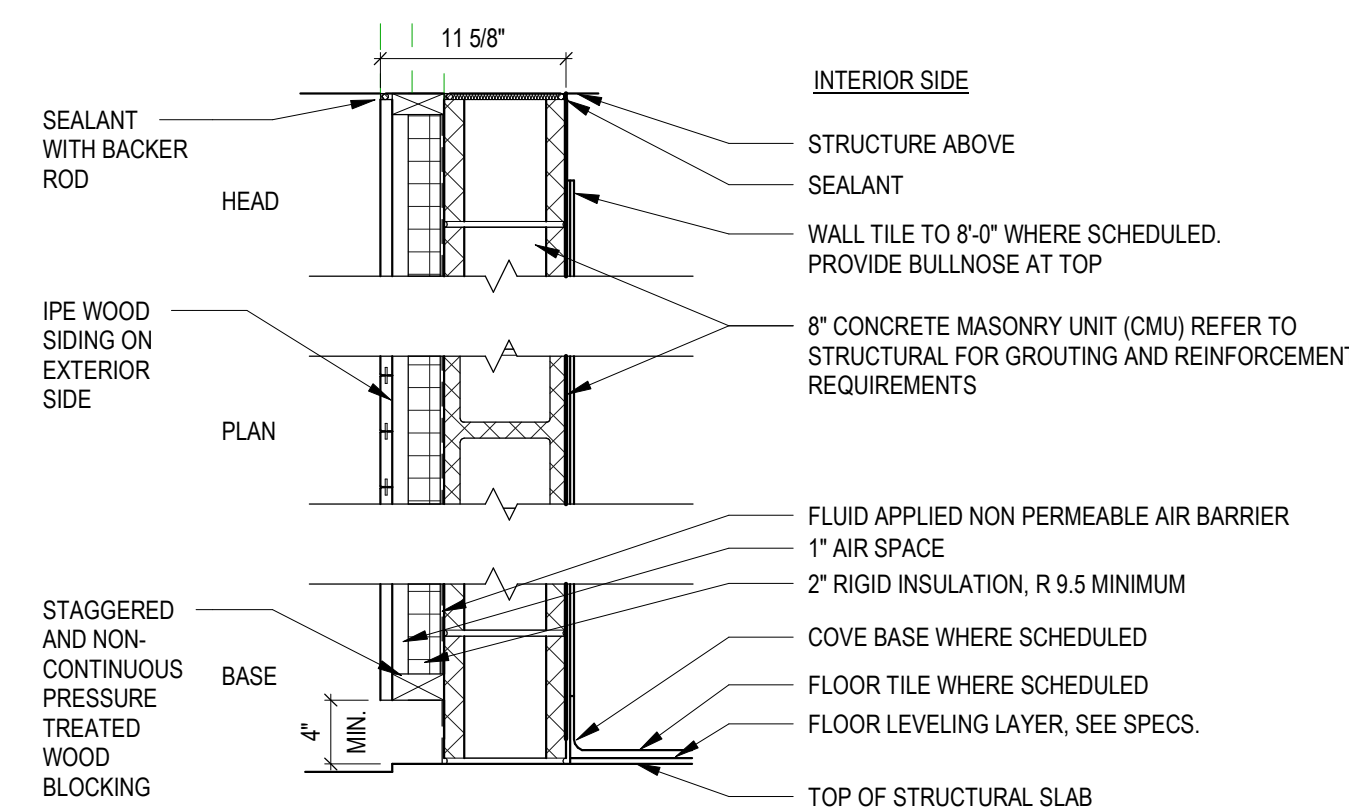


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

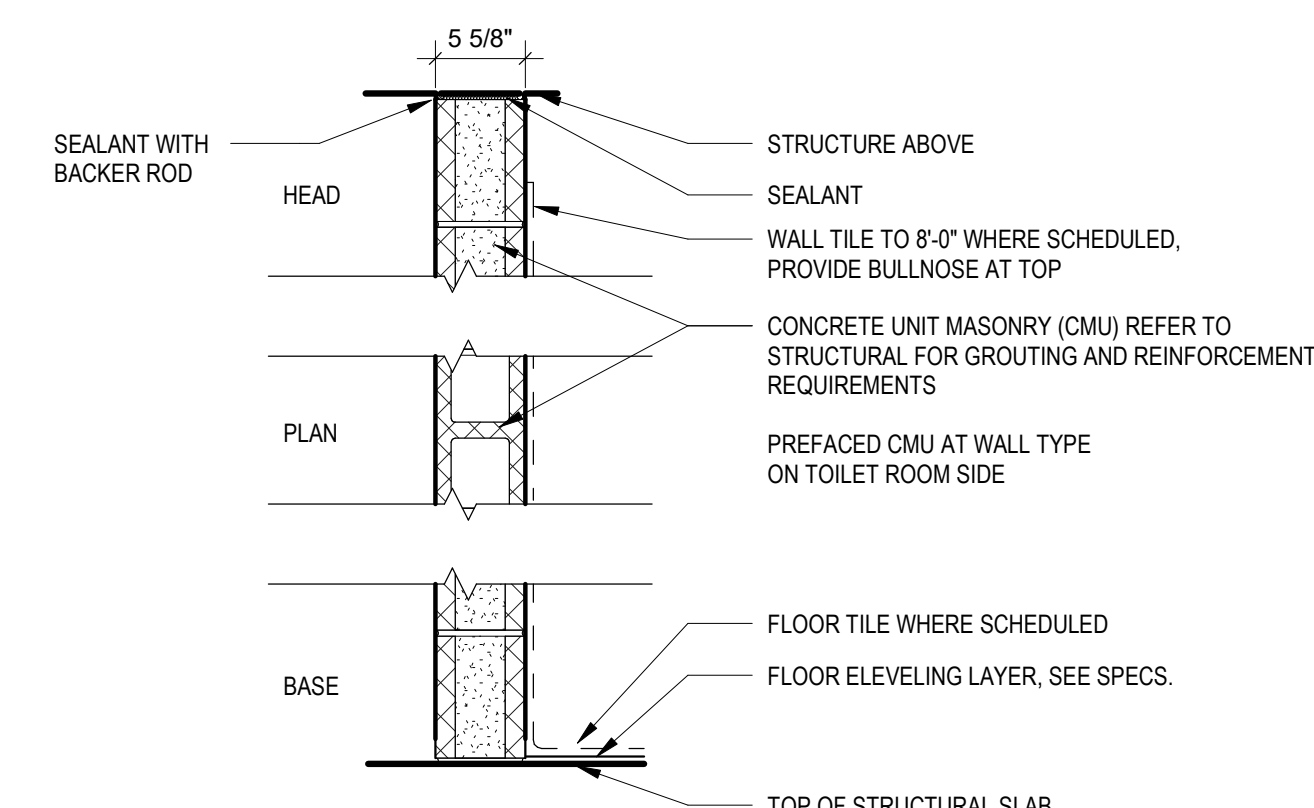
SHEET: A-120



- NOTES:
- WALLS TO RECEIVE BLOCK FILLER BEFORE PAINTING WHERE SCHEDULED
 - REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
 - REFER TO WALL SECTIONS FOR ADDITIONAL INFORMATION

EXTERIOR CONCRETE MASONRY
PARTITION WITH IPE WOOD FURRING

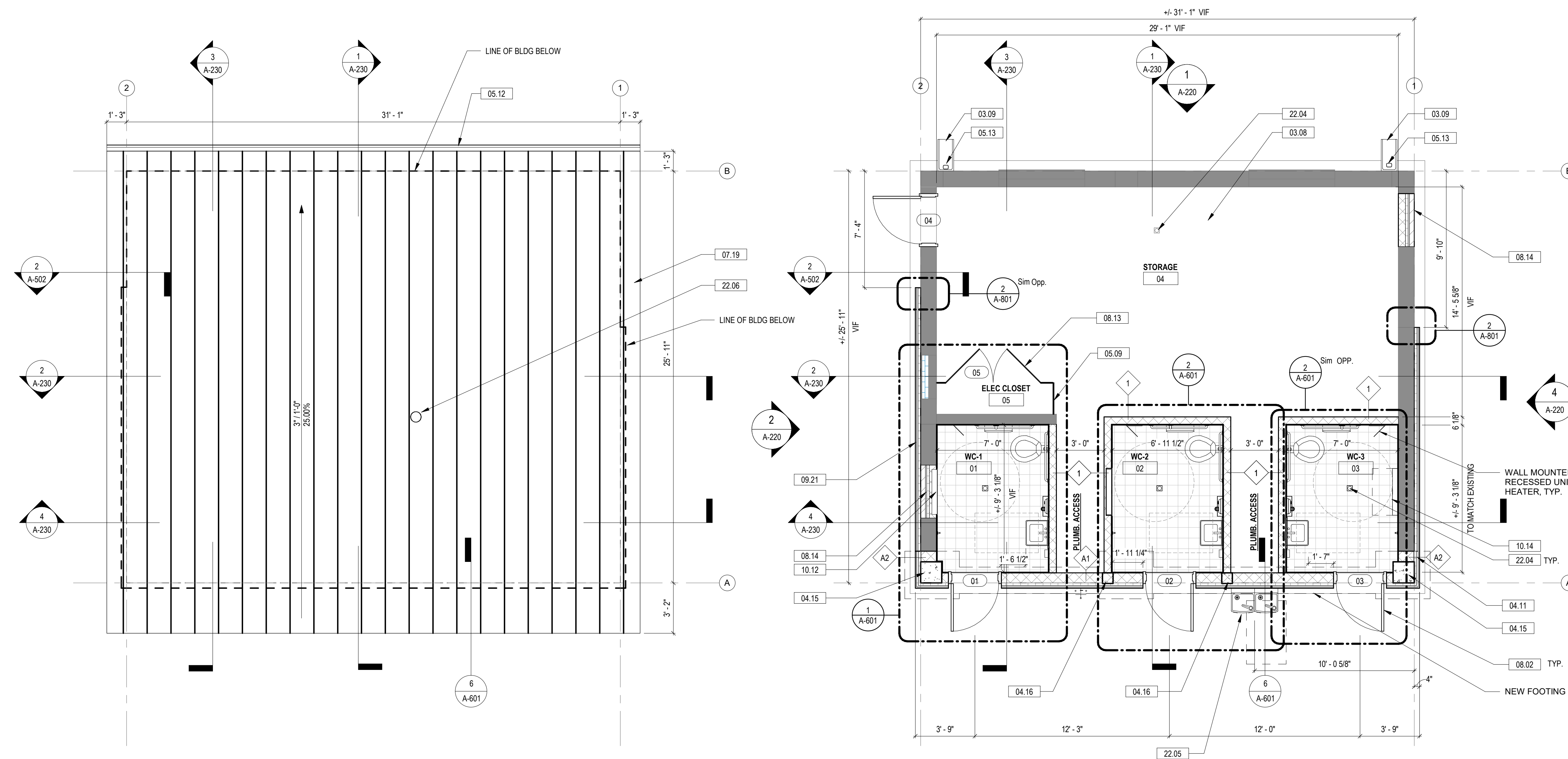
- A1 8" CMU NON-RATED
- A2 12" CMU NON-RATED



- NOTES:
- WALLS TO RECEIVE BLOCK FILLER BEFORE PAINTING WHERE SCHEDULED
 - REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
 - REFER TO WALL SECTIONS FOR ADDITIONAL INFORMATION

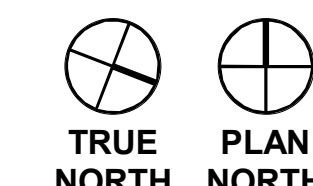
CONCRETE MASONRY PARTITION

- 1A 6" CMU, NON-RATED



2 ROOF PLAN
SCALE: 1/4" = 1'-0"

1 FLOOR PLAN, NEW WORK
SCALE: 1/4" = 1'-0"





GENERAL NOTES (DEMO ELEVATIONS)

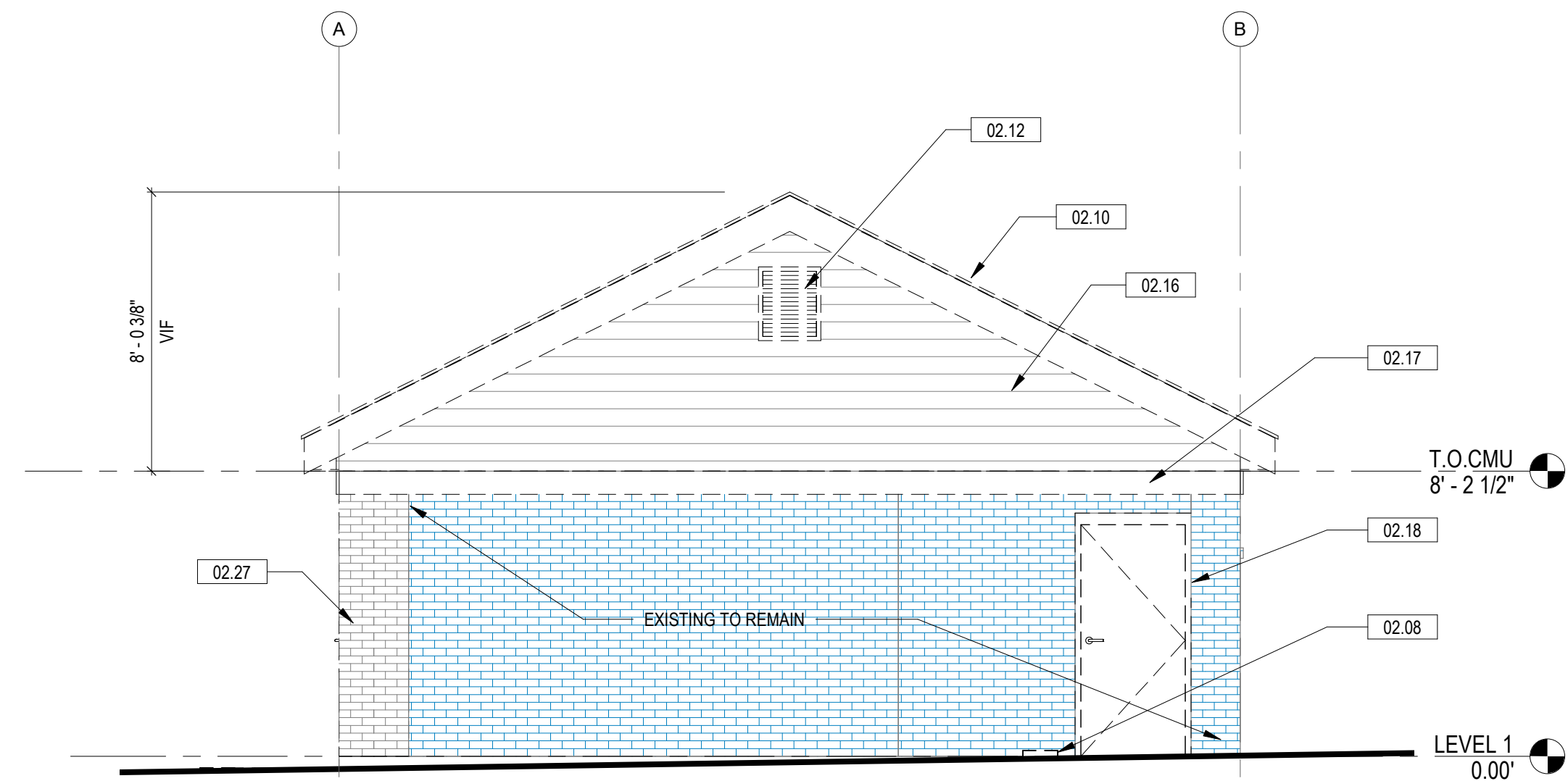
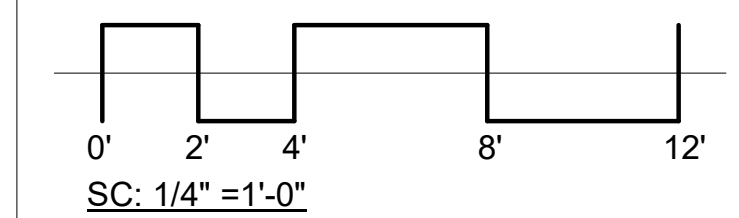
1. VERIFY ALL DIMENSIONS DESCRIBING EXTENTS OF DEMOLITION WITH ARCHITECT IN FIELD.
2. DIMENSIONS DEMONSTRATE DESIGN INTENT AND SHALL BE COORDINATED WITH ACTUAL CONDITIONS. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICTS WITH EXISTING CONDITIONS.
3. COORDINATE ALL DEMOLITION WITH NEW WORK. NOTIFY ARCHITECT IMMEDIATELY OF ANY CONFLICT.
4. REFER TO STRUCTURAL DRAWINGS FOR REMOVAL OF EXISTING STRUCTURAL BUILDING ELEMENTS INCLUDING BUT NOT LIMITED TO SLAB, WALL AND ROOF.
5. REFER TO MEP DRAWINGS FOR REMOVAL OF EXISTING MECHANICAL, ELECTRICAL AND PLUMBING FIXTURES AND EQUIPMENT.
6. REFER TO CIVIL DRAWINGS FOR REMOVAL OF EXISTING SITE ELEMENTS.
7. REMOVE ALL EXISTING INTERIOR AND EXTERIOR BUILDING MOUNTED WAYFINDING SIGNAGE.
8. REMOVE ALL EXISTING HOLLOW METAL DOORS AND FRAMES, U.N.O. PREPARE EXISTING OPENINGS TO RECEIVE NEW WORK; REFER TO NEW WORK PLAN.
9. REMOVE ALL EXISTING WINDOWS, WINDOW SILLS AND WINDOW TREATMENTS, U.N.O. PROTECT AND PREPARE OPENINGS TO RECEIVE NEW WORK.
10. FOR CLARITY, NOT ALL ELEMENTS REQUIRING DEMOLITION ARE SHOWN ON PLANS, V.I.F.

KEYNOTES

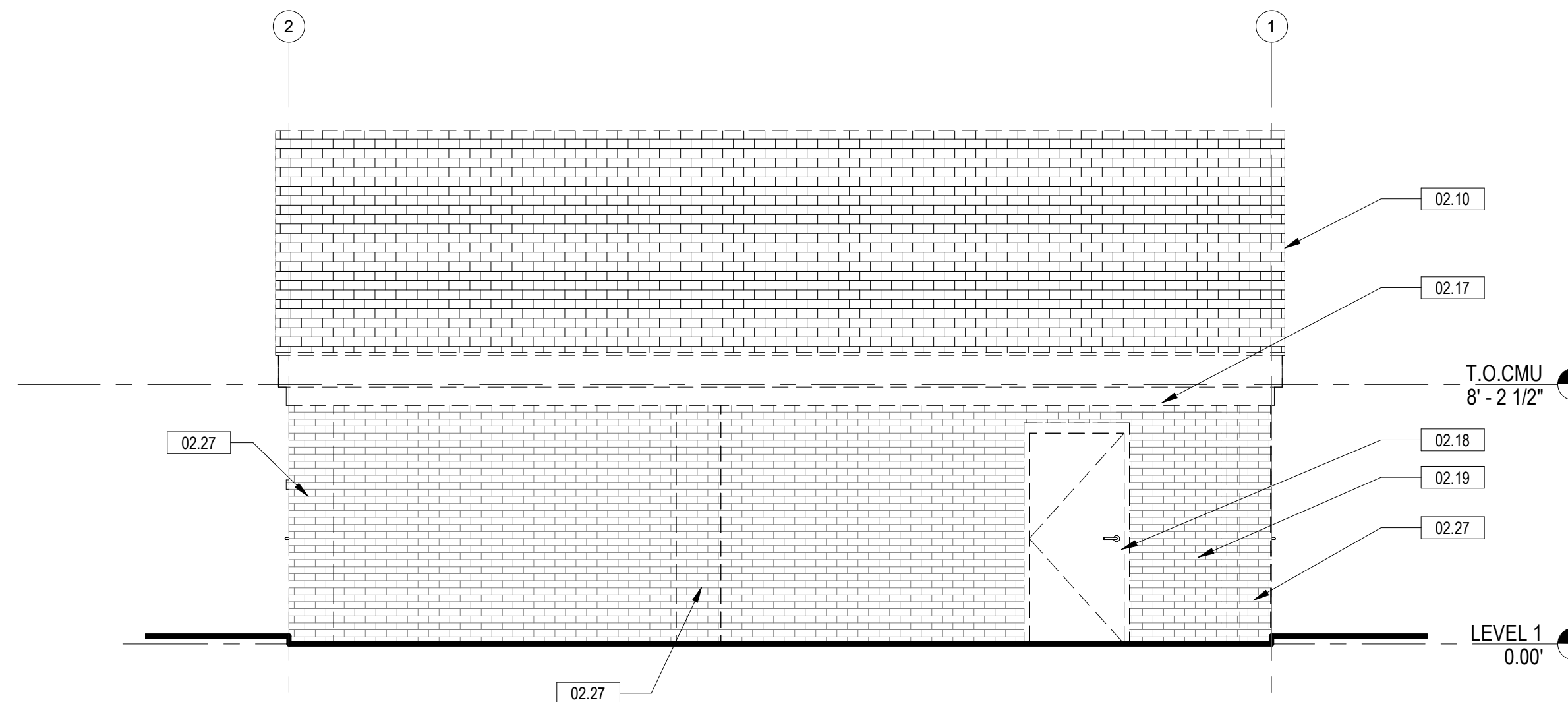
02.03	REMOVE DOOR AND FRAME. PREPARE TO RECEIVE NEW DOOR AND FRAME. SEE NEW WORK PLAN
02.07	CUT BRICK SILL FLUSH AT EXISTING INFILLED WINDOW. PREPARE FOR NEW FURRING FINISH SYSTEM
02.08	REMOVE EXISTING WOOD PLANTERS
02.10	REMOVE EXISTING ROOF AND ROOF STRUCTURE. REFER TO STRUCTURAL DWGS FOR ADDITIONAL INFO
02.12	REMOVE EXISTING LOUVERS
02.14	EXISTING INFILL WINDOW TO REMAIN
02.15	EXISTING BRICK SILL TO REMAIN, PAINT
02.16	REMOVE EXISTING SIDING AND FRAMING
02.17	REMOVE EXISTING WOOD TRIM
02.18	REMOVE DOOR AND FRAME
02.19	REMOVE EXISTING WALL
02.27	REMOVE EXISTING BRICK COLUMN. PREPARE TO INSTALL NEW COLUMNS AT NEW LOCATIONS PER STRUCTURAL DETAILS

LEGEND (ELEVATIONS)

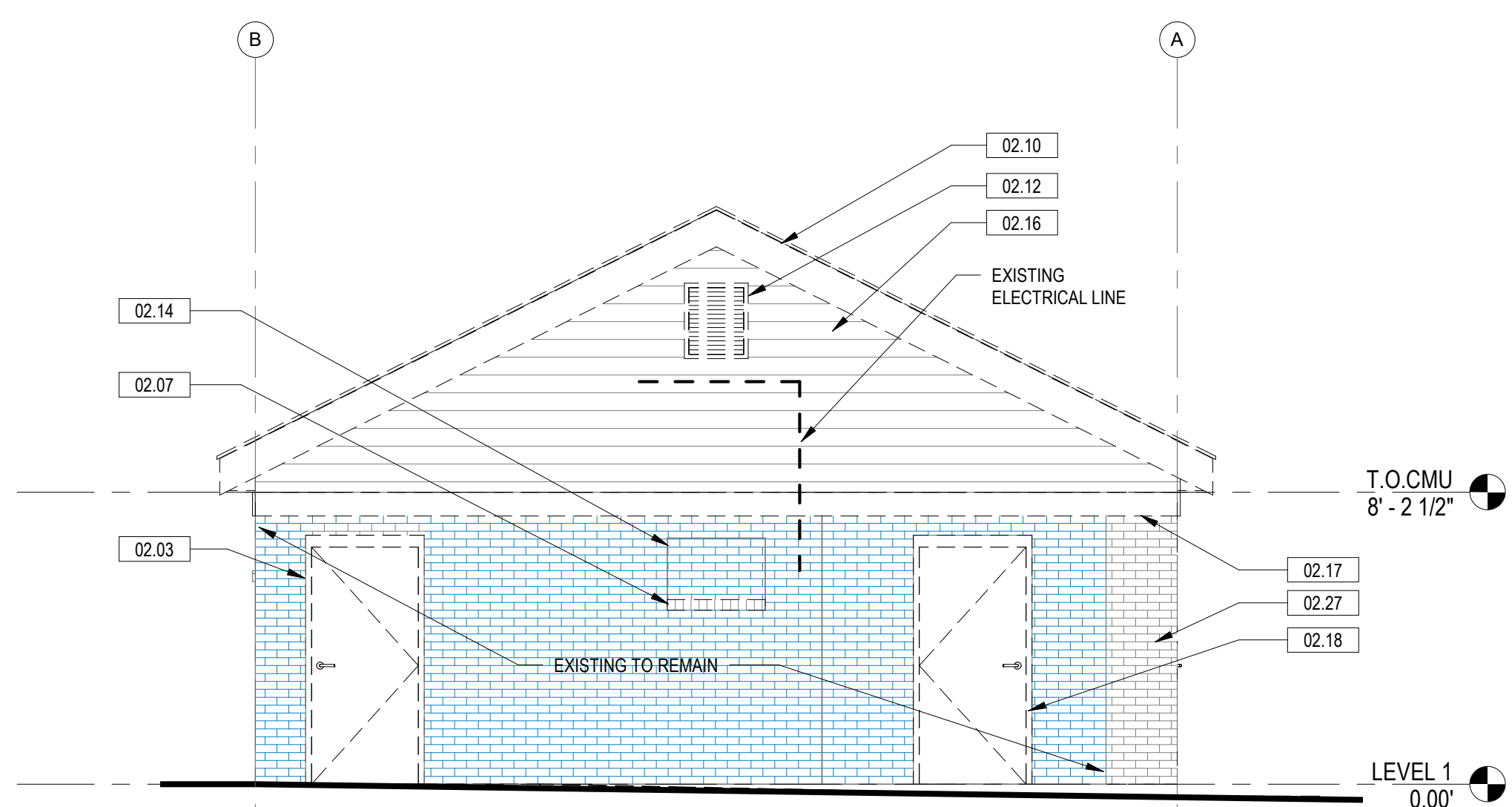
EXISTING CONSTRUCTION TO REMAIN



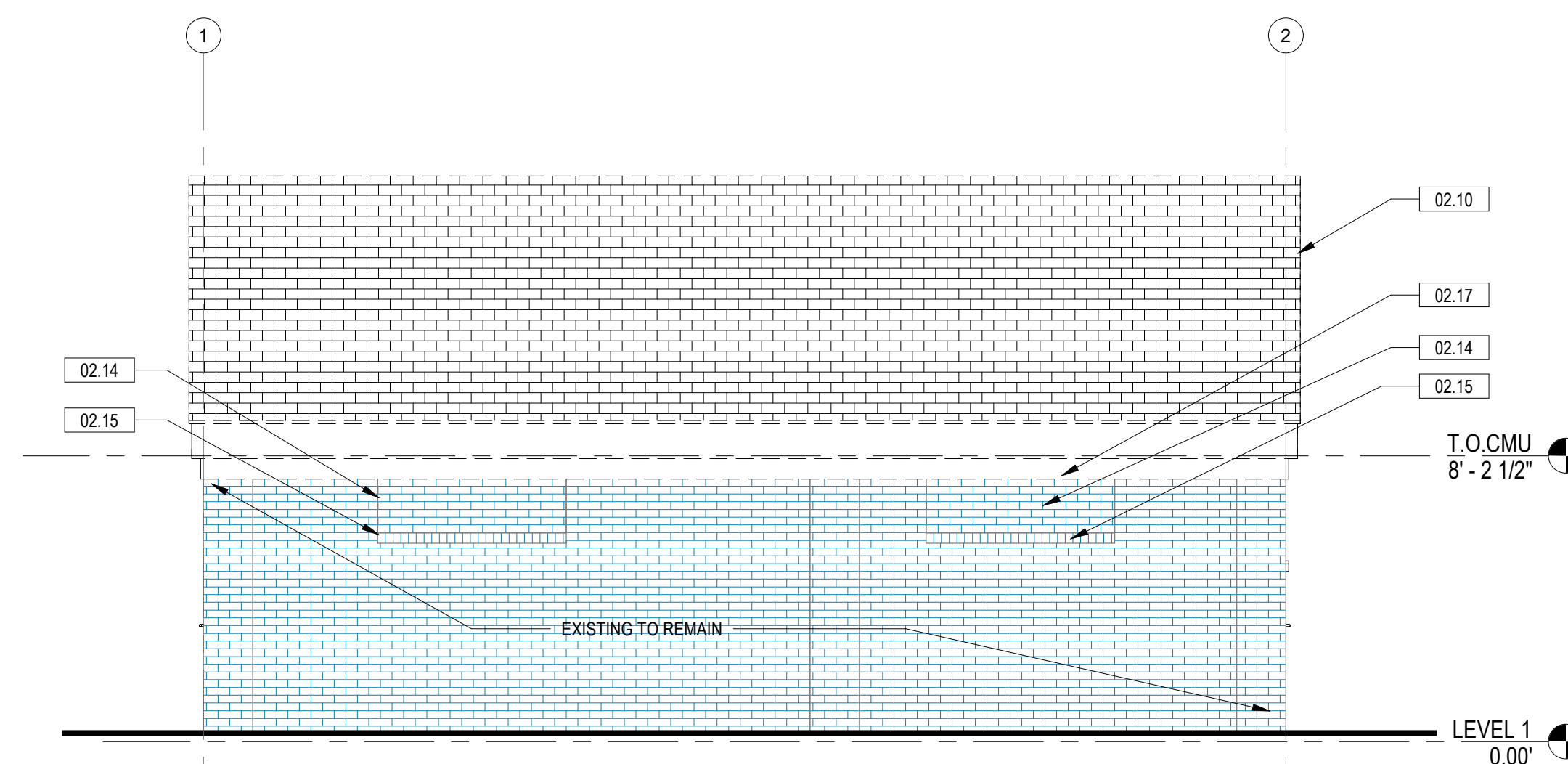
4 EAST ELEVATION DEMOLITION
A-110 A-210 SCALE: 1/4" = 1'-0"



3 SOUTH ELEVATION DEMOLITION
A-110 A-210 SCALE: 1/4" = 1'-0"



2 WEST ELEVATION DEMOLITION
A-110 A-210 SCALE: 1/4" = 1'-0"



1 NORTH ELEVATION DEMOLITION
A-110 A-210 SCALE: 1/4" = 1'-0"

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: A-210



GENERAL NOTES (ELEVATIONS/ SECTIONS)

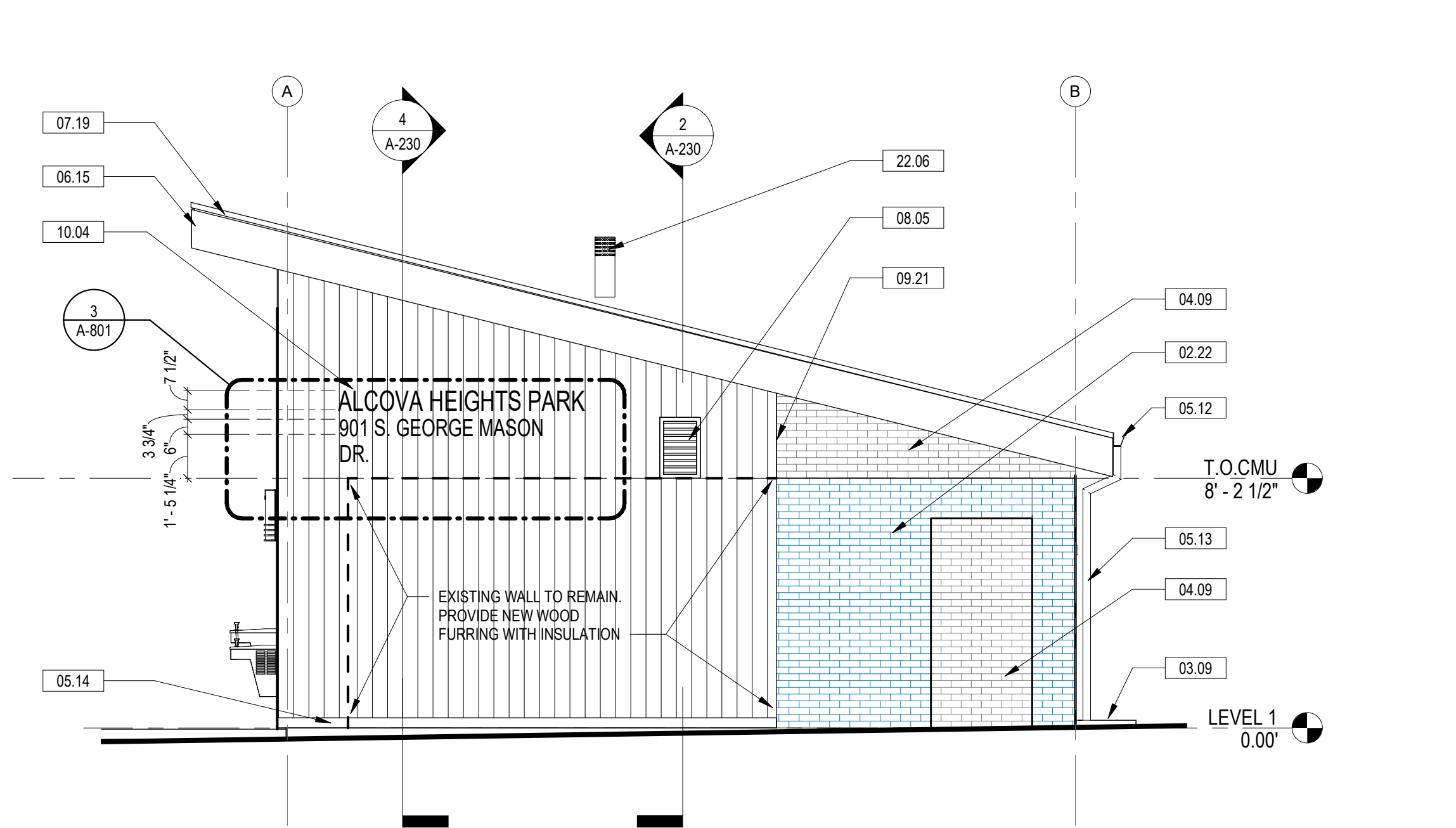
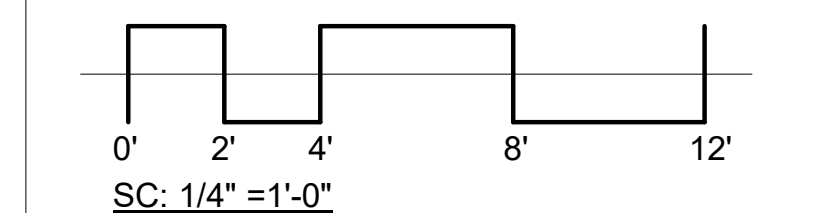
1. REFER TO STRUCTURAL AND MEP DRAWINGS FOR ADDITIONAL INFORMATION.
2. EXTERIOR WOOD SIDING IS TO BE 5/4" X 6" IPE RAINSCREEN SIDING INSTALLED WITH CONCEALED FASTENERS. ALL FASTENERS ARE TO BE STAINLESS STEEL UNLESS NOTED OTHERWISE. CORNERS ARE TO BE MITERED. PRE-SEALED, SEE SPECS
3. METAL ROOF FASCIA, STANDING SEAM ROOF ARE TO BE THE SAME COLOR.
4. FINISH FLOOR ELEVATION IN THIS PROJECT IS NOTED AS (0'-0"). REFER TO CIVIL DRAWINGS FOR GRADING.
5. NEW FENESTRATION IN THE BUILDING ENVELOPE WILL HAVE MIN./MAX. PERFORMANCE OF
U FACTOR = .38 FOR FIXED FENESTRATION
U FACTOR = .77 FOR ENTRANCE DOOR
SOLAR HEAT GAIN = .48
6. ALL EXISTING BRICK & CMU EXPOSED IS TO BE PREP AND PAINT

KEYNOTES

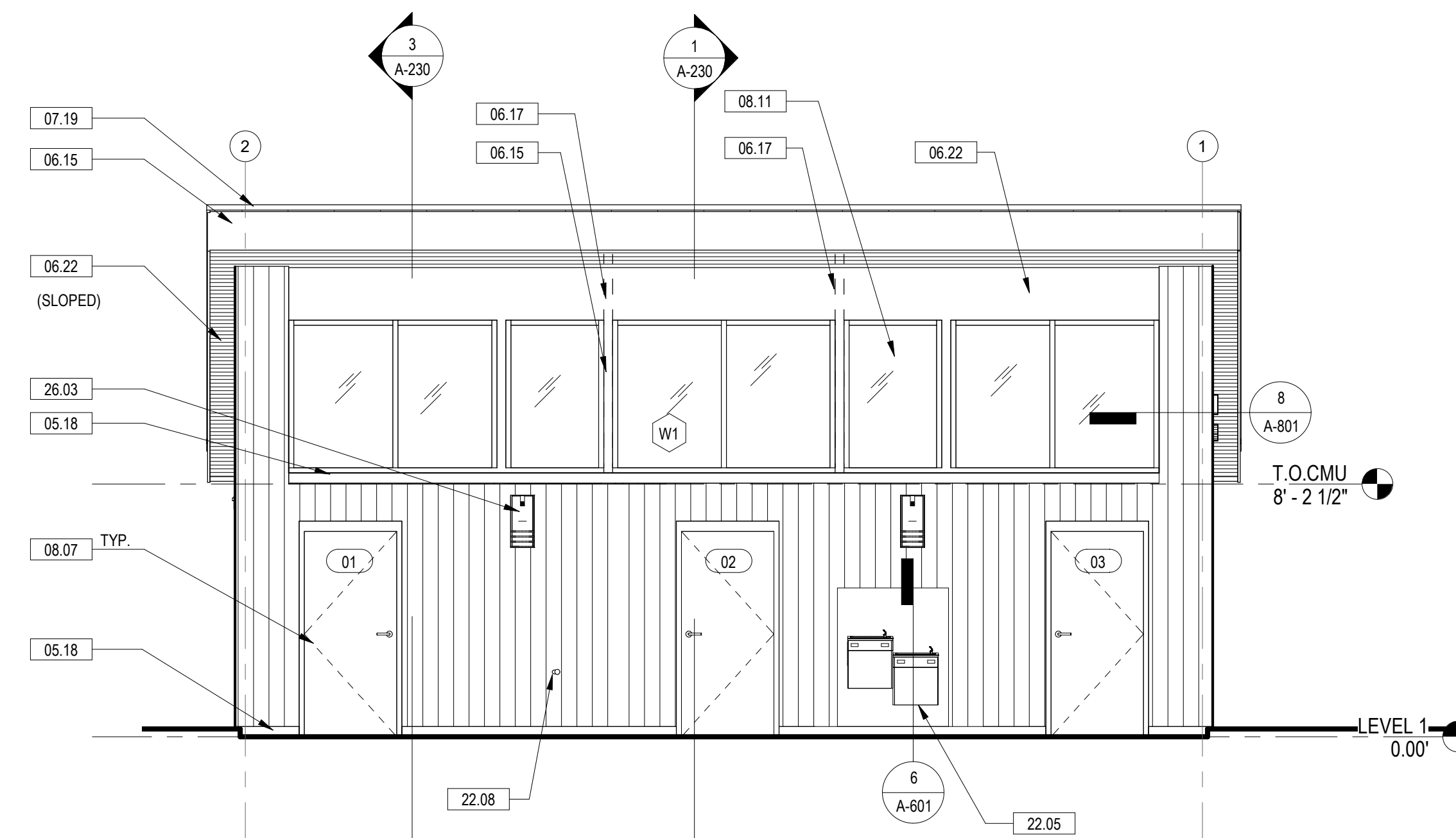
02.14	EXISTING INFILL WINDOW TO REMAIN
02.15	EXISTING BRICK SILL TO REMAIN, PAINT
02.22	EXISTING CMU WALL WITH FACE BRICK TO REMAIN, NEW PAINT FINISH ON INTERIOR
03.09	CONCRETE SPLASH BLOCK
04.09	NEW CMU WALL WITH FACEBRICK TO MATCH EXISTING WALL THICKNESS, PAINT FINISH
04.10	NEW FACE BRICK, PAINT FINISH
04.11	NEW CMU WALL WITH IPE WOOD FURRING SYSTEM
05.12	METAL GUTTER, COLOR TO MATCH THE ROOF
05.13	METAL DOWNSPOUT, COLOR TO MATCH THE ROOF
05.14	METAL FLASHING
05.18	METAL FLASHING WITH WELDED JOINTS, PAINT TO MATCH ROOF COLOR
06.15	WOOD FASCIA WRAPPED WITH BREAK METAL, COLOR TO MATCH METAL ROOF
06.17	4 X 4 POST, SEE STRUCTURAL
06.22	IPE WOOD SOFFIT
07.19	STANDING SEAM METAL ROOFING
08.05	FIXED METAL LOUVER
08.07	DOOR-AS SCHEDULED
08.11	CLERESTORY WINDOW (STRUCTURED POLYCARBONATE PANEL ASSEMBLY)
09.21	Division 09
10.04	CAST ALUMINUM LETTERS. SECURE TO FACADE WITH STAINLESS STEEL STAND-OFFS; MOUNT FLUSH TO EXTERIOR
22.05	ACCESSIBLE DRINKING FOUNTAIN
22.06	PLUMBING VENT, PAINT TO MATCH METAL ROOF
22.08	HOSE BIB
26.03	EXTERIOR LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO

LEGEND (ELEVATIONS)

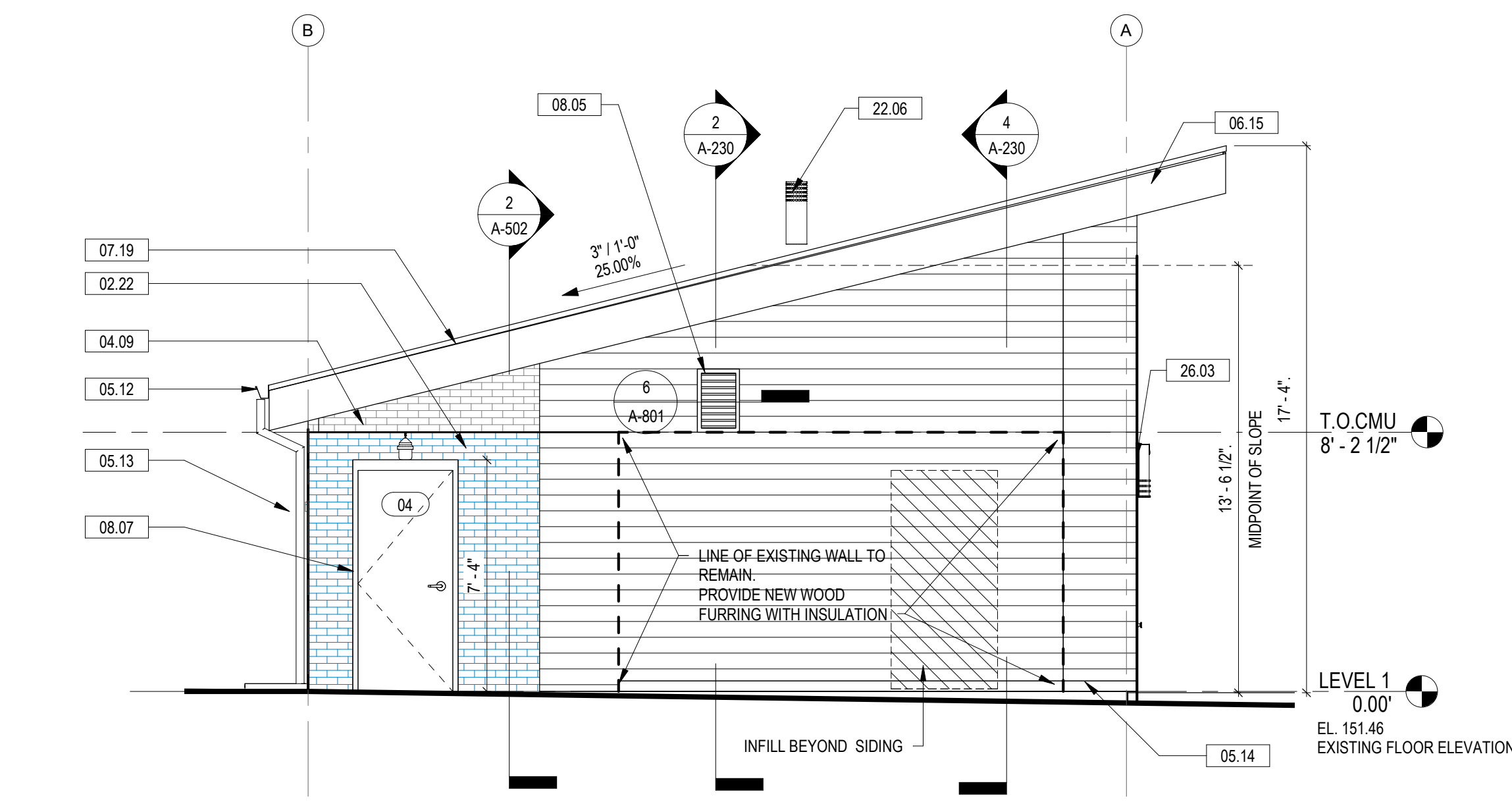
EXISTING CONSTRUCTION TO REMAIN



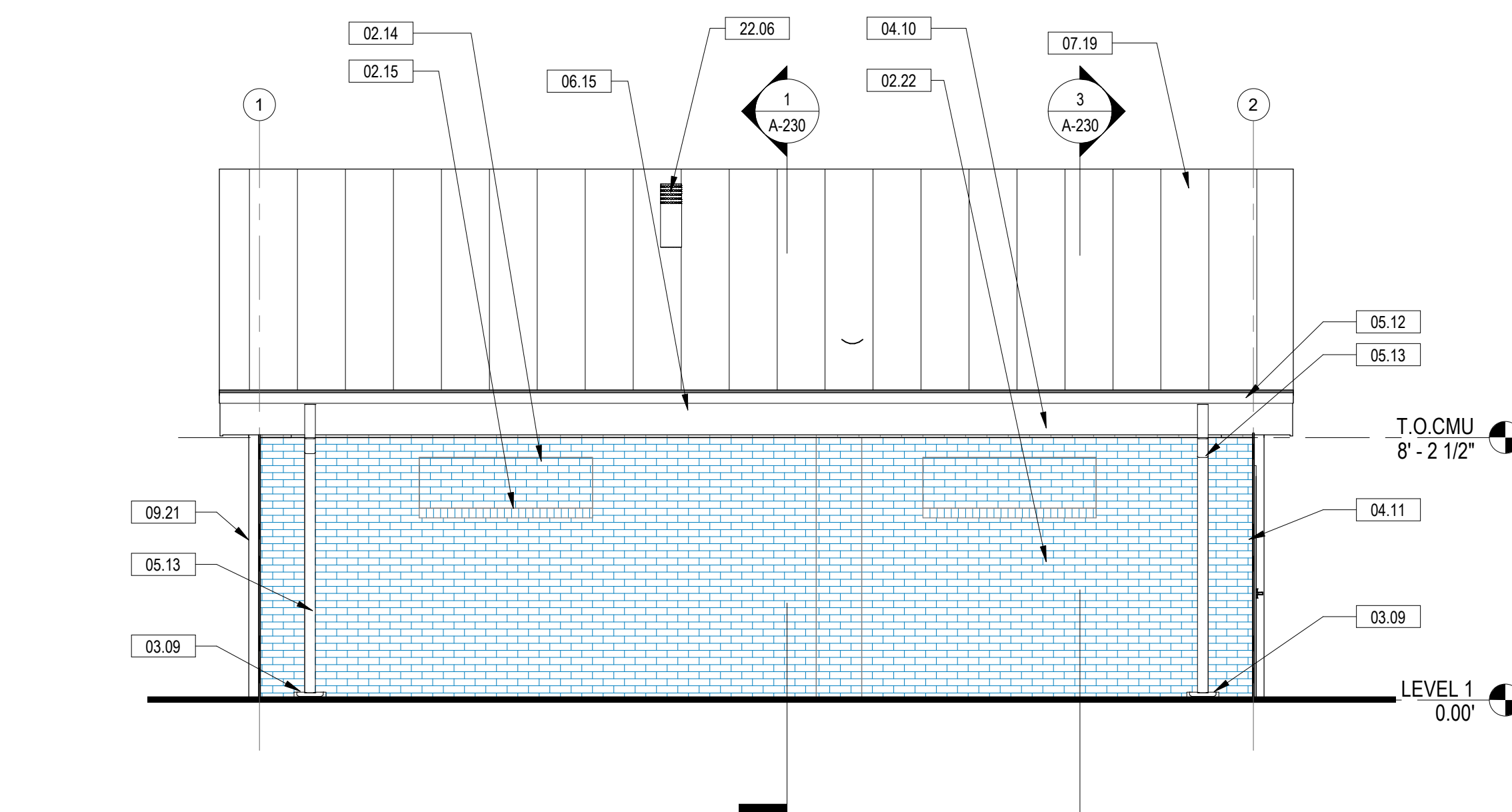
4 EAST ELEVATION_NEW WORK
SCALE: 1/4" = 1'-0"



3 SOUTH ELEVATION_NEW WORK
SCALE: 1/4" = 1'-0"



2 WEST ELEVATION_NEW WORK
SCALE: 1/4" = 1'-0"



1 NORTH ELEVATION_NEW WORK
SCALE: 1/4" = 1'-0"

GENERAL NOTES (ELEVATIONS/ SECTIONS)

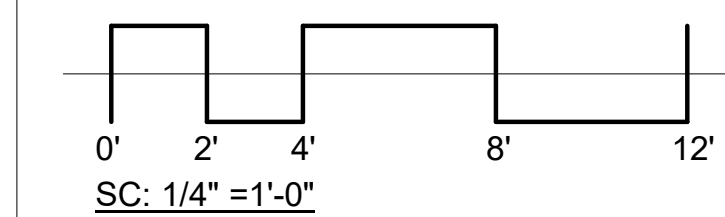
- REFER TO STRUCTURAL AND MEP DRAWINGS FOR ADDITIONAL INFORMATION.
- EXTERIOR WOOD SIDING IS TO BE 5/4" X 6" IPE RAINSCREEN SIDING INSTALLED WITH CONCEALED FASTENERS. ALL FASTENERS ARE TO BE STAINLESS STEEL UNLESS NOTED OTHERWISE. CORNERS ARE TO BE MITERED. PRE-SEALED, SEE SPECS
- METAL ROOF FASCIA, STANDING SEAM ROOF ARE TO BE THE SAME COLOR.
- FINISH FLOOR ELEVATION IN THIS PROJECT IS NOTED AS (0'-0"). REFER TO CIVIL DRAWINGS FOR GRADING.
- NEW FENESTRATION IN THE BUILDING ENVELOPE WILL HAVE MIN./MAX. PERFORMANCE OF
U FACTOR = .38 FOR FIXED FENESTRATION
U FACTOR = .77 FOR ENTRANCE DOOR
SOLAR HEAT GAIN = .48
- ALL EXISTING BRICK & CMU EXPOSED IS TO BE PREP AND PAINT

KEYNOTES

02.28	REMOVE EXISTING TOP MASONRY BLOCK. PREPARE TO RECEIVE NEW BOND BEAM ALIGNING WITH EXISTING BRICK VENEER. SEE STRUCTURAL
03.02	CONCRETE FOUNDATION WALL AND FOOTING - SEE STRUCTURAL DRAWINGS
04.01	CMU
05.09	FENCE-LINK PARTITION WITH STEEL FRAMING 8' HIGH
06.16	LVL WOOD JOIST @ 16' OC, SEE STRUCTURAL
07.19	STANDING SEAM METAL ROOFING
07.27	SEALANT
08.05	FIXED METAL LOUVER
08.11	CLERESTORY WINDOW (STRUCTURED POLYCARBONATE PANEL ASSEMBLY)
08.13	CHAIN LINK FENCE DOOR
08.14	NEW IN-FILL AT REMOVED DOOR/WINDOW TO MATCH EXISTING WALL WIDTH AND FINISHES BOTH EXTERIOR AND INTERIOR
09.13	SLOPED GWB CEILING, PAINT
09.19	WALL TILE OVER CMU
09.23	GYPSUM BOARD BULKHEAD, PAINT
23.01	WALL MOUNTED RECESSED UNIT HEATER
26.02	LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO

LEGEND (ELEVATIONS, SECTIONS)

- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON SECTION)
- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON ELEVATION)



Sheet Title

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

BID SET 9/21/21

Designed:

Drawn: **KN**

Checked: **BV**

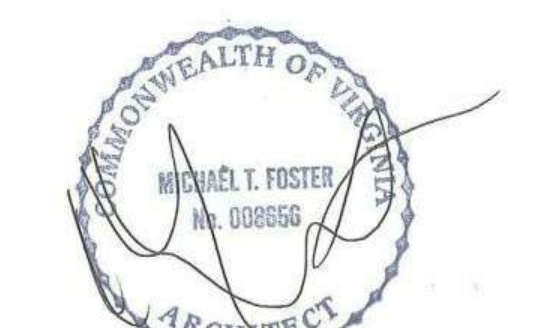
Filename:

Plotted:

Scale: AS INDICATED

Date: 10/11/19

Seal

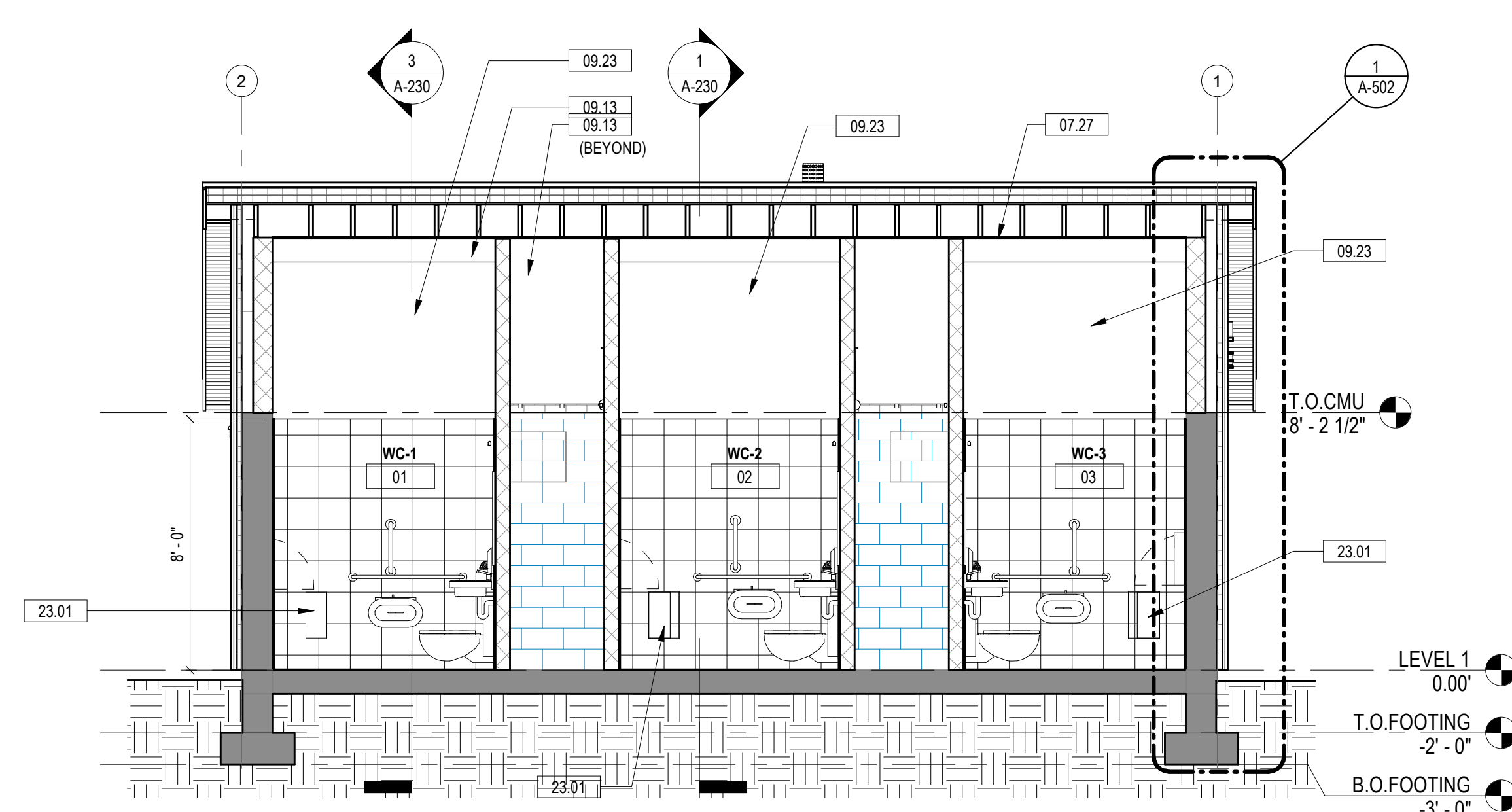


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

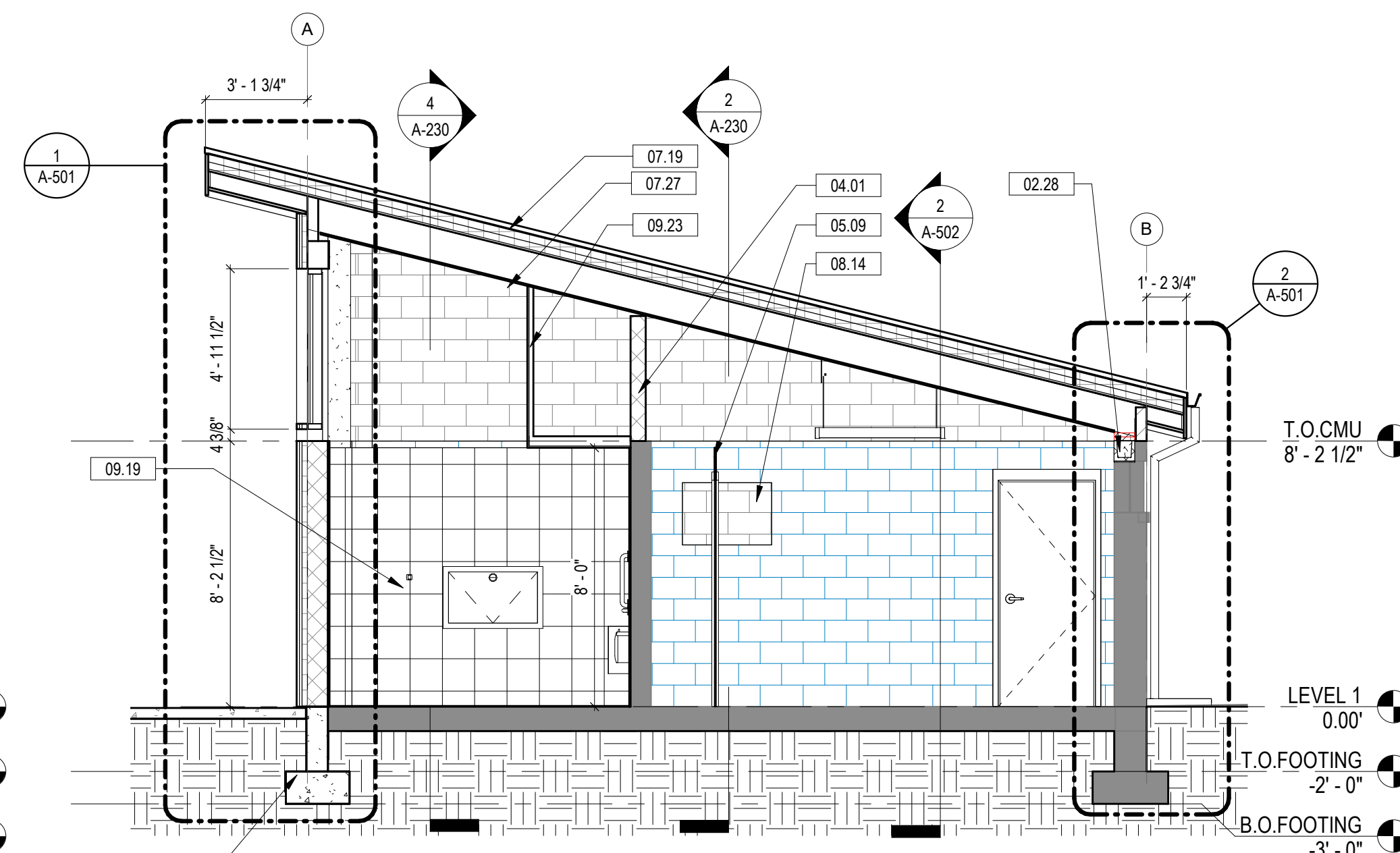
Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

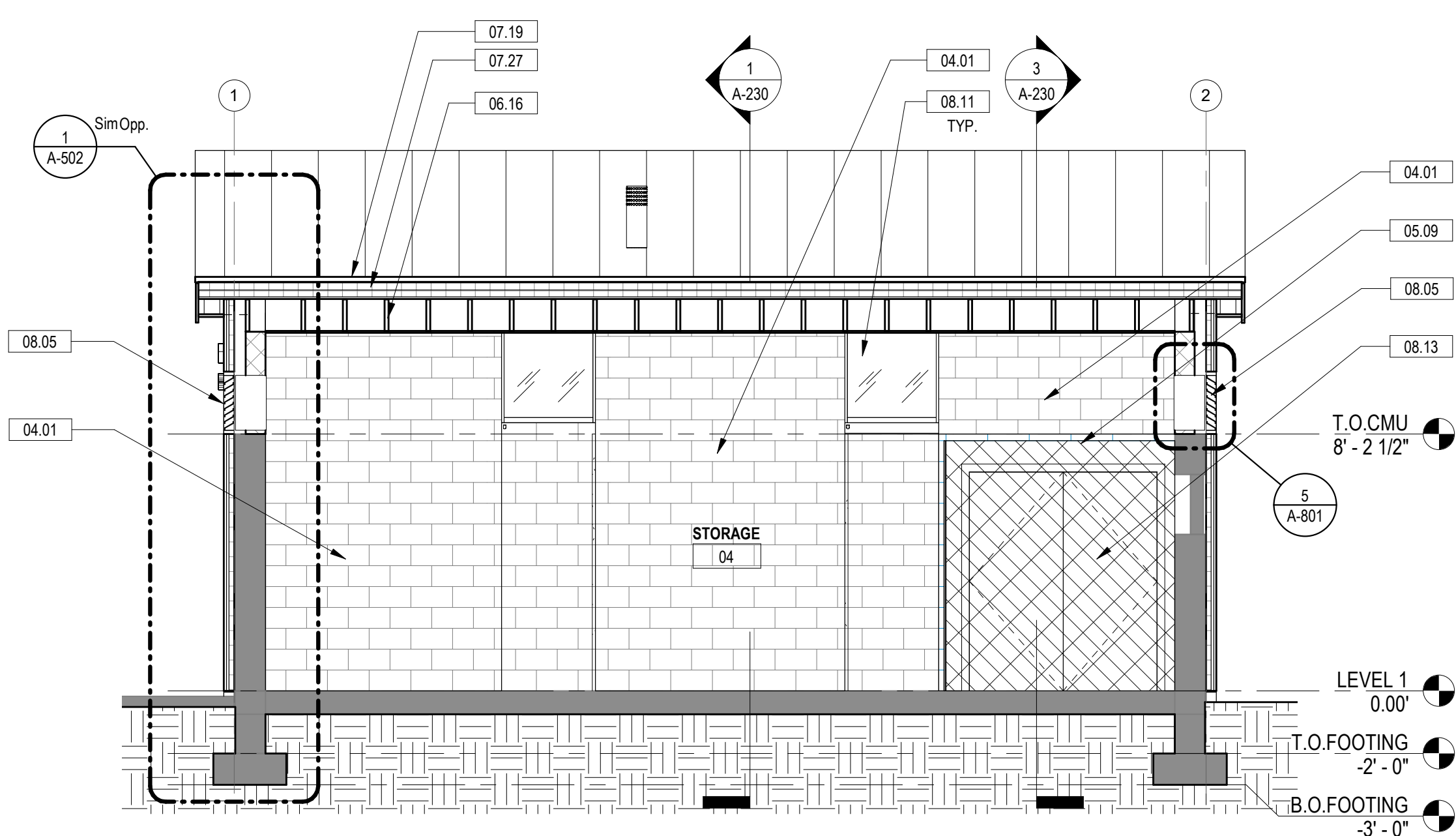
SHEET: **A-230**



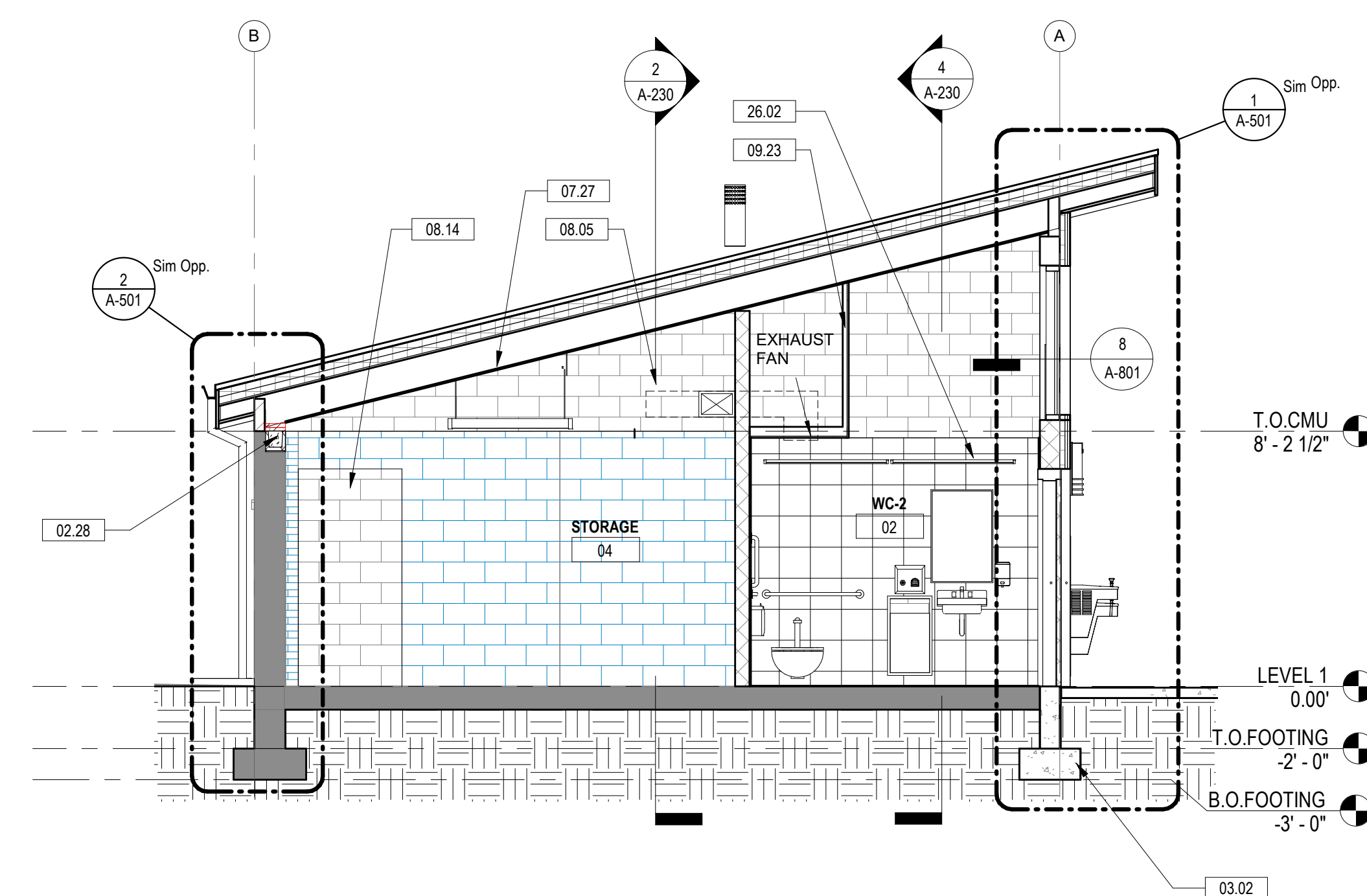
4 BUILDING SECTION 4
SCALE: 1/4" = 1'-0"



3 BUILDING SECTION 3
SCALE: 1/4" = 1'-0"



2 BUILDING SECTION 2
SCALE: 1/4" = 1'-0"



1 BUILDING SECTION 1
SCALE: 1/4" = 1'-0"



GENERAL NOTES (REFLECTED CEILING PLANS)

1. CONTRACTOR TO VERIFY IN FIELD FOR EXISTING CONDITIONS AND DIMENSIONS. IF ANY DISCREPANCY EXISTS BETWEEN THE ARCHITECTURAL & CIVIL DRAWINGS, NOTIFY THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
2. ALL DIMENSIONS ARE TO FACE OF FINISH U.N.O. ALL DIMENSIONS NOTED AS CLEAR MUST MAINTAIN NOTED DIMENSION FROM FINISH FACE.
3. CONTRACTOR TO COORDINATE LOCATIONS OF LIGHT FIXTURES WITH MECHANICAL DUCTWORK TO ACHIEVE THE CEILING HEIGHT AND FIXTURE LAYOUT AS SHOWN IN THE ARCHITECTURAL DRAWINGS. NOTIFY ARCHITECT OF ANY CONFLICT BEFORE PROCEEDING WITH WORK.
4. CEILING ELEVATIONS ARE BASED ON FINISHED FLOOR ELEVATIONS DIRECTLY BELOW NOTED LOCATIONS.
5. REFER TO ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.

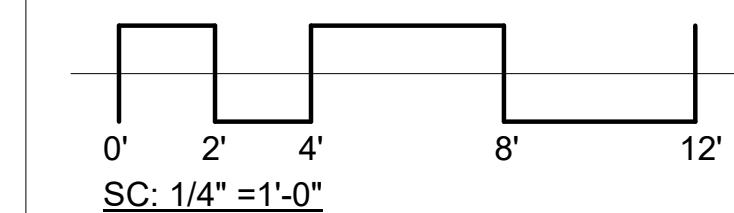
KEYNOTES

05.09	FENCE-LINK PARTITION WITH STEEL FRAMING 8' HIGH
06.16	LVL WOOD JOIST @ 16" OC. SEE STRUCTURAL
06.17	4 X 4 POST, SEE STRUCTURAL
06.22	IPE WOOD SOFFIT
07.27	SEALANT
08.05	FIXED METAL LOUVER
09.21	Division 09
09.23	GYPSUM BOARD BULKHEAD, PAINT
26.02	LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO
26.03	EXTERIOR LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO

LEGEND (PLANS)

EXISTING CONSTRUCTION TO REMAIN

NEW CONSTRUCTION

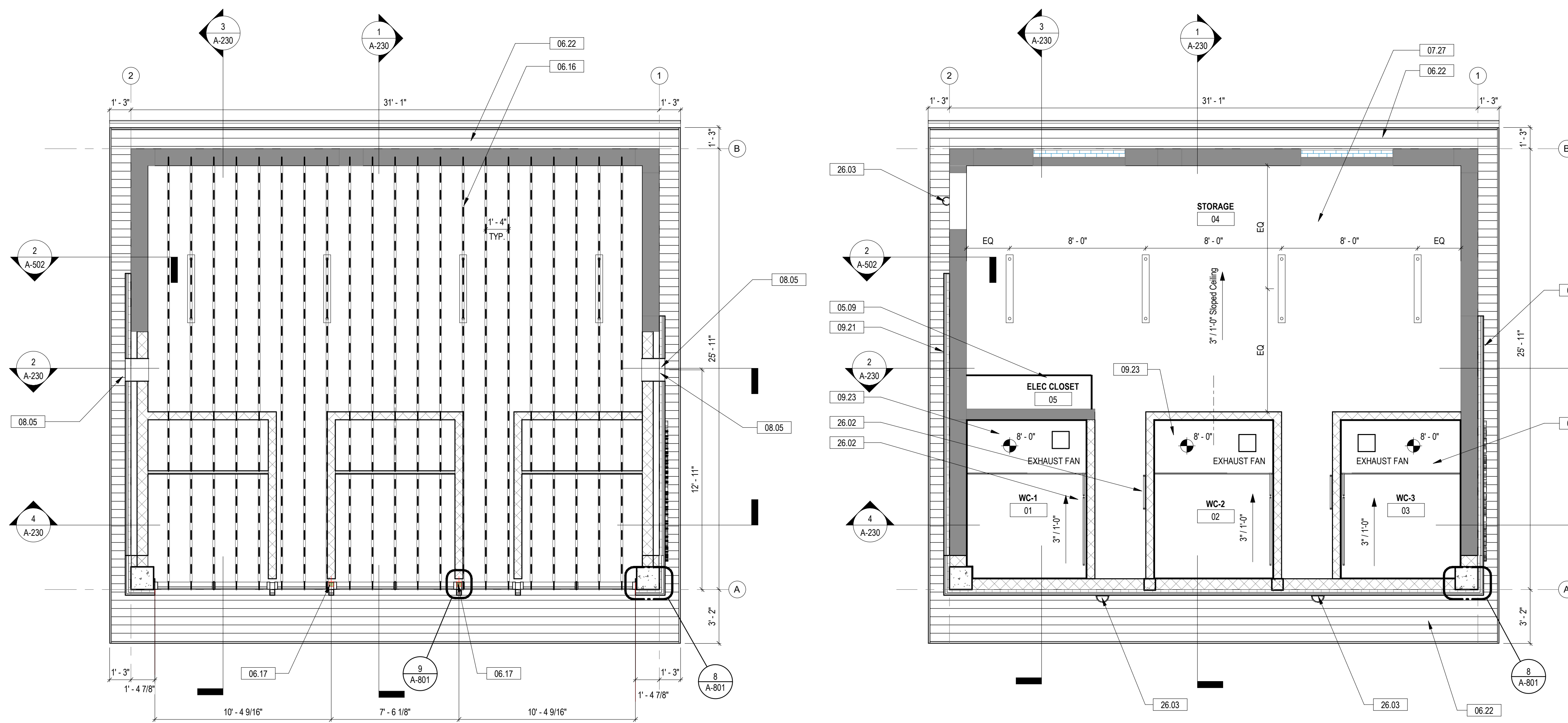
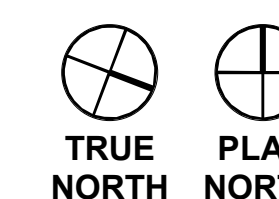


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
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SCALE: AS INDICATED

SHEET: A-401



2 RCP_UNDER ROOF_NEW WORK
SCALE: 1/4" = 1'-0"

1 RCP_NEW WORK
SCALE: 1/4" = 1'-0"



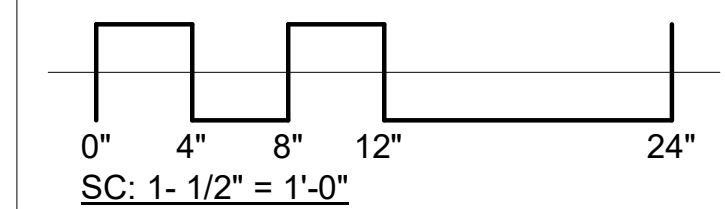
KEYNOTES

02.14	EXISTING INFILL WINDOW TO REMAIN
02.15	EXISTING BRICK SILL TO REMAIN, PAINT
02.22	EXISTING CMU WALL WITH FACE BRICK TO REMAIN, NEW PAINT FINISH ON INTERIOR
02.24	EXISTING CONCRETE FLOOR TO REMAIN. PROVIDE NEW SELF LEVELING TOPPING. SEE SCHEDULE
02.26	EXISTING FOUNDATION WALL AND FOOTING, SEE STRUCTURE FOR MORE INFO
03.09	CONCRETE SPLASH BLOCK
04.10	NEW FACE BRICK, PAINT FINISH
04.12	BOND BEAM, SEE STRUCTURAL
04.13	DOWEL, SEE STRUCTURAL
05.12	METAL GUTTER, COLOR TO MATCH THE ROOF
05.13	METAL DOWNSPOUT, COLOR TO MATCH THE ROOF
05.14	METAL FLASHING
05.16	PROVIDE TAPE SEALANT, CLIPS, CLEATS PER MANUFACTURER'S INSTALLATION REQUIREMENTS
06.08	PRESSURED TREATED WOOD BLOCKING
06.09	IPE WOOD SIDING ON PRESSURE TREATED, STAGGERED, NON-CONTINUOUS WOOD BLOCKING
06.10	RAFTER, SEE STRUCTURAL
06.12	WOOD TRIM, PAINT
06.14	NON-CONTINUOUS PRESSURE TREATED WOOD FURRING, STAGGER JOINT
06.15	WOOD FASCIA WRAPPED WITH BREAK METAL, COLOR TO MATCH METAL ROOF
06.16	LVL WOOD JOIST @ 16" OC, SEE STRUCTURAL
06.18	(2) PRESSURE TREATED 2 X 8
06.19	PAINTED WOOD SILL
06.22	IPE WOOD SOFFIT
07.07	BATT INSULATION
07.08	RIGID INSULATION (WALL=R19, ROOF=R30)
07.11	AIR/VAPOR BARRIER
07.16	METAL FLASHING
07.19	STANDING SEAM METAL ROOFING
07.22	THROUGH WALL FLASHING
07.27	SEALANT
07.33	BREATHABLE PROTECTION ROOF FELT
07.34	5/8" EXTERIOR SHEATHING
07.35	VAPOR BARRIER
07.37	POLYISOCYANURATE FOAM INSULATION PANEL 2.60 INCHES THICK, R-15
09.19	WALL TILE OVER CMU
09.20	CERMIC TILE FLOOR SLOPED TO FLOOR DRAIN
32.03	NEW WALKWAY. REFER CIVILLANDSCAPE DWGS FOR ADDITIONAL INFO

LEGEND

(ELEVATIONS, SECTIONS)

- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON SECTION)
- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON ELEVATION)

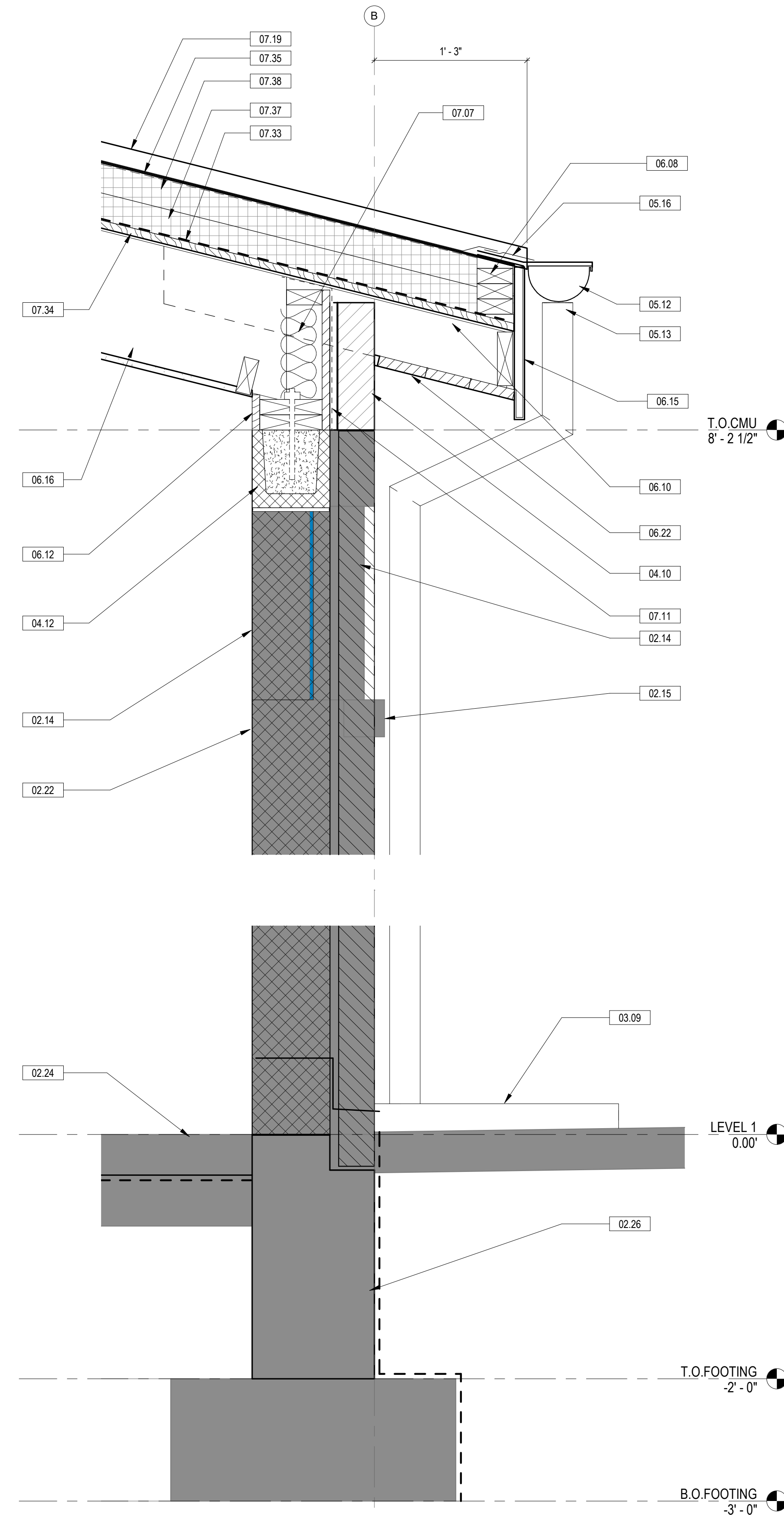


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

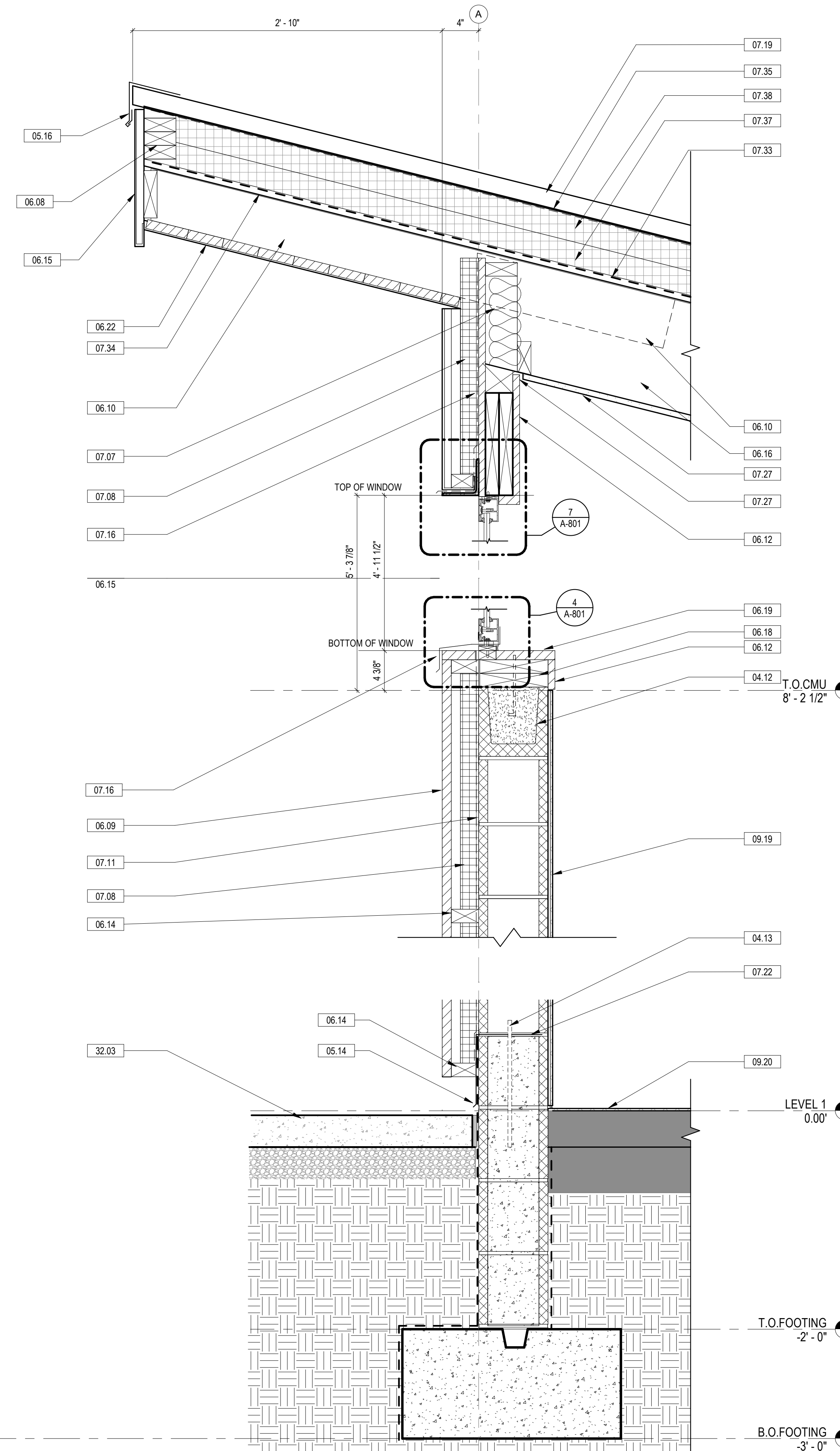
Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

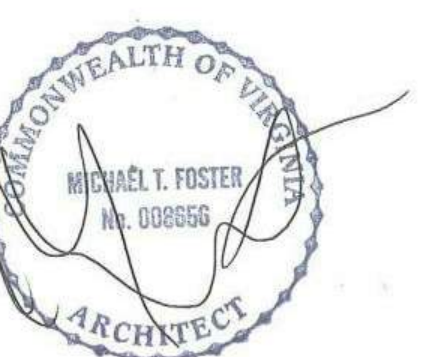
SHEET: A-501



2 WALL SECTION 2
SCALE: 1 1/2" = 1'-0"



1 WALL SECTION 1
SCALE: 1 1/2" = 1'-0"



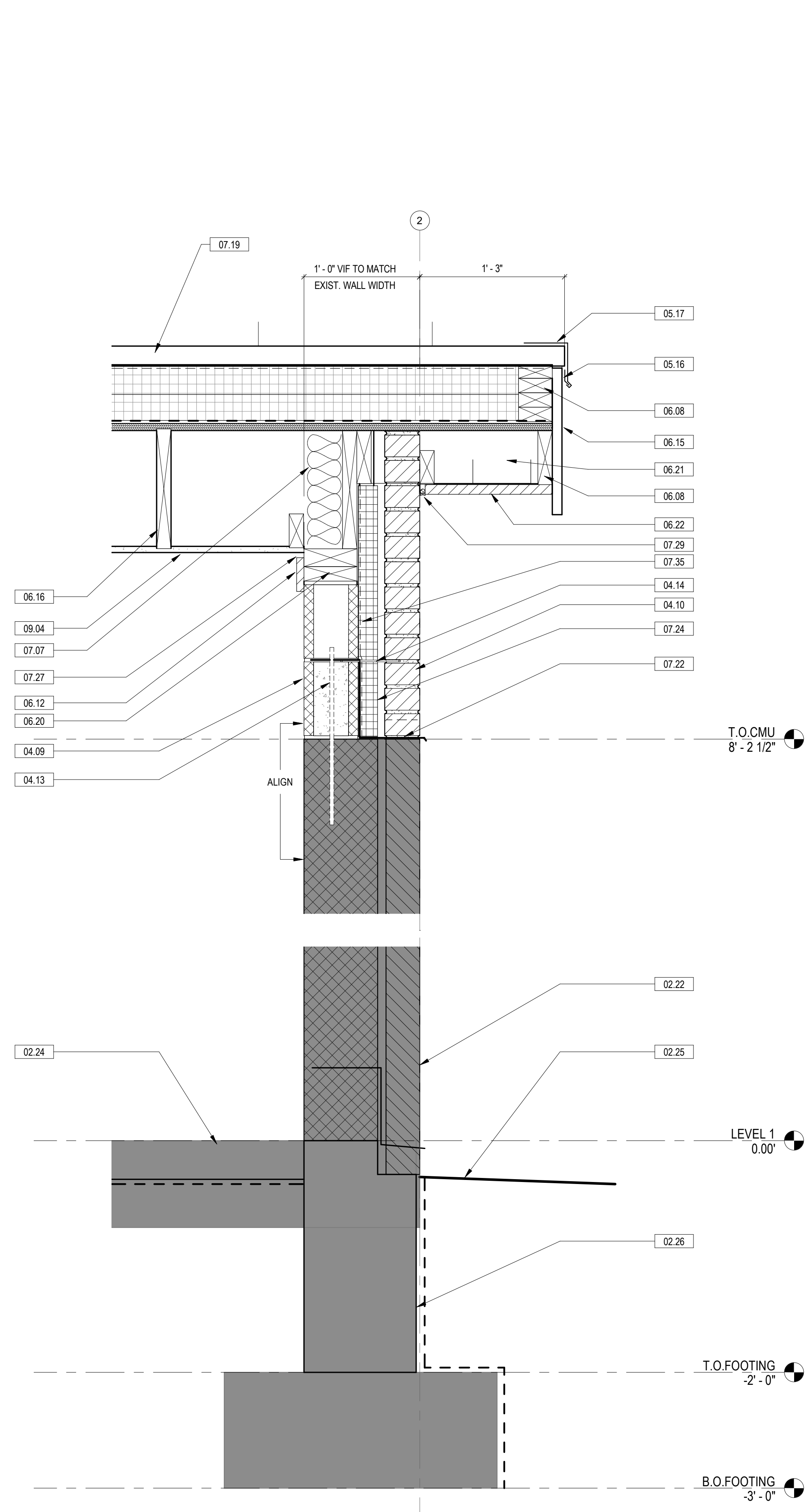
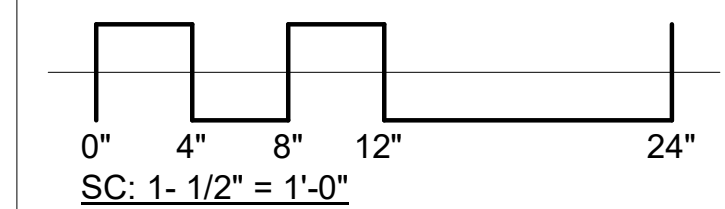
KEYNOTES

02.22	EXISTING CMU WALL WITH FACE BRICK TO REMAIN, NEW PAINT FINISH ON INTERIOR
02.24	EXISTING CONCRETE FLOOR TO REMAIN. PROVIDE NEW SELF LEVELING TOPPING. SEE SCHEDULE
02.25	EXISTING PAVEMENT COORDINATE WITH LANDSCAPE
02.26	EXISTING FOUNDATION WALL AND FOOTING, SEE STRUCTURE FOR MORE INFO
04.09	NEW CMU WALL WITH FACE BRICK TO MATCH EXISTING WALL THICKNESS, PAINT FINISH
04.10	NEW FACE BRICK, PAINT FINISH
04.13	DOWEL, SEE STRUCTURAL
04.14	BRICK TIE
05.14	METAL FLASHING
05.16	PROVIDE TAPE SEALANT, CLIPS, CLEATS PER MANUFACTURER'S INSTALLATION REQUIREMENTS
05.17	RAKE TRIM PER MANUFACTURER INSTALLATION REQUIREMENTS
06.02	5/8" PLYWOOD SHEATHING
06.08	PRESSURED TREATED WOOD BLOCKING
06.09	IPE WOOD SIDING ON PRESSURE TREATED, STAGGERED, NON-CONTINUOUS WOOD BLOCKING
06.12	WOOD TRIM, PAINT
06.14	NON-CONTINUOUS PRESSURE TREATED WOOD FURRING, STAGGER JOINT
06.15	WOOD FASCIA WRAPPED WITH BREAK METAL, COLOR TO MATCH METAL ROOF
06.16	LVL WOOD JOIST @ 16" OC, SEE STRUCTURAL
06.20	(2) PRESSURE TREATED 2 X 6
06.21	OUTRIGGER, SEE STRUCTURAL
06.22	IPE WOOD SOFFIT
07.07	BATT INSULATION
07.11	AIR/VAPOR BARRIER
07.19	STANDING SEAM METAL ROOFING
07.22	THROUGH WALL FLASHING
07.24	RIGID INSULATION
07.27	SEALANT
07.29	SEALANT AND BACKER ROD
07.33	BREATHABLE PROTECTION ROOF FELT
07.35	VAPOR BARRIER
07.37	POLYISOCYANURATE FOAM INSULATION PANEL 2.00 INCHES THICK, R-15
07.38	3.0 INCHES THICK, R-15
09.04	GYP/SJM WALLBOARD
09.13	SLOPED GWB CEILING, PAINT
09.19	WALL TILE OVER CMU
10.04	CAST ALUMINUM LETTERS. SECURE TO FACADE WITH STAINLESS STEEL STAND-OFFS; MOUNT FLUSH TO EXTERIOR

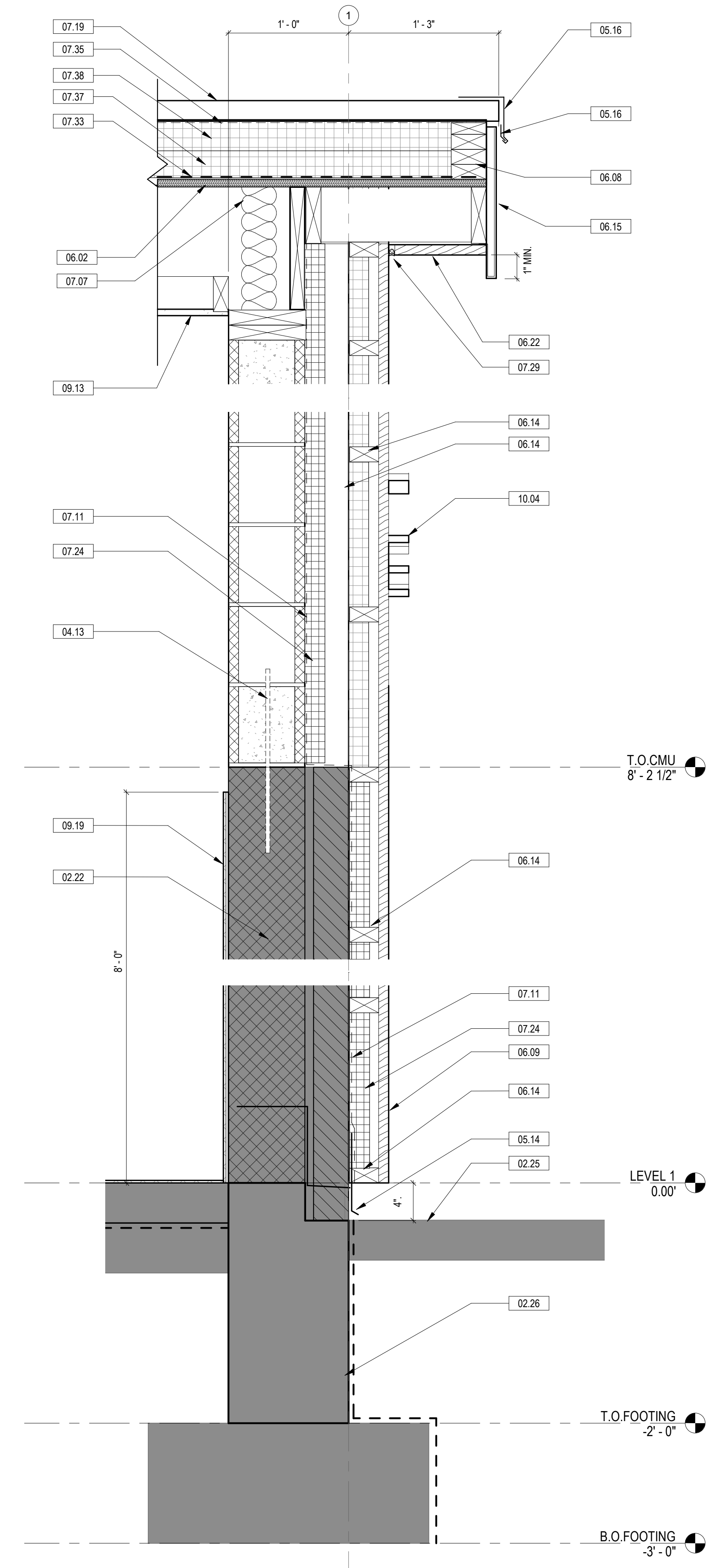
LEGEND

(ELEVATIONS, SECTIONS)

- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON SECTION)
- EXISTING CONSTRUCTION TO REMAIN (SHOWN ON ELEVATION)



2 WALL SECTION 4
SCALE: 1 1/2" = 1'-0"



1 WALL SECTION 3
SCALE: 1 1/2" = 1'-0"

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
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SCALE: AS INDICATED

SHEET: **A-502**



GENERAL NOTES (TOILET ROOMS)

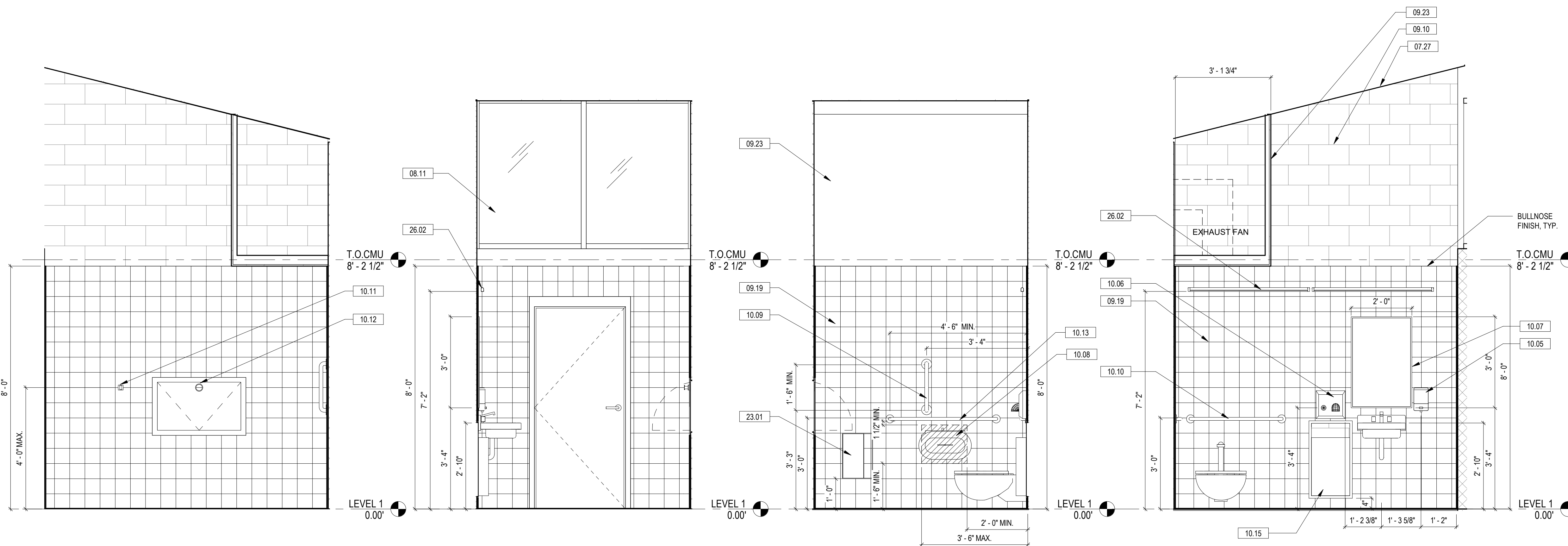
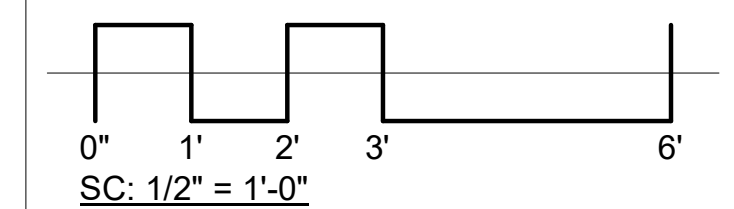
- CONTRACTOR TO VERIFY IN FIELD FOR EXISTING CONDITIONS AND DIMENSIONS. IF ANY DISCREPANCY EXISTS BETWEEN THE ARCHITECTURAL & CIVIL DRAWINGS, NOTIFY THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK.
- ALL DIMENSIONS ARE TO FACE OF FINISH U.N.O. ALL DIMENSIONS NOTED AS CLEAR MUST MAINTAIN NOTED DIMENSION FROM FINISH FACE.
- REFER TO ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
- ALL PLUMBING FIXTURES AND ACCESSORIES ARE TO BE INSTALLED TO MEET THE REQUIREMENTS OF ANSI 117.1 2009 ALONG WITH ADA GUIDELINES.
- PROVIDE PIPE PROTECTION FOR EXPOSED PIPING BELOW LAVATORY.
- PROVIDE ADA COMPLIANT CLEAR TOE AND KNEE CLEARANCE BELOW WALL MOUNTED LAVATORY.
- CERAMIC TILE ON NEW AND EXISTING WALLS IN TOILETS IS 8'-0" HIGH, UNLESS NOTED OTHERWISE.

KEYNOTES

04.16	8" X 8" SOLID MASONRY PIER, SEE STRUCTURAL
05.09	FENCE-LINK PARTITION WITH STEEL FRAMING 8' HIGH
07.27	SEALANT
08.11	CLERESTORY WINDOW (STRUCTURED POLYCARBONATE PANEL ASSEMBLY)
09.10	PAINT FINISH
09.19	WALL TILE OVER CMU
09.23	GYPSUM BOARD BULKHEAD, PAINT
10.05	SOAP DISPENSER
10.06	HAND DRYER
10.07	FRAMELESS MIRROR
10.08	DOUBLE-ROLL TOILET PAPER DISPENSER
10.09	18" MIN. VERTICAL GRAB BAR
10.10	36" GRAB BAR, 1.5" O.D.
10.11	ADA ROBE HOOK 48" MAX. MOUNTING HEIGHT AFF
10.12	RECESSED WALL MOUNTED BABY CHANGING STATION
10.13	42" GRAB BAR, 1.5" O.D.
10.15	SEMI-RECESSED WALL MOUNTED WASTE RECEPTACLE
22.04	NEW FLOOR DRAIN
22.05	ACCESSIBLE DRINKING FOUNTAIN
23.01	WALL MOUNTED RECESSED UNIT HEATER
26.02	LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO

LEGEND (PLANS)

- EXISTING CONSTRUCTION TO REMAIN
- NEW CONSTRUCTION



8 INTERIOR ELEV D_TOILET WC-2

SCALE: 1/2" = 1'-0"

5 INTERIOR ELEV C_TOILET WC-2

SCALE: 1/2" = 1'-0"

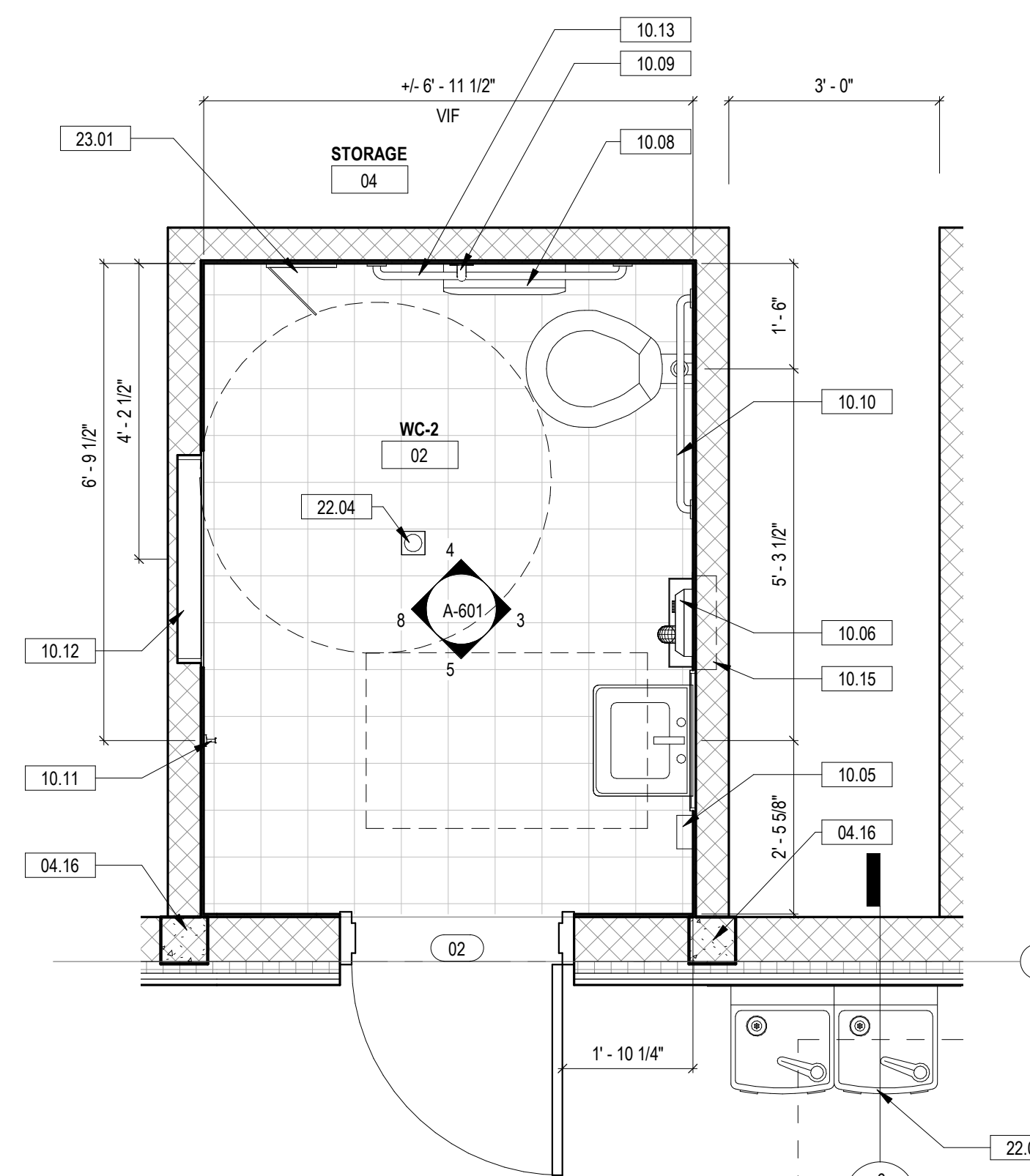
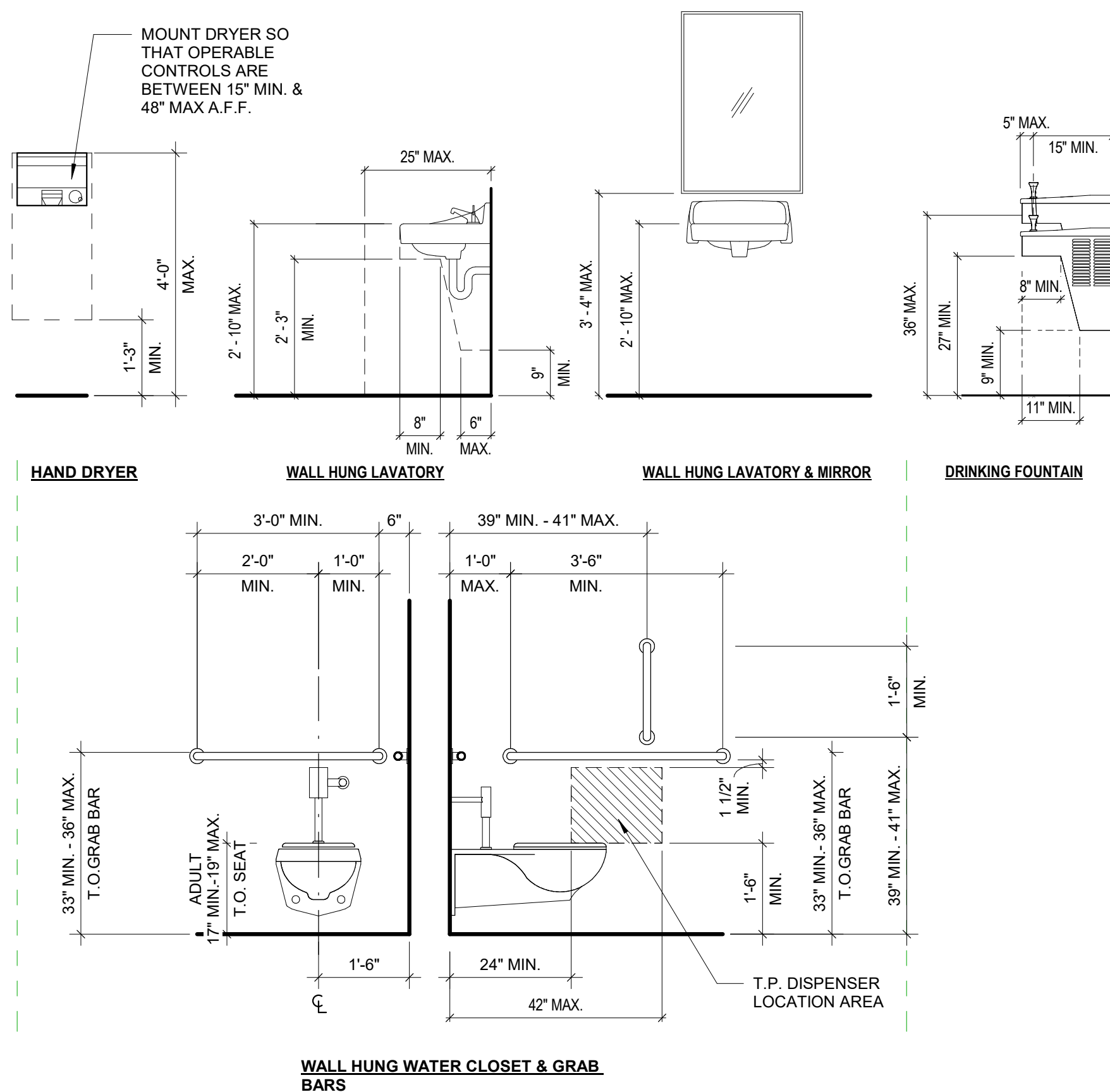
4 INTERIOR ELEV B_TOILET WC-2

SCALE: 1/2" = 1'-0"

3 INTERIOR ELEV A_TOILET WC-2

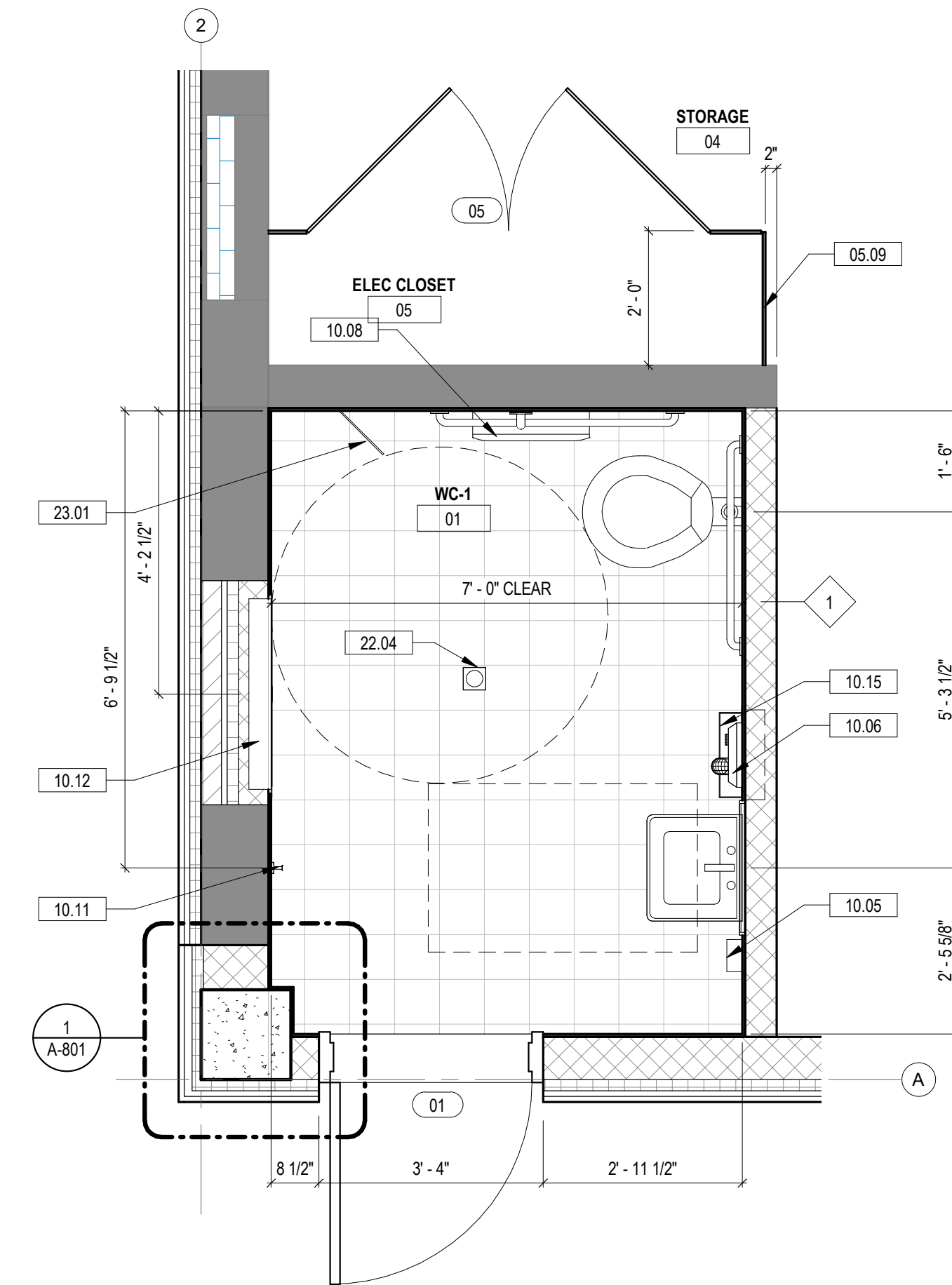
SCALE: 1/2" = 1'-0"

TYPICAL MOUNTING HEIGHTS



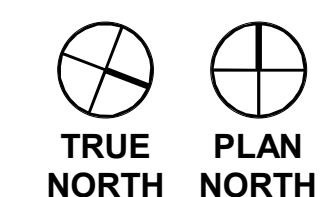
2 TYPICAL TOILET ROOM PLAN

SCALE: 1/2" = 1'-0"



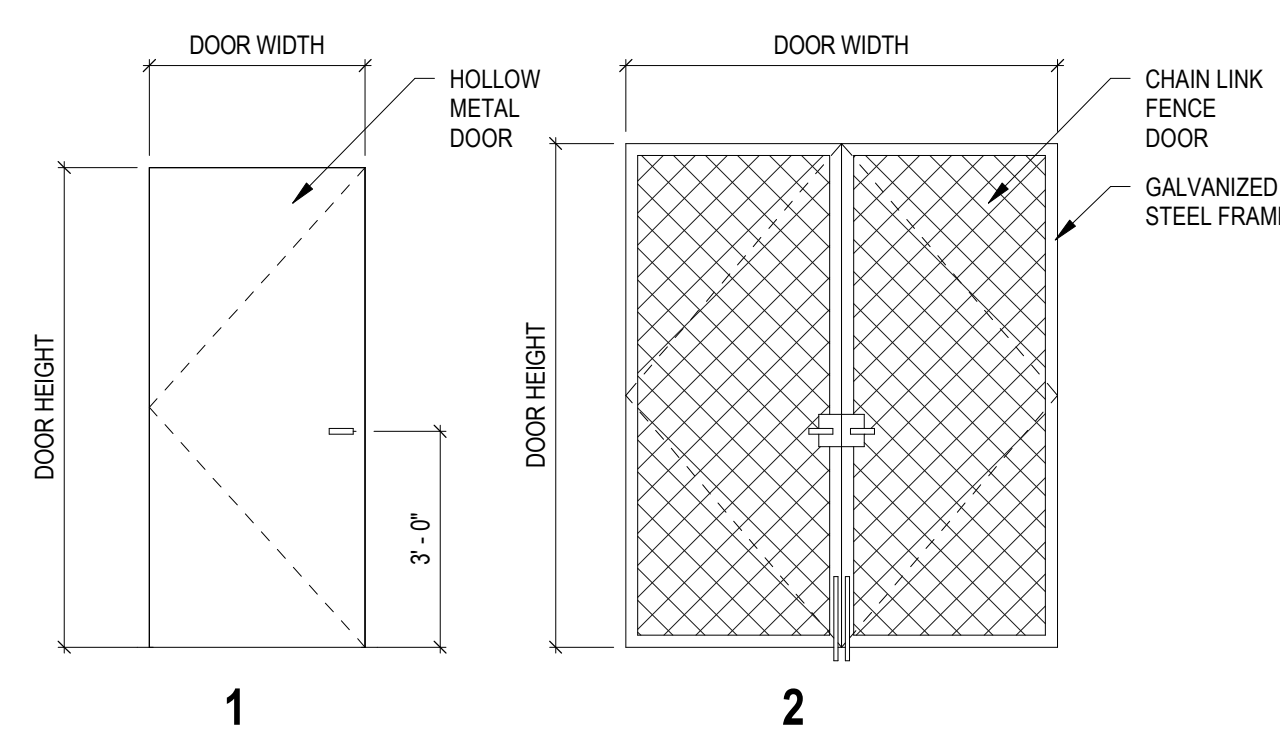
1 TOILET ROOM PLAN 2

SCALE: 1/2" = 1'-0"

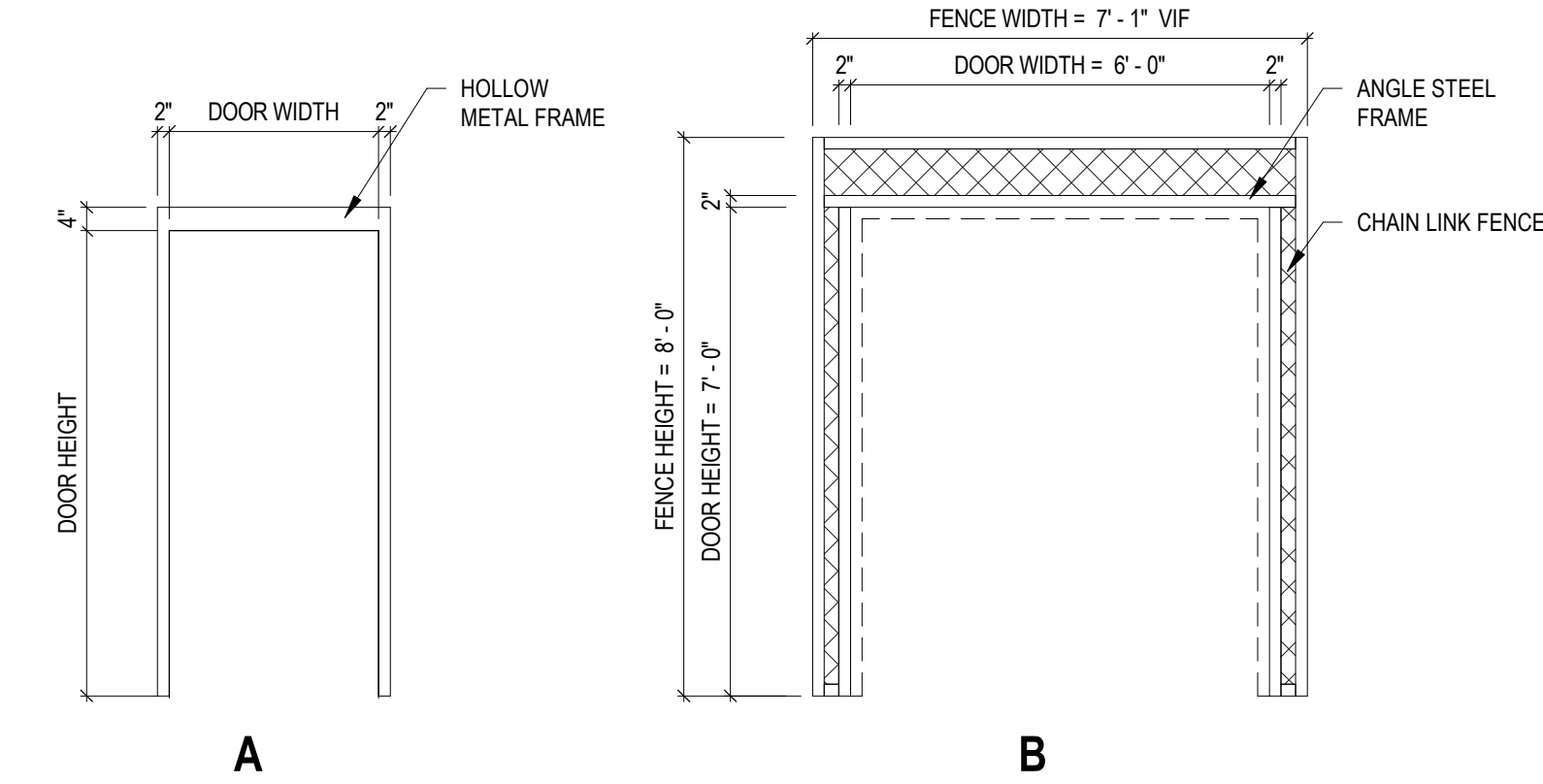


DOOR SCHEDULE																
DOOR NO.	ROOM NAME	DOOR						FRAME			DETAILS			UL LABEL	HARDWARE SET	REMARKS
		WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL			
LEVEL 1																
01	WC-1	3'-0"	6'-8"	1 3/4"	1	HM	PT	A	HM	PT	H1	J1	S1		1	
02	WC-2	3'-0"	6'-8"	1 3/4"	1	HM	PT	A	HM	PT	H1	J1	S1		1	
03	WC-3	3'-0"	6'-8"	1 3/4"	1	HM	PT	A	HM	PT	H1	J1	S1		1	
04	STORAGE	3'-0"	7'-0"	1 3/4"	1	HM	PT	A	HM	PT	H1	J1	S1		2	
05	ELEC CLOSET	6'-0"	7'-0"	1/2"	2	CHAIN LINK	PT	B	STEEL	PT	H2	J2	-		3	

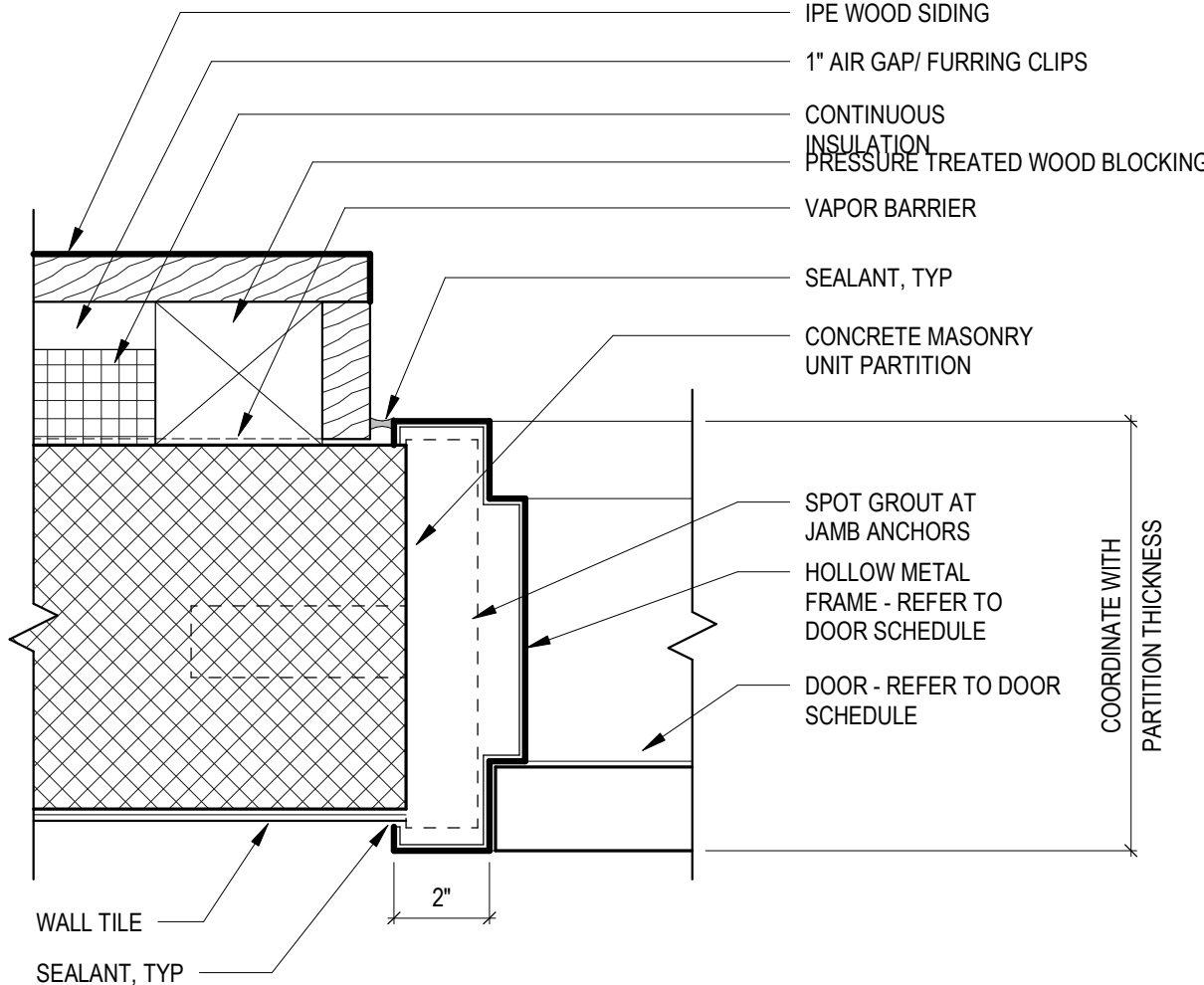
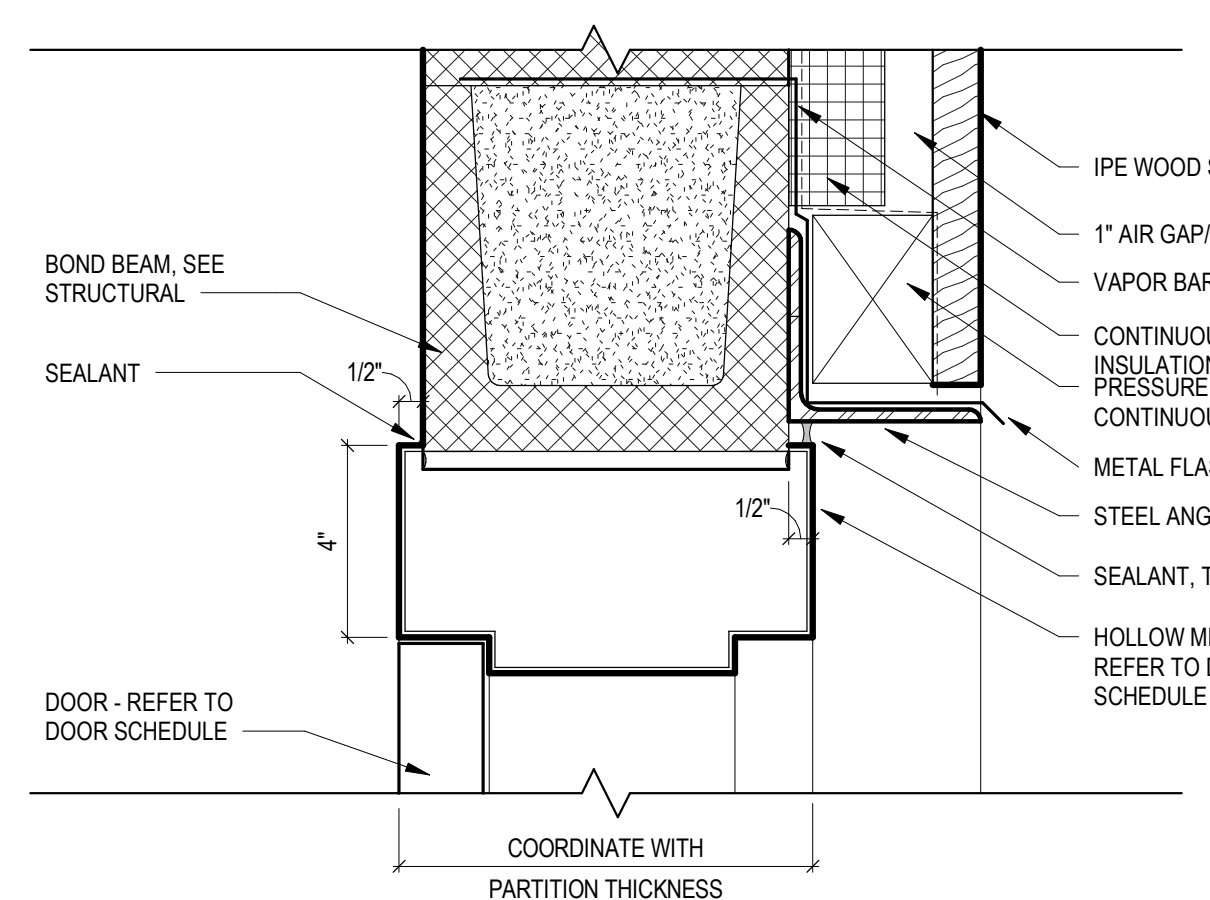
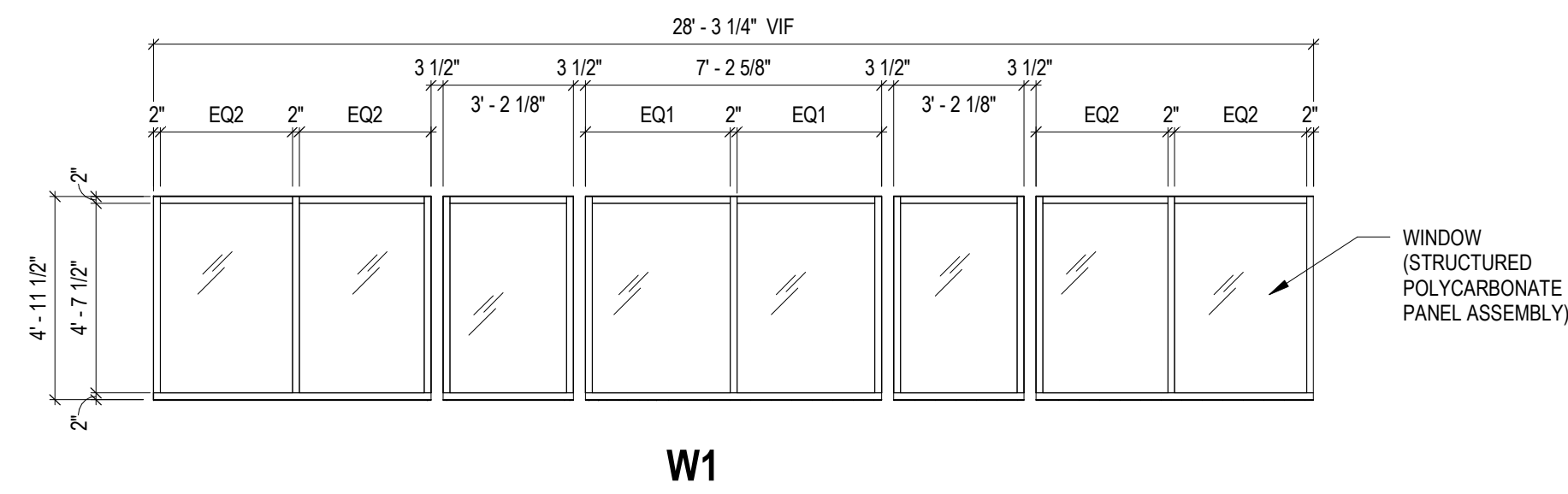
DOOR TYPE



FRAME TYPE

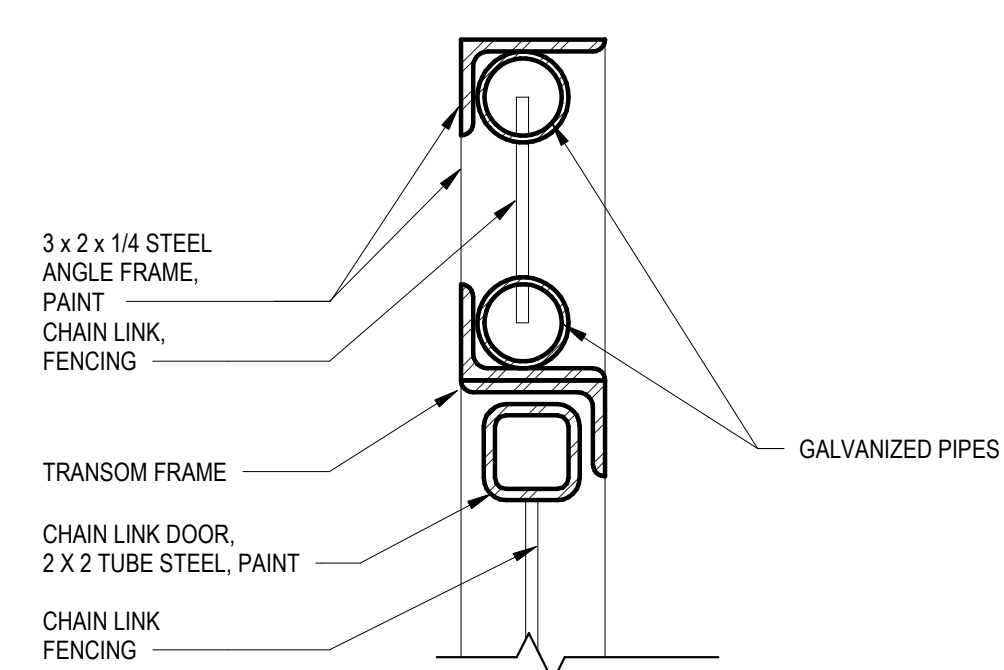


WINDOW TYPE

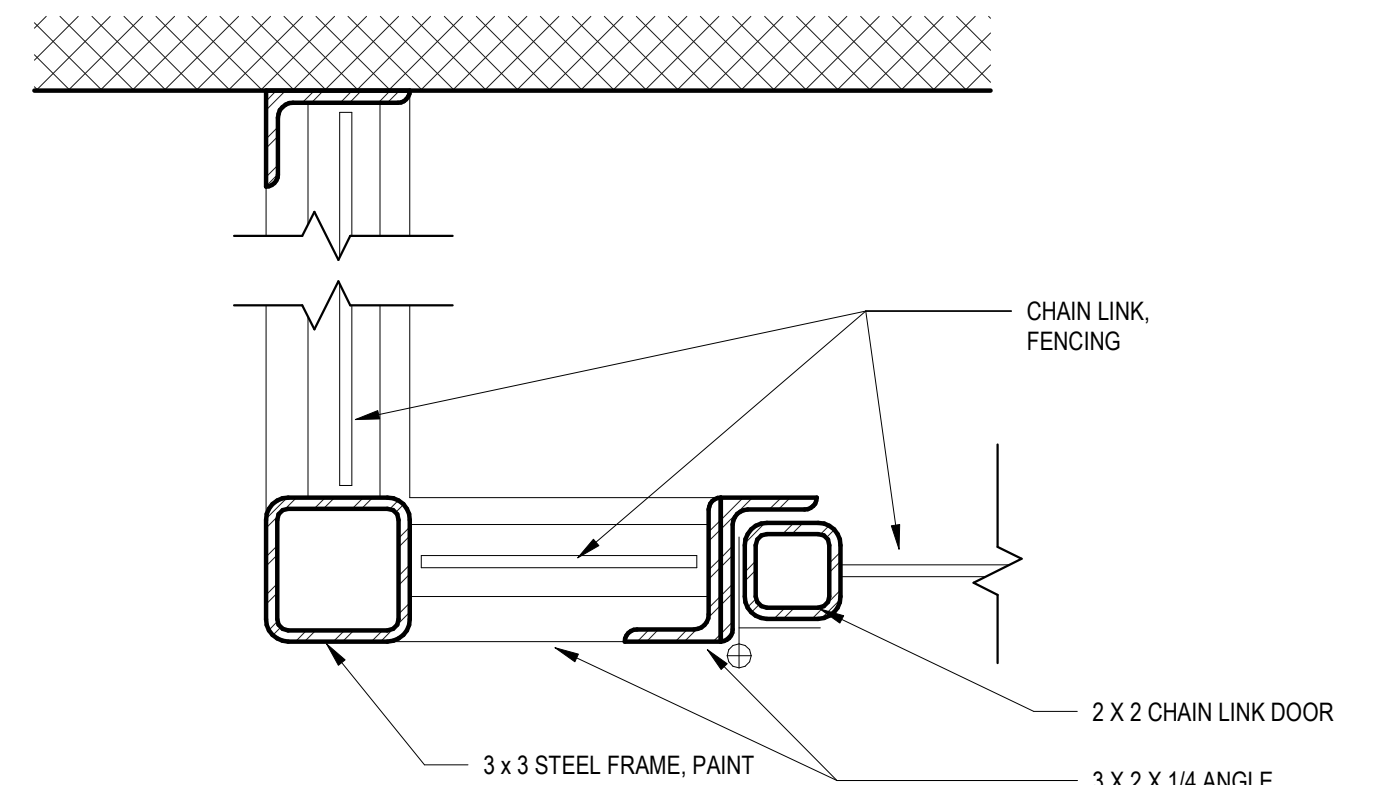


DOOR HEAD DETAIL - H1

DOOR JAMB DETAIL - J1



DOOR HEAD DETAIL- H2



DOOR JAMB DETAIL- J2

DOOR HARDWARE SYNOPSIS

SET 1
ELECTRIFIED PRIVACY LOCK & INDICATOR
DIGITAL TIMER AND BATTERY BACKUP
SEE SPECIFICATIONS

NOTE:
UNLESS OTHERWISE INDICATED, PROVIDE ELECTRIFIED LOCKSETS STANDARD AS FAIL SECURE.
KEY SWITCH TO BE USED BY AUTHORIZED PERSONS FOR MANUAL ACTIVATION AND DEACTIVATION OF THE ELECTROMAGNETIC LOCK. DIGITAL TIMER TO DEACTIVATE THE ELECTROMAGNETIC LOCK FOR NORMAL OPERATION AND ACTIVATE THE ELECTROMAGNETIC LOCK FOR AFTER HOURS OPERATION.

MOTION SENSOR TO DEACTIVATE THE ELECTROMAGNETIC LOCK AND ALLOW FOR IMMEDIATE EGRESS AT ALL TIMES

REQUEST FOR EXIT SWITCH IN TOILET SIDE LEVER OF THE ELECTRIFIED PRIVACY SET TO DEACTIVATE THE ELECTROMAGNETIC LOCK AND ALLOW FOR IMMEDIATE EGRESS AT ALL TIMES.

SET 2
STOREROOM LOCKSET WITH CLOSER
SEE SPECIFICATIONS

SET 3
CYLINDER LOCK
FLUSH BOLT TO FLOOR (ON BOTH DOORS)

COORDINATE WITH GATE MANUFACTURER FOR ADDITIONAL HARDWARE REQUIREMENTS AND DOOR HARDWARE SPECIFICATIONS

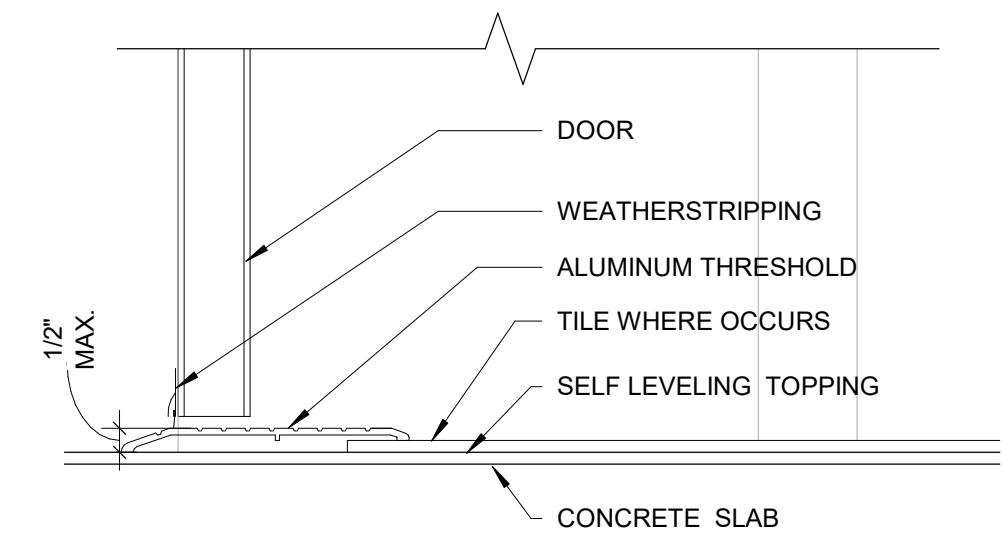
ROOM FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR	WALL	CEILING	MISC.	NOTES
01	WC-1	CT-1	CT-2/PT-1	PT-2	PT-3	
02	WC-2	CT-1	CT-2/PT-1	PT-2	PT-3	
03	WC-3	CT-1	CT-2/PT-1	PT-2	PT-3	
04	STORAGE	CONC-1	PT-1	PT-2	PT-3	

MATERIALS SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	REFERENCE #	COLOR	COMMENTS
FLOOR CONC-1	CONCRETE (SELF LEVELING)	WC-1	CONTRACTOR		SELF LEVELING FINISH
CT-1	PORCELAIN TILE	CROSSVILLE	AV293	BEDROCK	12 X 24 , INSTALL 1/3 JOINT PATTERN
CT-2	PORCELAIN TILE	CROSSVILLE	A1401	WINTER GARDEN HON	12 X 24 , INSTALL 1/3 JOINT PATTERN
PT-1	PAINT	SHERWIN WILLIAMS	SW6285	DOVE WHITE	FLAT
CEILING PT-2	PAINT	SHERWIN WILLIAMS	SW6285	DOVE WHITE	FLAT
MISC PT-3	PAINT	SHERWIN WILLIAMS	TBD	TBD	SEMI-GLOSS (DOOR & FRAMES) *
MISC PT-4	PAINT	SHERWIN WILLIAMS	TBD	TBD	FLAT (EXTERIOR BRICK) *

NOTES:
PROVIDE EXTERIOR GRADE PAINT FOR EXTERIOR EXPOSED SURFACES CALLED OUT WITH PAINT FINISHES.



SILL DETAIL- S1

GENERAL NOTES (DOORS & WINDOWS)

- ALL DOORS ARE TO BE INSULATED. MAXIMUM U VALUE IS .70
- MOUNT DOOR LEVER AT 3'-0" A.F.F.
- ALL THRESHOLDS TO BE ADA COMPLIANT
- CONTRACTOR TO COORDINATE FRAME DEPTH WITH PARTITION TYPE OR EXISTING WALL WIDTH TO REMAIN
- DOOR WEATHER STRIPPING IS TO BE RATED TO MEET THE AIR INFILTRATION REQUIREMENTS OF SECTION ASTM E-283 FOR ALL EXTERIOR DOORS
- THE MAXIMUM AIR INFILTRATION RATING OF DOORS AND WINDOWS IS TO COMPLY WITH SECTION 5.4.3.2 ASHRAE 90.1-2013
- COORDINATE WITH OWNER'S REPS FOR DOOR HARDWARE CONTROL MANAGEMENT
- DOOR AND FRAME TO BE PAINTED WITH SEMI-GLOSS PAINT. COLOR TBD
- MAXIMUM WINDOW U VALUE IS .38. MINIMUM SHGC IS .40

KEYNOTES

21- DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II
Restroom Renovation

Sheet Title

SCHEDULES

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

BID SET 9/21/21

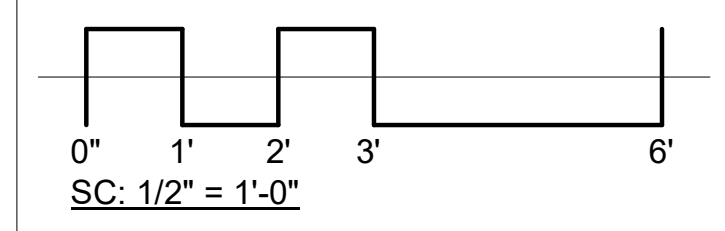
Designed: **KN**

Checked: **BV**

Filename:
Plotted:

Scale: AS INDICATED
Date: 10/11/19

Seal



ARLINGTON COUNTY, VIRGINIA
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Alcova Heights Park - Phase II - Restrooms Renovation
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SCALE: AS INDICATED SHEET: **A-701**



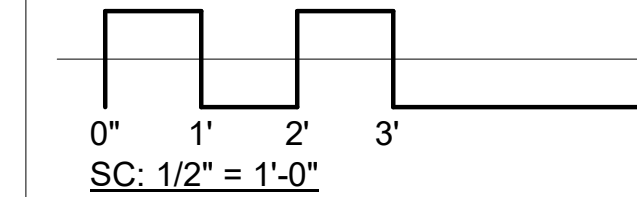
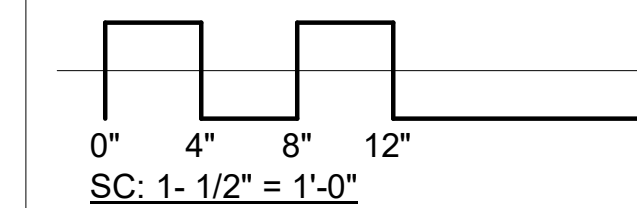
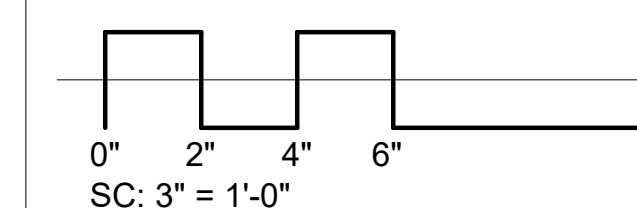
KEYNOTES

02.22	EXISTING CMU WALL WITH FACE BRICK TO REMAIN, NEW PAINT FINISH ON INTERIOR
04.08	NEW CMU WALL
04.15	16" X 16" SOLID MASONRY PIER, SEE STRUCTURAL
06.09	IPE WOOD SIDING ON PRESSURE TREATED, STAGGERED, NON-CONTINUOUS WOOD BLOCKING
06.13	FIRE RETARD TREATED WOOD BLOCKING
06.14	NON-CONTINUOUS PRESSURE TREATED WOOD FURRING, STAGGER JOINT
07.11	AIR/VAPOR BARRIER
07.24	RIGID INSULATION
07.27	SEALANT
07.29	SEALANT AND BACKER ROD
07.40	1" AIR GAP
09.19	WALL TILE OVER CMU
26.03	EXTERIOR LIGHT FIXTURE, REFER TO MEP FOR ADDITIONAL INFO

LEGEND

(PLANS)

	EXISTING CONSTRUCTION TO REMAIN
	NEW CONSTRUCTION

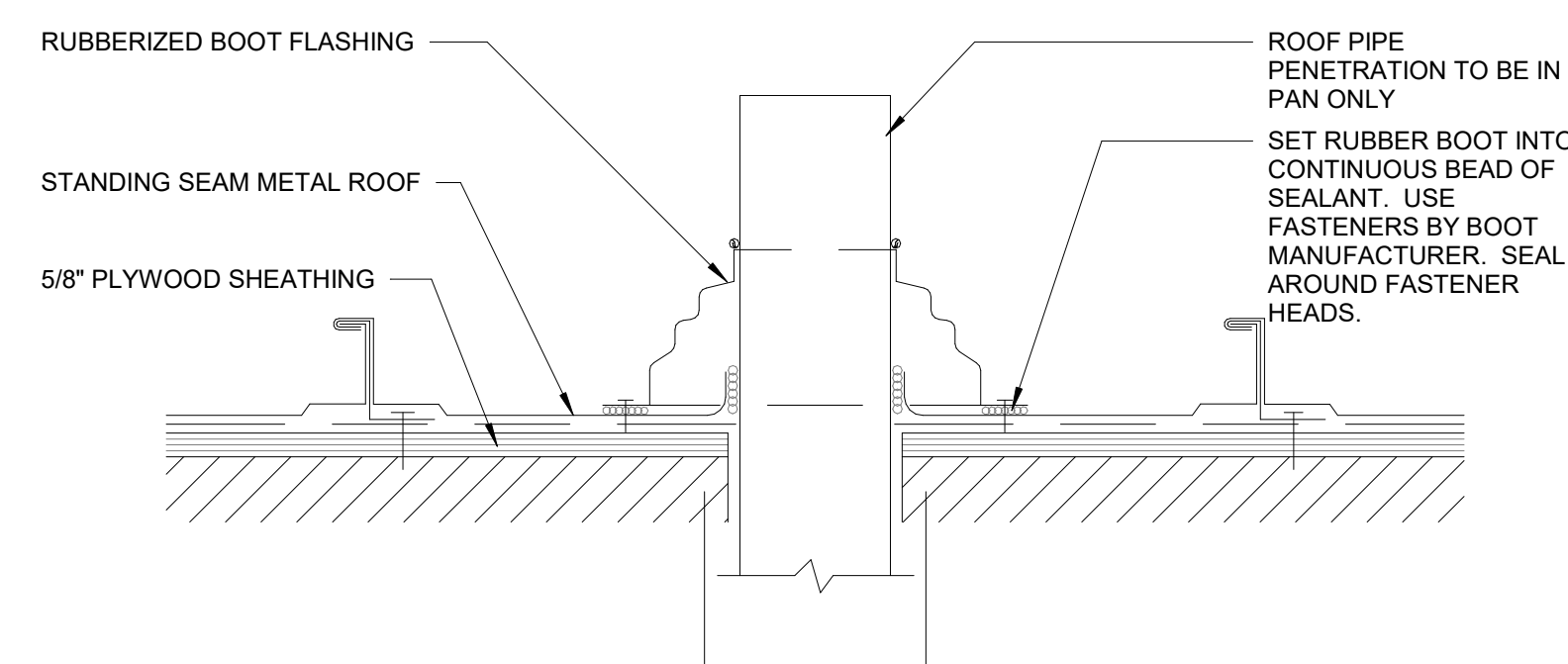


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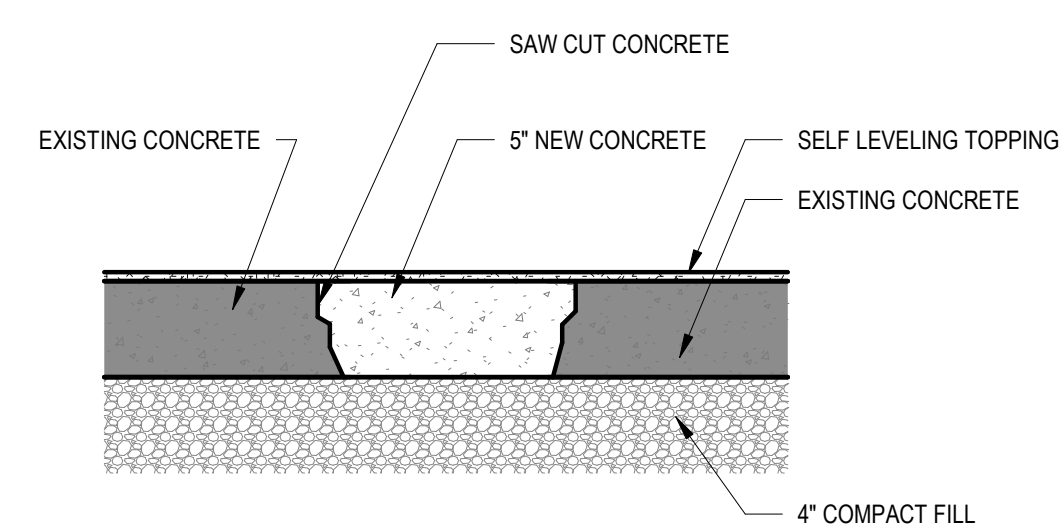
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SHEET: A-801



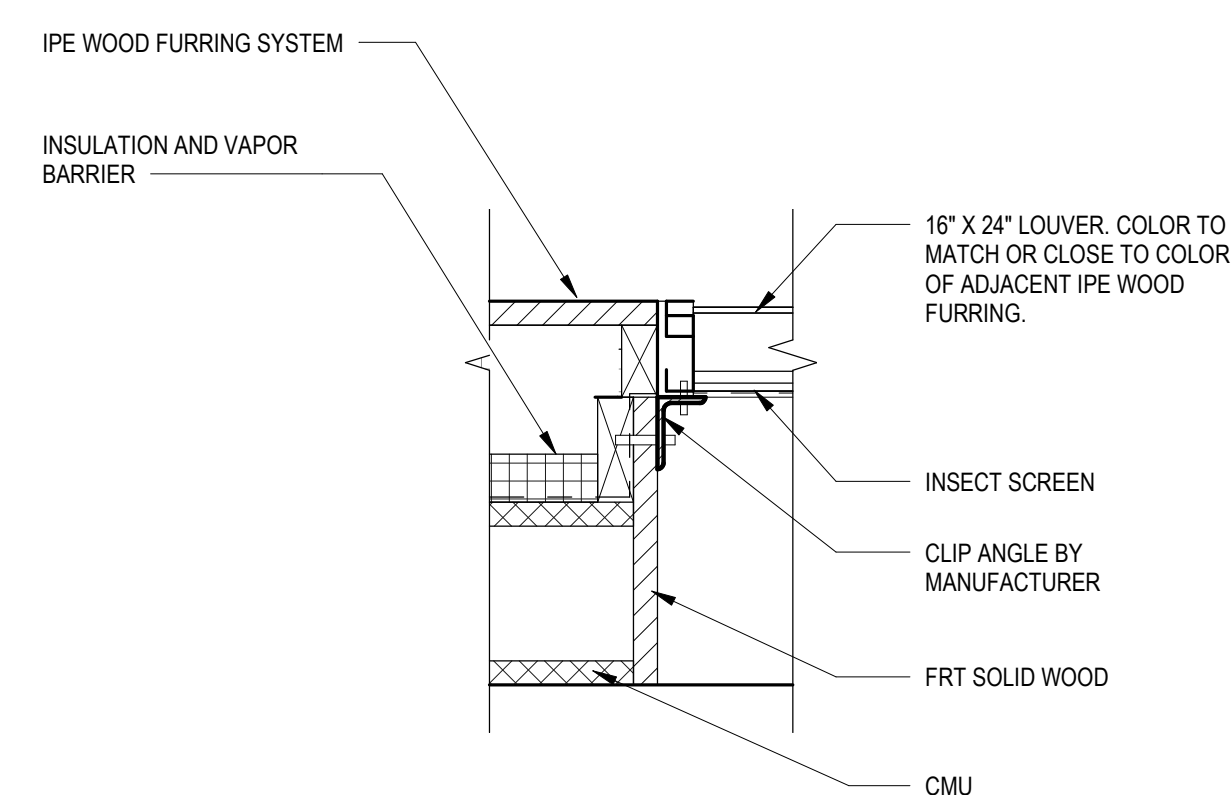
11 METAL ROOF PENETRATION DETAIL

SCALE: 3" = 1'-0"



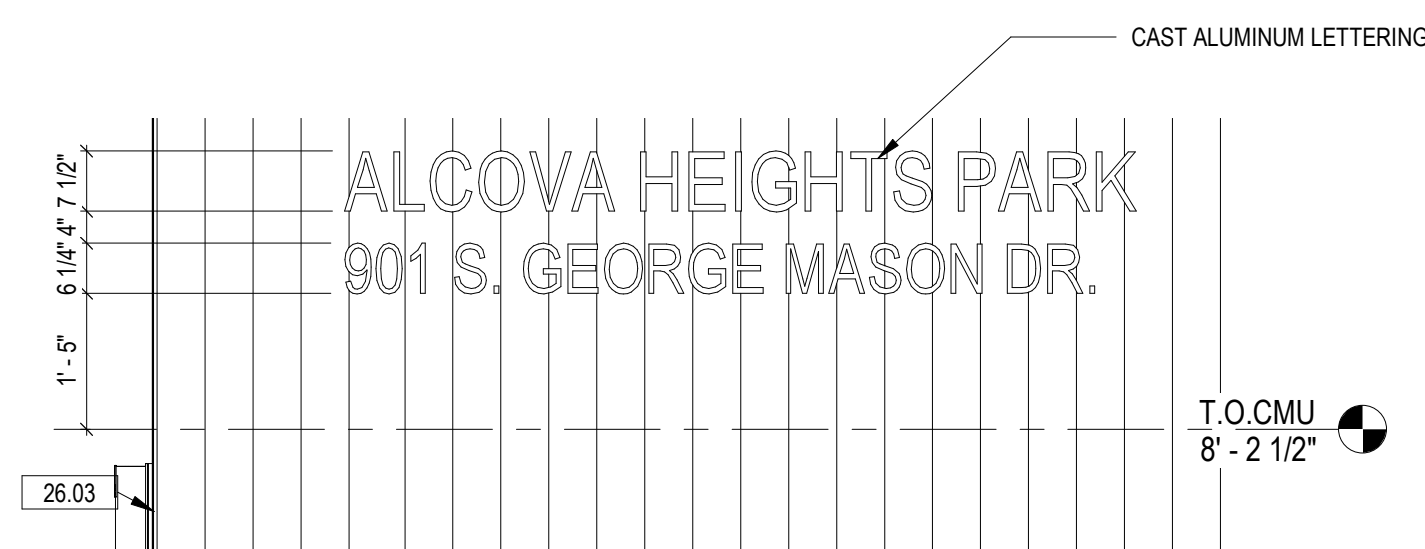
10 TYPICAL FLOOR DETAIL REFER TO STRUCTURAL INFO/ DETAILS

SCALE: 1 1/2" = 1'-0"



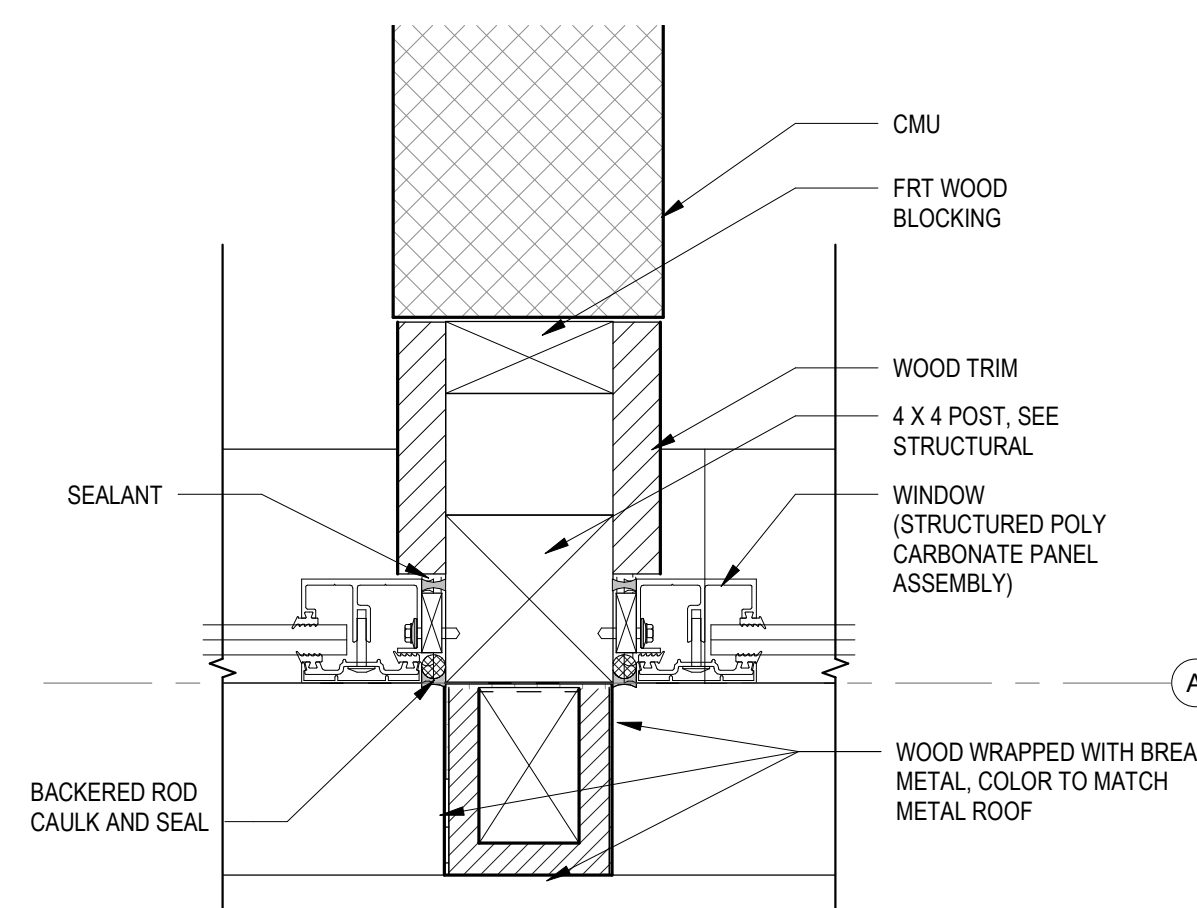
6 LOUVER JAMB DETAIL

SCALE: 1 1/2" = 1'-0"



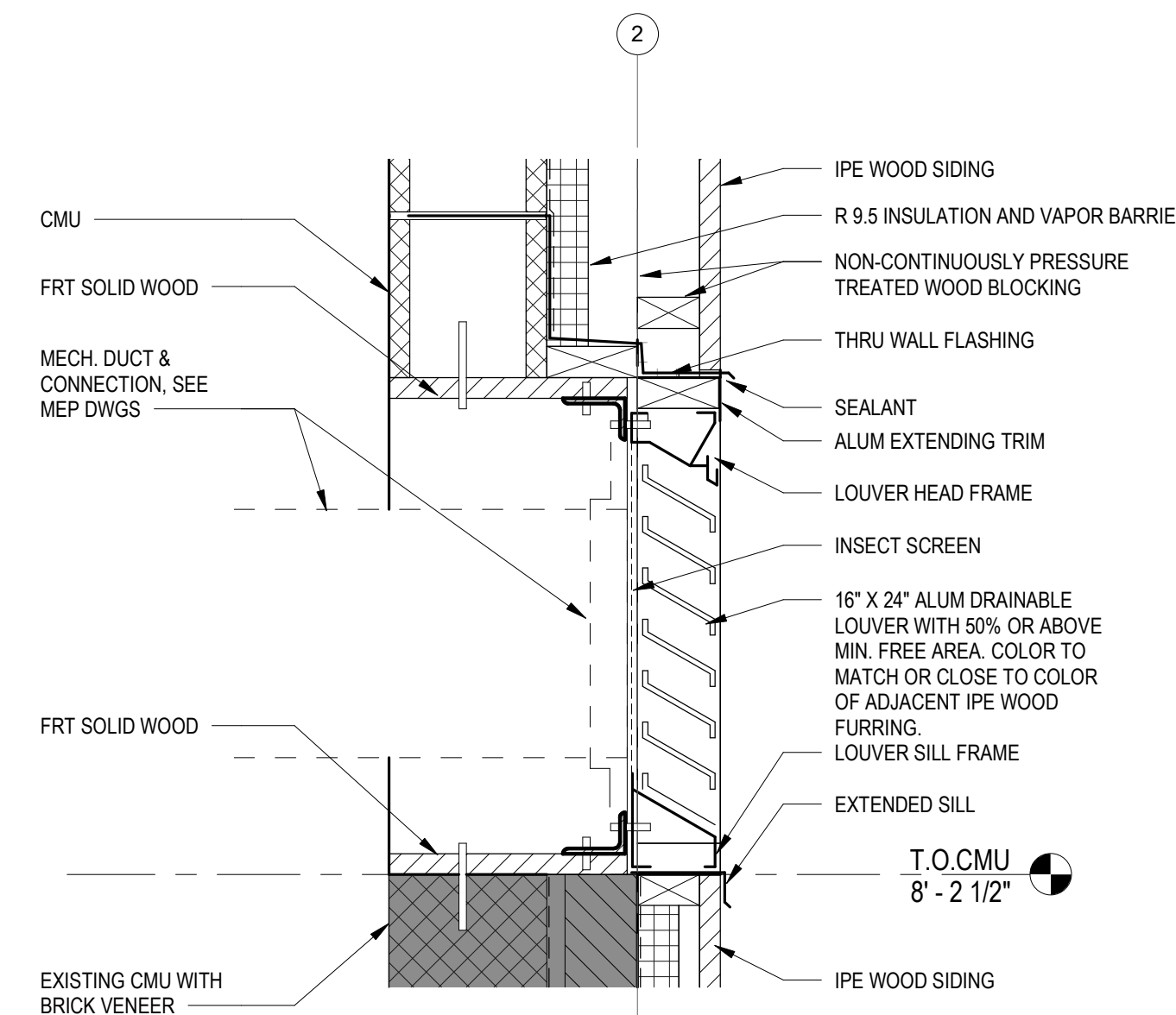
3 SIGNAGE DETAIL

SCALE: 1/2" = 1'-0"



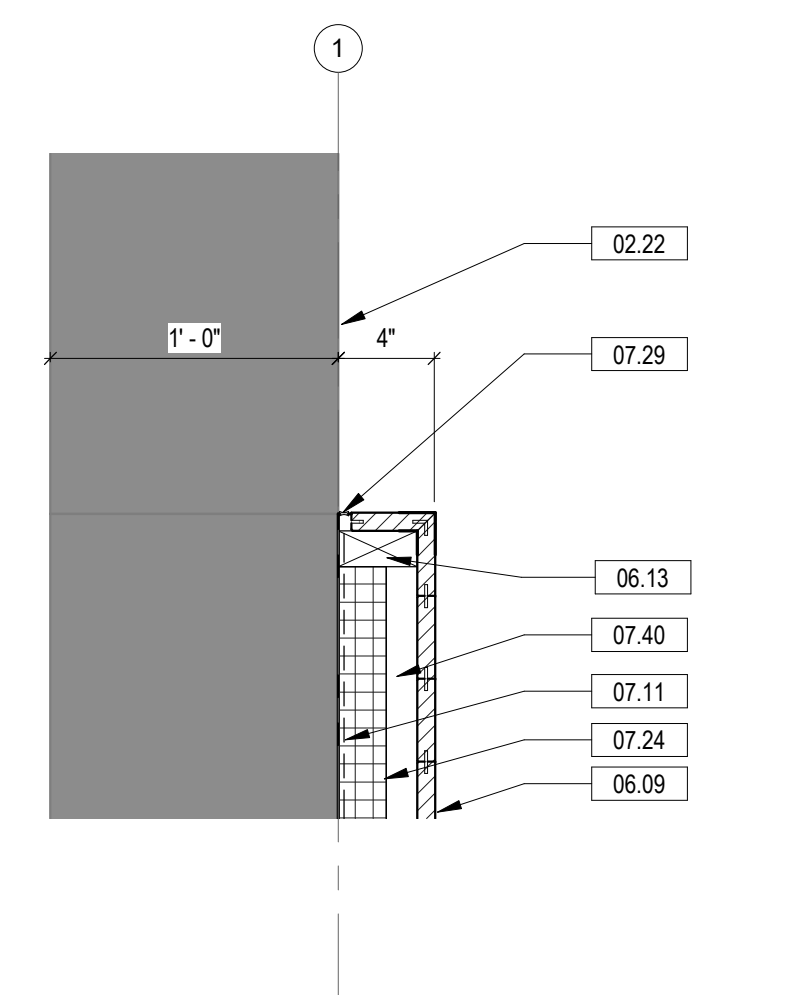
9 TYPICAL WINDOW JAMB @ MULLION

SCALE: 3" = 1'-0"



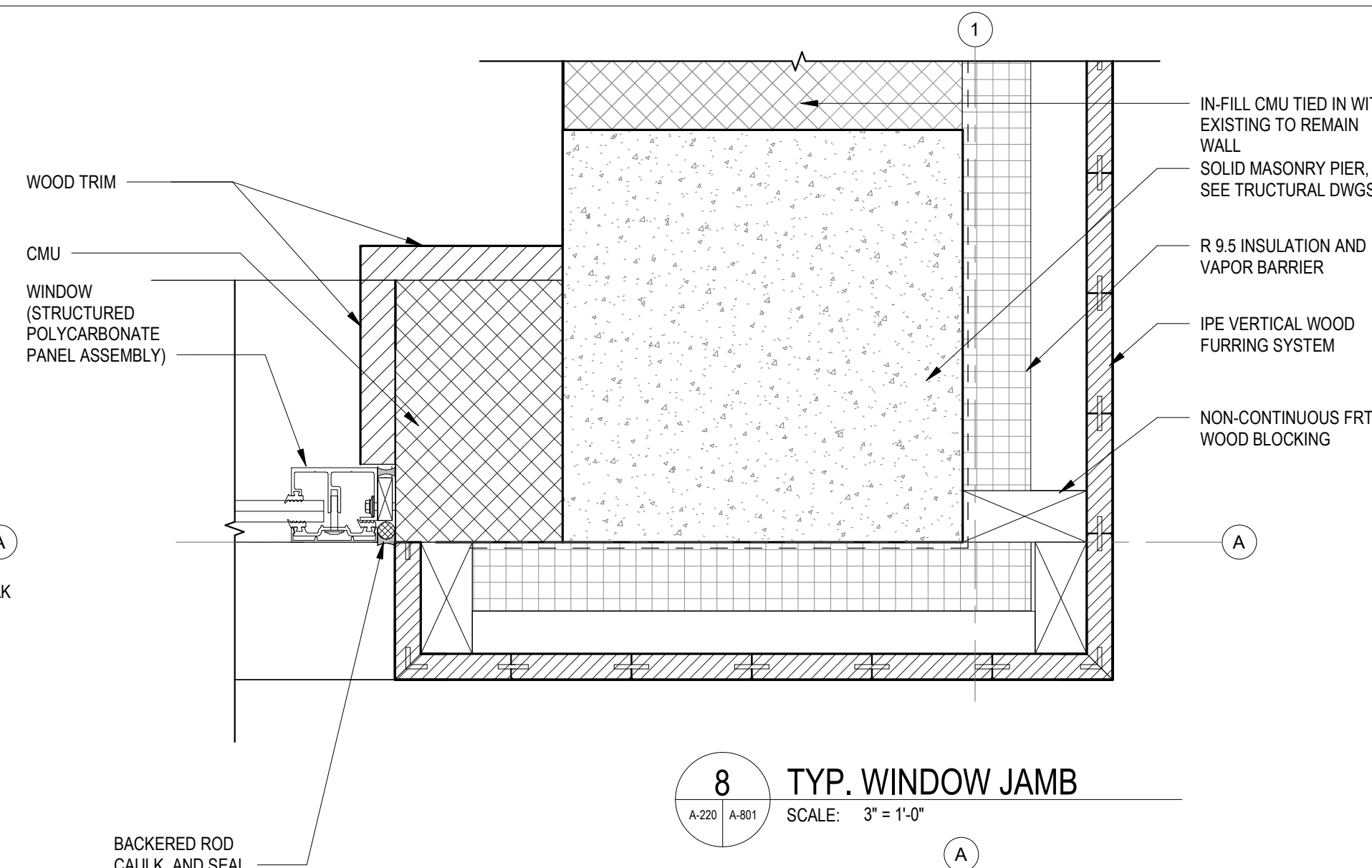
5 SECTION DETAIL @ LOUVER

SCALE: 1 1/2" = 1'-0"



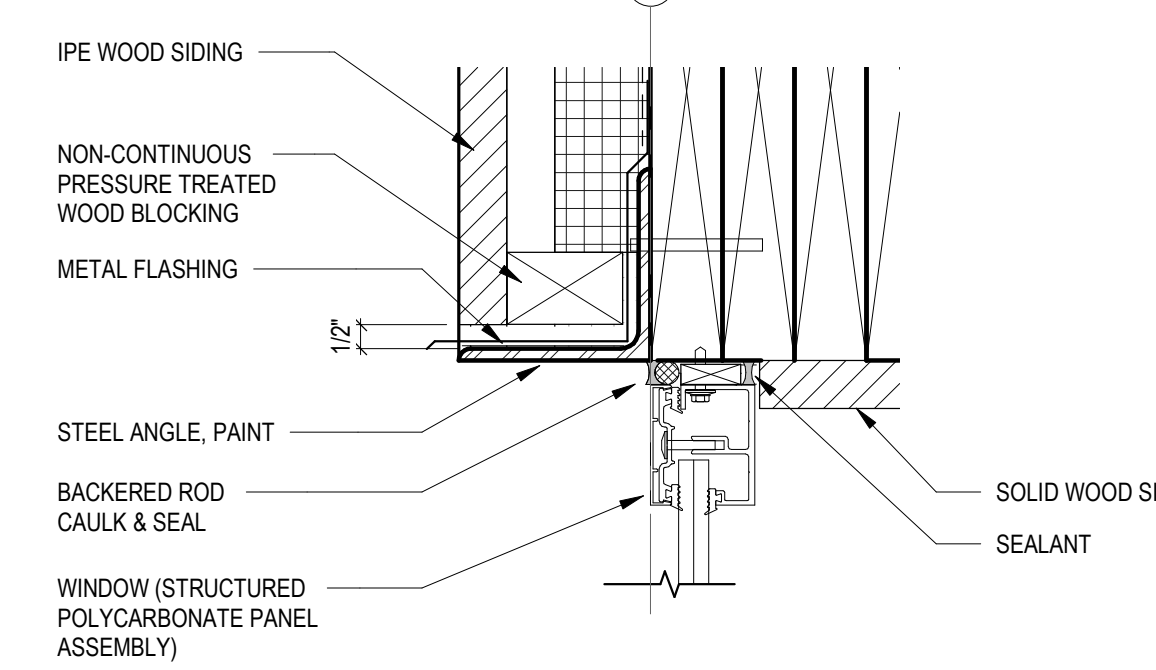
2 PLAN DETAIL @ FURRING WALL END

SCALE: 1 1/2" = 1'-0"



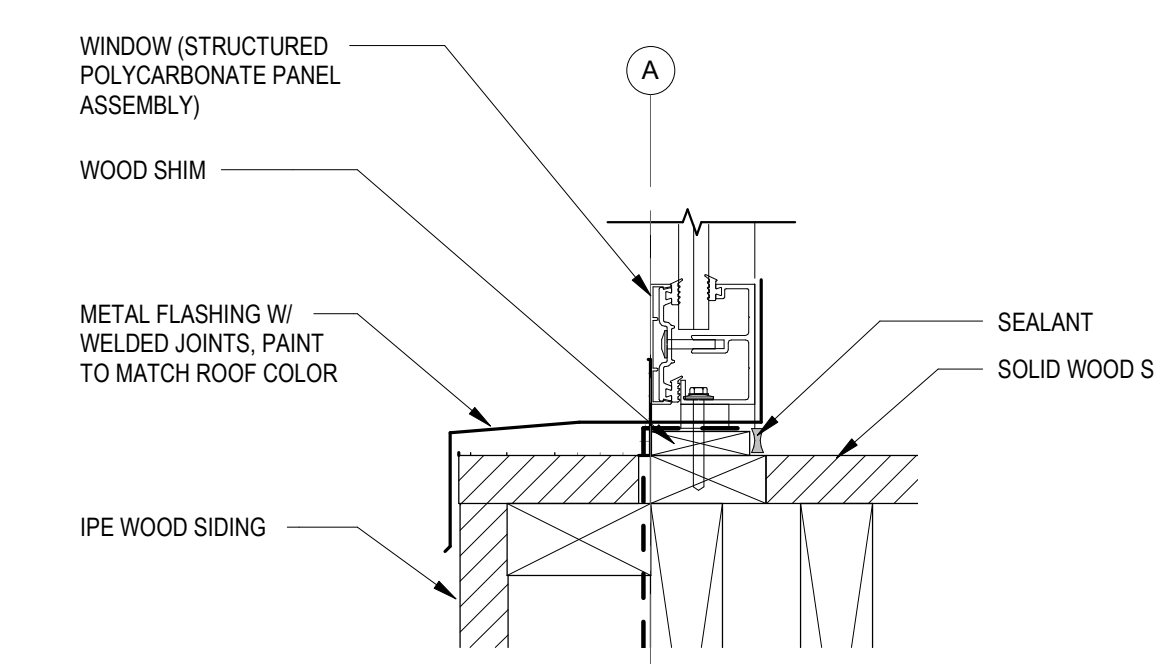
8 TYP. WINDOW JAMB

SCALE: 3" = 1'-0"



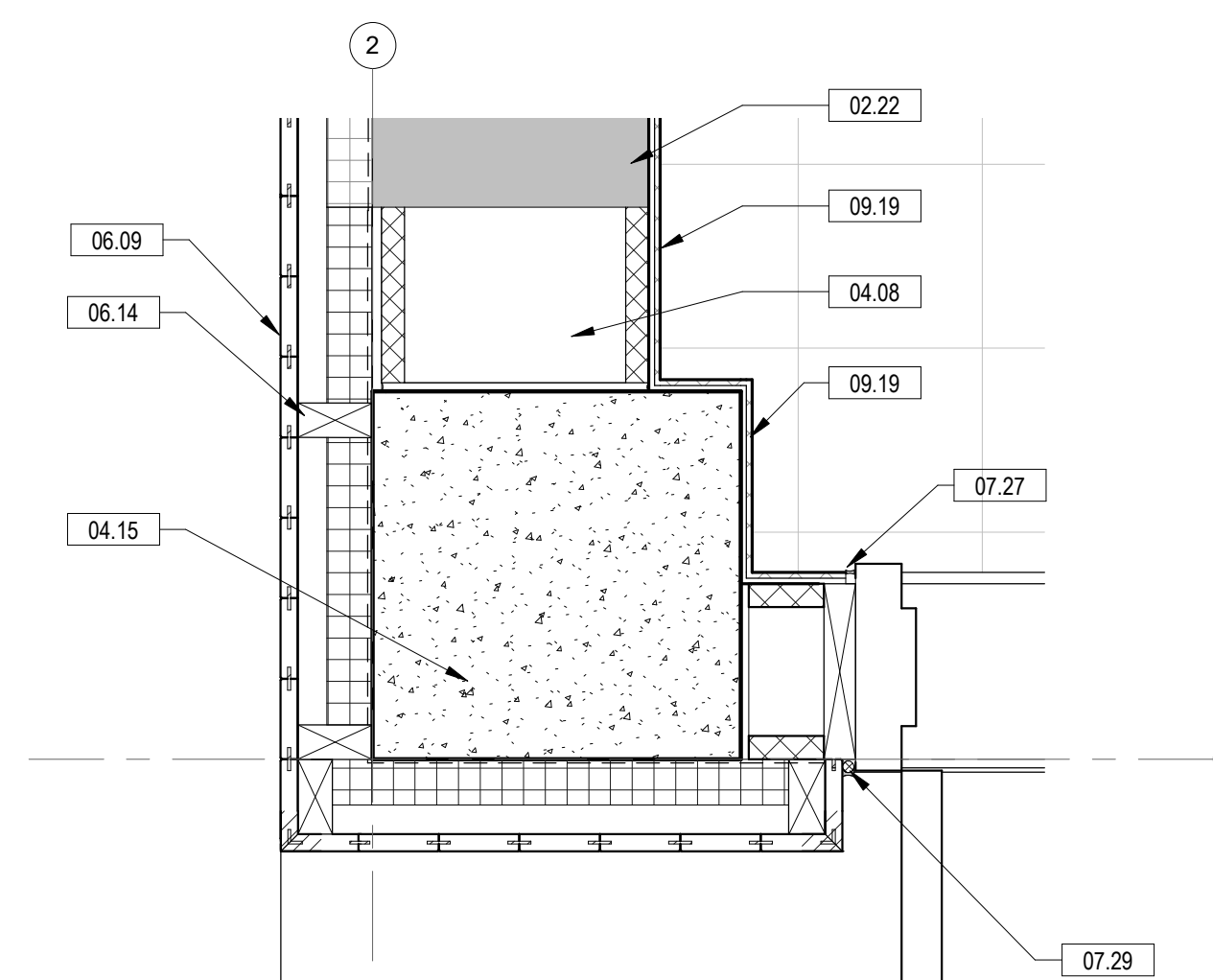
7 TYPICAL WINDOW HEAD DETAIL

SCALE: 3" = 1'-0"



4 TYP. WINDOW SILL

SCALE: 3" = 1'-0"



1 PLAN DETAIL @ COLUMN

SCALE: 1 1/2" = 1'-0"

DESIGN NOTES

L. DESIGN LOADS FOR NEW WORK

A. ROOF SNOW LIVE LOAD

- 1. Pg = 30 PSF
2. Pf = 21 PSF + DRIFTING, MIN ROOF DESIGN LOAD = 30 PSF
3. ROOF LIVE LOAD = 20 PSF + 300 LBS. CONCENTRATED LOAD.
4. SNOW EXPOSURE FACTOR, Ce = 1.0
5. SNOW LOAD IMPORTANCE FACTOR, Is = 1.0
6. SLOPE FACTOR, Cs = 1.0
7. THERMAL FACTOR, Ct = 1.0

B. FLOOR LIVE LOADS

- 1. PUBLIC RESTROOMS = 60 PSF
2. STORAGE = 125 PSF

C. WIND LOAD

- 1. Vult (3-second gust) = 115 MPH
2. Vasd = 89 MPH
3. EXPOSURE = B
4. INTERNAL PRESSURE COEFFICIENT = 0.18GcpI
5. COMPONENT AND CLADDING PRESSURE PER ASCE 7-10, TABLE 30.3-1 AND FIGURES 30.4-1 to 4.

D. SEISMIC LOAD

- 1. RISK CATEGORY = II
2. SEISMIC IMPORTANCE FACTOR, IE = 1.0
3. MAPPED SPECTRAL ACCELERATION, SHORT PERIOD, Ss = 0.119
4. MAPPED SPECTRAL ACCELERATION, 1-SEC. PERIOD, S1 = 0.051
5. SITE CLASS = D
6. SPECTRAL RESPONSE COEFFICIENT, SHORT PERIOD, SDS = 0.127
7. SPECTRAL RESPONSE COEFFICIENT, 1-SEC. PERIOD, SD1 = 0.082
8. SEISMIC DESIGN CATEGORY = B
9. BASIC SEISMIC FORCE RESISTING SYSTEM = ORDINARY REINFORCED MASONRY SHEAR WALL
10. DESIGN BASE SHEAR, Vb = 100 KIP
11. SEISMIC RESPONSE COEFFICIENT, CS = 0.1
12. RESPONSE MODIFICATION FACTOR, R = 2
13. ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE

E. CODE: THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE/2015 AND THE 2015 VUSBC.

F. ASSUMED SOIL PARAMETERS

- 1. AT REST EARTH PRESSURE= 60H
2. ACTIVE EARTH PRESSURE= 45H
3. PASSIVE EARTH PRESSURE COEFFICIENT, Kp = 3.00
4. PASSIVE EARTH PRESSURE= 3.0 X 125 = 375 PCF
5. MODULUS OF SUBGRADE REACTION = 100 PCI
6. FRICTION COEFFICIENT = 0.30
7. SOIL UNIT WEIGHT = 125 PCF

G. DEAD LOADS

- 1. ROOF = 10 PSF

II. WOOD

A. ALL JOISTS, BEAMS AND POSTS TO BE SPRUCE-PINE-FIR NO.1/NO.2 PER "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION," NFPA. ALL STUDS SHALL BE SPRUCE-PINE-FIR STUD-GRADE. ALL WOOD MEMBERS SHALL BE MANUFACTURED TO COMPLY WITH PS20 OF "AMERICAN SOFTWOOD LUMBER STANDARDS" AND SHALL HAVE 19% MAXIMUM MOISTURE CONTENT.

MINIMUM MEMBER PROPERTIES SHALL BE AS FOLLOWS:

1. WOOD LINTELS, JOISTS AND BEAMS

- a) FLEXURE: Fb = 875 PSI
b) SHEAR: Fv = 135 PSI
c) MODULUS OF ELASTICITY = 1,400,000 PSI

2. 4x4 POSTS (SYP - P-T.)

- a) COMPRESSION PARALLEL: Fc* = 1,100 PSI (WET SERVICE)
b) MODULUS OF ELASTICITY: E = 1,400,000 PSI

B. ALL FRAMING EXPOSED TO WEATHER IN ACCORDANCE WITH IBC SECTION 2304.12 SHALL BE PRESSURE TREATED SOUTHERN PINE NO.2 PER THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION," NFPA. ALL WOOD MEMBERS SHALL BE MANUFACTURED TO COMPLY WITH PS20 OF THE "AMERICAN SOFTWOOD LUMBER STANDARDS." MINIMUM PROPERTIES SHALL BE IN ACCORDANCE WITH TABLE 4B IN THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION." PRESSURE TREATED WOOD MEMBERS "PT," SHALL BE PROVIDED WHEN:

- 1. WOOD JOISTS OR THE BOTTOM OF A WOOD STRUCTURAL FLOOR IS CLOSER THAN 18-INCHES TO GRADE OR WHEN A WOOD GIRDER/BEAM IS CLOSER THAN 12-INCHES TO GRADE IN EXPOSED CRAWL SPACES OR UNEXCAVATED AREAS LOCATED WITHIN THE PERIPHERY OF THE BUILDING.
2. WOOD FRAMING MEMBERS REST ON A CONCRETE OR MASONRY EXTERIOR FOUNDATION WALL AND ARE LESS THAN 8-INCHES ABOVE THE EXPOSED EXTERIOR GRADE.
3. SILL AND SLEEPERS ARE ON A CONCRETE OR MASONRY SLAB THAT IS IN DIRECT CONTACT WITH THE GROUND UNLESS SEPARATED FROM THE SLAB BY AN IMPERVIOUS MOISTURE BARRIER.
4. THE ENDS OF A WOOD GIRDER/BEAM ENTER AN EXTERIOR MASONRY OR CONCRETE WALL AND HAS A CLEARANCE WITH THE EXTERIOR OF THE WALL OF LESS THAN 1/2-INCH.
5. WOOD SIDING, SHEATHING AND WALL FRAMING IN THE EXTERIOR OF A BUILDING HAVING A CLEARANCE OF LESS THAN 6-INCHES FROM THE GROUND OR LESS THAN 2-INCHES MEASURED VERTICALLY FROM CONCRETE STEPS, PORCH SLABS, PATIO SLABS OR SIMILAR HORIZONTAL SURFACES EXPOSED TO THE WEATHER.
6. WOOD STRUCTURAL MEMBERS SUPPORT MOISTURE PERMEABLE FLOORS OR ROOFS THAT ARE EXPOSED TO WEATHER, SUCH AS CONCRETE OR MASONRY SLABS, UNLESS SEPARATED FROM SUCH FLOORS OR ROOFS BY AN IMPERVIOUS MOISTURE BARRIER.

C. PROVIDE SIMPSON STRONG-TIE (OR APPROVED EQUAL) POST CAPS AT ALL BEAM-ON-POST BEARING LOCATIONS, U.N.O.

D. ROOF SHEATHING SHALL BE 5/8-INCH, CDX, APA RATED SHEATHING, EXPOSURE I, PER THE "AMERICAN PLYWOOD ASSOCIATION." SHEATHING SHALL BE FASTENED WITH 8d NAILS AT 6-INCHES ON CENTER AT PANEL EDGES AND AT 12-INCHES ON CENTER AT ALL INTERMEDIATE SUPPORTS.

E. LAMINATED VENEER LUMBER (L.V.L.) SHALL BE INSTALLED AND FASTENED PER THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM MEMBER PROPERTIES SHALL BE AS FOLLOWS:

- 1. FLEXURE: Fb = 2,800 PSI
2. SHEAR: Fv = 285 PSI
3. MODULUS OF ELASTICITY: E = 2,000,000 PSI

CONTRACTOR SHALL PROVIDE MANUFACTURER'S PRODUCT SHEETS FOR APPROVAL BY ENGINEER FOR ALL LVL BEAMS

F. PROVIDE MIN. 3" BEARING FOR ALL LAMINATED VENEER STANDARD LUMBER BEAMS. NO JOIST OR BEAM BEARING SHALL OCCUR ON MASONRY VENEER WALLS.

G. ALL WOOD TOP PLATE SPLICES SHALL BE STAGGERED 6'-0" MINIMUM.

H. ALL MULTIPLE MEMBERS ARE TO BE FASTENED TOGETHER WITH THE FOLLOWING NAILS AND SIMPSON SDS (STRONG-DRIVE SCREWS), USING THE FASTENER-TO-FASTENER SPACING NOTED WITHIN EACH ROW OF FASTENERS. ALL FASTENERS SHALL BE INSTALLED IN THE QUANTITY OF ROWS SPECIFIED, IN A STAGGERED PATTERN.

Table with 4 columns: PILES, DEPTH, FASTENERS, SPACING. Row 1: (2)1'-3/4", 9'-12", 12d NAILS, 16" O.C. 2

I. PROVIDE SOLID BLOCKING BETWEEN RAFTERS AT ALL BEARING POINTS.

J. ALL MISCELLANEOUS WOOD CONNECTIONS SHALL BE FASTENED PER 2015 IBC, TABLE 2304.10.1 "FASTENING SCHEDULE."

K. NAILS INDICATED IN THE DRAWINGS, DETAILS, AND NOTES SHALL BE DEFINED AS FOLLOWS: 8d=0.131"x2.5", 10d=0.148"x3", 16d=0.162"x3.5", 30d=0.207"x4.5". SUBSTITUTIONS FOR THESE NAIL SIZES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL.

L. ALL ROOF SHEATHING SHALL BE LAID CONTINUOUSLY BETWEEN THE EDGES OF THE ROOF. NO INTERRUPTIONS ARE PERMITTED AT CAP TRUSSES OR AT ROOF OVERBUILDS.

III. CONCRETE

A. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 301, ACI 318 AND ACI 302.

B. CEMENT SHALL COMPLY WITH ASTM C150, TYPE I OR II.

C. REINFORCING STEEL SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60. ALL REINFORCEMENT SPLICES SHALL BE A MINIMUM OF 40 BAR DIAMETERS.

D. CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH Fc AS FOLLOWS:

- 1. INT. SLAB-ON-GRADE AND FOOTINGS = 3000 PSI.
2. EXT. SLAB-ON-GRADE AND WALLS = 4500 PSI.

E. PROVIDE 6x6-W2.1xW2.1 W.W.F. IN ALL SLAB-ON-GRADE AT MID-DEPTH OF THE SLAB. ALL WIRE FABRIC SHALL CONFORM TO ASTM A1064. ALL MESH EDGES SHALL LAP A MINIMUM OF TWO (2) SQUARES.

F. CONCRETE SLUMP SHALL = 4" ± 1".

G. MINIMUM CONCRETE COVER BETWEEN FACE OF REINFORCING BAR AND FACE OF CONCRETE SHALL BE AS FOLLOWS:

- 1. CONCRETE CAST AGAINST EARTH = 3"
2. FORMED CONCRETE EXPOSED TO WEATHER OR EARTH = 2"
3. FORMED CONCRETE NOT EXPOSED TO WEATHER:
a) SLABS = 3/4"

H. ALL FOUNDATION WALLS AND EXTERIOR EXPOSED SLABS SHALL HAVE A MINIMUM AIR ENTRAINMENT OF 6% ± 1.5% PER ACI- 318 4.2.1.

I. SHOP DRAWINGS FOR ALL CONCRETE REINFORCEMENT SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

J. PROVIDE A 10-MIL VAPOR BARRIER OVER A 4-INCH GRAVEL LAYER BENEATH ALL SLAB ON GRADE.

IV. POST-INSTALLED ANCHORS

A. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES AS PROVIDED BY HILTI, INC. OR AN EQUIVALENT AS APPROVED BY THE STRUCTURAL ENGINEER.

- 1. ANCHORAGE TO MASONRY:
a. ADHESIVE ANCHORS FOR USE IN REINFORCED MASONRY:
- HILTI HIT-HY 270 ADHESIVE SYSTEM (OR EQUAL) PER ICC ESR-4143
2. ANCHORAGE TO CONCRETE:
a. ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
- HILTI HIT-HY 200 ADHESIVE SYSTEM (OR EQUAL) PER ICC ESR-3187

B. SUBSTITUTION REQUESTS FOR ALTERNATE POST-INSTALLED ANCHOR PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR CORRESPONDING ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION MUST ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE.

C. INSTALL ANCHORS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING. EXPANSION/ADHESIVE ANCHORS SHALL BE INSTALLED SUCH THAT THE APPLIED SHEAR FORCES ACT THROUGH THE BOLT SHAFT, NOT THE THREADS. TAKE MEASURES TO AVOID DRILLING OR CUTTING OF EXISTING REINFORCING STEEL. BLOW HOLES CLEAN PRIOR TO SETTING ANCHORS.

D. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN THE ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCE INDICATED ON THE DRAWINGS.

E. CONCRETE SHALL BE AT LEAST 50-DEGREES AT THE TIME OF ANCHOR INSTALLATION.

F. CONCRETE AT INDOOR ANCHOR APPLICATIONS SHALL BE DRY AT THE TIME OF ANCHOR INSTALLATION.

V. MASONRY

A. ALL HOLLOW CONCRETE MASONRY UNITS SHALL BE MID-HEIGHT AND CONFORM TO ASTM C90 TYPE I HAVING A MINIMUM NET UNIT AREA COMPRESSIVE STRENGTH OF 2800 PSI AND A NET MASONRY COMPRESSIVE STRENGTH OF Fm = 2000 PSI IN ACCORDANCE WITH THE UNIT STRENGTH METHOD.

B. ALL FACE BRICK MASONRY UNITS SHALL CONFORM TO ASTM C216 AND C652, GRADE MW OR SW, TYPE FBS, FBX, OR FBA. WITH A MINIMUM NET AREA COMPRESSIVE STRENGTH = 2000 PSI IN ACCORDANCE WITH THE UNIT STRENGTH METHOD.

C. GALVANIZED HORIZONTAL JOINT REINFORCEMENT SHALL BE 9 GA. MINIMUM, PLACED IMMEDIATELY ABOVE AND BELOW ALL OPENINGS AND AT 16" O.C. VERTICALLY. REINFORCEMENT SHALL BE LADDER TYPE, AND WHERE SPLICED, SHALL LAP A MINIMUM OF 6". REINFORCEMENT SHALL CONFORM TO ASTM A-951 AND ASTM A153, CLASS B2, HOT DIP GALVANIZED (1.5 OZ./SF).

D. ALL VERTICAL WALL REINFORCEMENT INTERRUPTED BY WALL OPENINGS SHALL BE PLACED IMMEDIATELY ADJACENT TO EACH OF THE OPENINGS.

E. MASONRY MORTAR SHALL BE ASTM C270 TYPE S FOR HOLLOW CMU WALLS AND TYPE N FOR VENEER WALLS. PORTLAND CEMENT/LIME SHALL BE USED FOR ALL CMU WALLS. THE USE OF MASONRY CEMENT MORTAR IS PROHIBITED.

F. ALL MASONRY CELLS CONTAINING BOLTS OR REINFORCEMENT SHALL BE FILLED WITH COARSE GROUT PER ASTM C476, AGGREGATE PER ASTM C404.

G. PROVIDE TWO (2) COURSES OF SOLID CMU PER ASTM C 90 OR GROUT-FILLED CMU BENEATH ALL BEAM AND HEADER BEARING POINTS.

H. PROVIDE DOWELS WITH STANDARD BAR HOOK IN FOOTING TO MATCH DIAMETER AND SPACING OF VERTICAL REINFORCEMENT. MINIMUM SPLICE LENGTH = 40x BAR DIAMETER.

I. BRICK TIES SHALL BE ATTACHED TO ALL BRICK VENEER SPACED AT 24" O.C. HORIZONTALLY AND 16" O.C. VERTICALLY (MAXIMUM). CORRUGATED TIES ARE PROHIBITED FOR WALLS WITH CAVITIES OVER 1". TIES SHALL EXTEND 3" INTO BRICK AND/OR CMU.

J. TIE MATERIAL SHALL CONFORM TO ASTM A366 AND ASTM A153, CLASS B2, HOT DIP GALVANIZED (1.5 OZ/SF). STEEL WIRE SHALL CONFORM TO ASTM A82.

K. SCREW FASTENERS SHALL BE SELF-DRILLING/SELF-TAPPING WITH MILD SHANK AND HARDENED TIP AND AN ORGANIC-POLYMER COATING CONFORMING TO ASTM A449.

L. PROVIDE #5 CORNER BARS AT ALL BOND BEAM CORNERS TO LAP A MINIMUM OF 40 BAR DIAMETERS.

M. ALL MASONRY WORK SHALL BE IN CONFORMANCE WITH THE "SPECIFICATIONS FOR MASONRY STRUCTURES" ACI 530.1-11/ASCE 6-11/TMS 602-11.

N. ALL CMU GROUT SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 2000 PSI.

O. VERTICAL AND HORIZONTAL REINFORCING STEEL SHALL BE SECURELY HELD IN PROPER ALIGNMENT AND POSITION DURING GROUTING OPERATIONS BY USING REBAR POSITIONERS. ALL VERTICAL BARS SHALL BE TIED TO REBAR POSITIONERS.

P. GROUT SHALL BE PLACED USING LOW-LIFT GROUTING PROCEDURES CONFORMING TO NCHA REQUIREMENTS. THE MAXIMUM GROUT HEIGHT SHALL NOT EXCEED 4-FEET 8-INCHES. TERMINATE GROUT POURS AT 1 1/2-INCHES BELOW TOP COURSE OR POUR. SPLICES FOR VERTICAL REINFORCEMENT SHALL BE LAPPED 48-BAR DIAMETERS.

Q. ALL NEW MASONRY WORK SHALL BE TOOTHED INTO EXISTING ADJACENT MASONRY.

R. ALL PRECAST MASONRY LINTELS SHALL HAVE A MINIMUM BEARING LENGTH OF 8" AND SHALL BE PROPORTIONED AS FOLLOWS FOR EACH 4" OF THICKNESS FOR NON-LOAD-BEARING WALLS, Fc=3000 PSI.

Table with 2 columns: OPENING THICKNESS, LINTEL (8" DEEP). Row 1: UP TO 4'-0", W1 #4 T&B

VI. STRUCTURAL STEEL

A. ALL STEEL LINTELS SHALL BE GALVANIZED AND HAVE A MINIMUM OF 6" BEARING AND SHALL BE PROPORTIONED AS FOLLOWS FOR EACH 4" OF WALL WIDTH.

Table with 2 columns: OPENING SIZE, LINTEL (LLV). Row 1: UP TO 4'-0", L 4 x 3-1/2 x 1/4

B. ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED (1.5OZ./SF.) TO ASTM A123 GRADE 55. TOUCH UP ALL DAMAGED AREAS.

VII. GENERAL

A. INFORMATION SHOWN REGARDING EXISTING CONDITIONS HAS BEEN OBTAINED BY LIMITED VISUAL OBSERVATIONS. AREAS NOT VISIBLE HAVE BEEN ASSUMED TYPICAL WITH OBSERVED EXISTING CONDITIONS.

B. THE CONTRACTOR SHALL EXPOSE AND CONFIRM ALL EXISTING STRUCTURAL CONDITIONS RELATIVE TO THE NEW CONSTRUCTION AND INFORM THE ENGINEER OF CONDITIONS AT VARIANCE WITH THOSE SHOWN ON THE DRAWINGS. VERIFICATION AND NOTIFICATION SHALL PROCEED PRIOR TO THE START OF WORK SO THAT ANY NECESSARY CHANGES CAN BE MADE WITHOUT DELAYING THE PROJECT SCHEDULE.

C. THE CONTRACTOR SHALL MEASURE AND PROVIDE ALL EXISTING FIELD DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE JOB SITE PRIOR TO CONSTRUCTION AND THE SUBMISSION OF SHOP DRAWINGS AND SHALL NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.

D. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A VIRGINIA REGISTERED ENGINEER TO DESIGN ALL TEMPORARY BRACING AND SHORING, AS NEEDED, TO ENSURE VERTICAL AND LATERAL STABILITY OF THE ENTIRE STRUCTURE OR PORTION THEREOF DURING DEMOLITION OPERATIONS.

E. DETAILS, SECTIONS, AND NOTES SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR CONDITIONS ELSEWHERE UNLESS OTHERWISE SHOWN OR NOTED.

F. ALL WALLS ARE DESIGNED AS Laterally Braced BY THE FLOOR AND ROOF SYSTEMS. CONTRACTOR SHALL ENSURE THAT WALLS ARE ADEQUATELY BRACED DURING CONSTRUCTION.

G. TEMPORARY BRACING SHALL BE PROVIDED FOR ALL WALLS SUBJECT TO UNBALANCED BACKFILL. BRACE WALL PLUMB UNTIL STABILIZING ELEMENT AT TOP AND BOTTOM OF WALL IS IN PLACE.

H. ANY REQUIRED TEMPORARY SHORING SHALL BE IN CONFORMANCE WITH OSHA REGULATIONS. UNBRACED EXCAVATIONS SHALL BE SLOPED NO GREATER THAN (1.5) HORIZONTAL TO (1) VERTICAL.

I. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN VICINITY OF FOUNDATIONS AND NOTIFY THE ARCHITECT IF A CONFLICT EXISTS. PROVIDE INFORMATION ON LOCATION SIZE AND ELEVATION OF UTILITIES PRIOR TO START OF WORK SO THAT ANY NECESSARY CHANGES CAN BE MADE WITHOUT DELAYING THE PROJECT SCHEDULE.

J. THE DEVELOPMENT AND IMPLEMENTATION OF JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

K. CONTRACTOR SHALL PROVIDE INDEPENDENTLY PREPARED SHOP DRAWINGS AND SHALL NOT REPRODUCE ANY PORTION OF THE CONTRACT DOCUMENTS IN PREPARING SHOP DRAWINGS. THE SHOP DRAWINGS SHALL NOT SIMPLY BE A MARK-UP OF THE CONTRACT DOCUMENTS.

VIII. DEMOLITION

A. ALL MEANS AND METHODS OF SAFELY REMOVING ALL EXISTING CONSTRUCTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

IX. TESTING AND INSPECTION

THE CONTRACTOR WILL RETAIN THE SERVICES OF AN INSPECTION AGENCY TO PERFORM THE FOLLOWING SERVICES. ADDITIONAL INSPECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.

A. THE PLACEMENT OF ALL CONCRETE AND MASONRY REINFORCEMENT SHALL BE INSPECTED.

B. CONCRETE CYLINDERS SHALL BE TAKEN IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS. IN ABSENCE OF LOCAL REQUIREMENTS, ONE SET OF 6 CYLINDERS SHALL BE TAKEN FOR EACH DAY'S POUR: (2) 7-DAY, (2) 28-DAY, (2) HOLD.

C. MASONRY INSPECTION FOR QUALITY CONTROL ASSURANCE SHALL BE LEVEL B AS DEFINED IN TABLE 1.15.1 OF THE ACI 530-11/ASCE 5-11/TMS 602-11 CODE AND SHALL BE MINIMALLY INCLUDE INSPECTION OF FINISHES, GROUT, REINFORCING ANCHOR BOLTS AND LINTELS.

D. INSPECTION OF SUBGRADE BELOW ALL FOUNDATIONS AND SLAB ON GRADE TO VERIFY THE ADEQUACY OF THE BEARING MATERIAL.

E. WRITTEN REPORTS SHALL BE SUBMITTED TO THE ARCHITECT STATING COMPLIANCE OR NONCOMPLIANCE WITH DESIGN DOCUMENTS AND SPECIFICATIONS. ALL REPORTS SHALL BE SIGNED AND SEALED BY A VIRGINIA REGISTERED ENGINEER.

F. INSPECTION AND TESTING OF ALL NEW STRUCTURAL FILL WITH REPORTS SUBMITTED TO ARCHITECT STATING COMPLIANCE OR NONCOMPLIANCE WITH PERCENT COMPACTION REQUIREMENTS.

G. PERIODIC INSPECTION SHALL BE PROVIDED FOR ALL POST INSTALLED ANCHORS IN ACCORDANCE WITH IBC CHAPTER 17 PROCEDURES. IN-SITU LOAD TESTING OF ANCHORS WHEN REQUIRED SHALL BE PERFORMED IN ACCORDANCE WITH ACI 35.4 TESTING PROCEDURES. POST INSTALLED ANCHORS USED TO SUPPORT SUSTAINED TENSION REQUIRE CONTINUOUS INSPECTION.

X. EARTHWORK

A. ASSUMED ALLOWABLE SOIL BEARING PRESSURE FOR ALL SHALLOW FOOTINGS IS 1500 PSF. SHOULD UNSUITABLE MATERIAL BE ENCOUNTERED, FOOTINGS SHALL BE OVEREXCAVATED AND REPLACED WITH LEAN CONCRETE, Fc = 2000 PSI. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-6" BELOW EXTERIOR GRADE, UNLESS NOTED OTHERWISE. WORK SHALL BE COORDINATED WITH EXISTING UNDERGROUND UTILITIES IN ACCORDANCE WITH TYPICAL DETAIL. OVERCUT SHALL NOT UNDERMINE EXISTING ADJACENT FOUNDATIONS.

B. PRIOR TO PLACEMENT OF GRANULAR FILL LAYER, THE SUBGRADE BENEATH ALL SLAB ON GRADE SHALL BE PROFFERLOD, PROPERLY COMPACTED AND FREE OF STANDING WATER, MUD, AND FROZEN SOIL.

C. IF FOOTINGS ARE NOT TO BE POURED THE DAY OF EXCAVATION, FOOTING TRENCHES SHALL BE BACKFILLED WITH LEAN CONCRETE IMMEDIATELY UPON EXCAVATION TO PREVENT GROUNDWATER INFILTRATION.

D. FIELD MOISTURE CONTENTS SHALL BE MAINTAINED WITHIN 2% OF OPTIMUM DURING STRUCTURAL FILL COMPACTION. MOISTURE CONDITIONING SHOULD BE ANTICIPATED.

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite 414
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Phone: 703.228.3323
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21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II

Restroom Renovation

Sheet Title

DESIGN NOTES

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Table with 2 columns: PERMIT SUBMISSION, BID SUBMISSION. Row 1: 03-30-21, 09-21-21

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Drawn: MA
Checked: DL

Filename:
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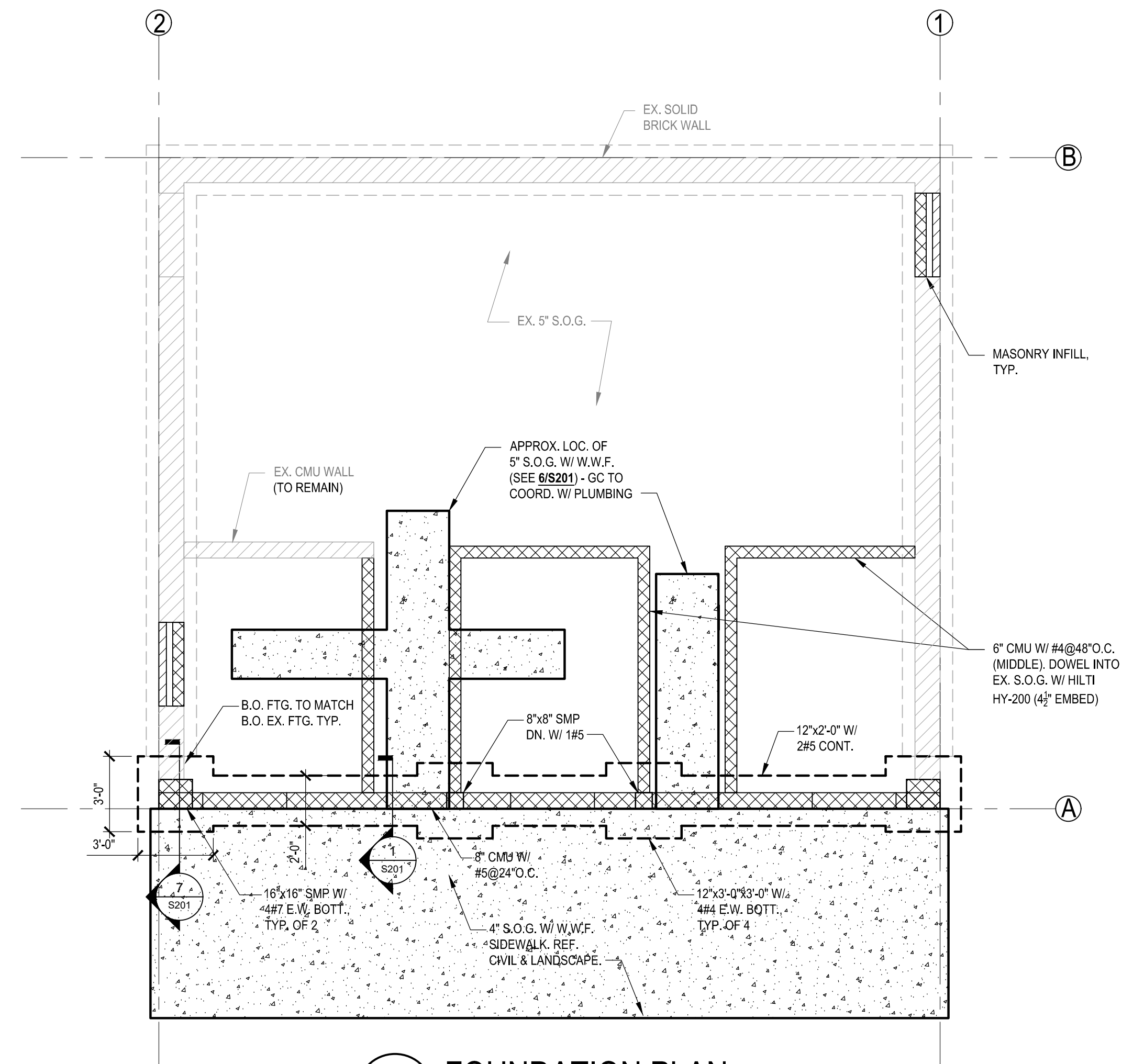
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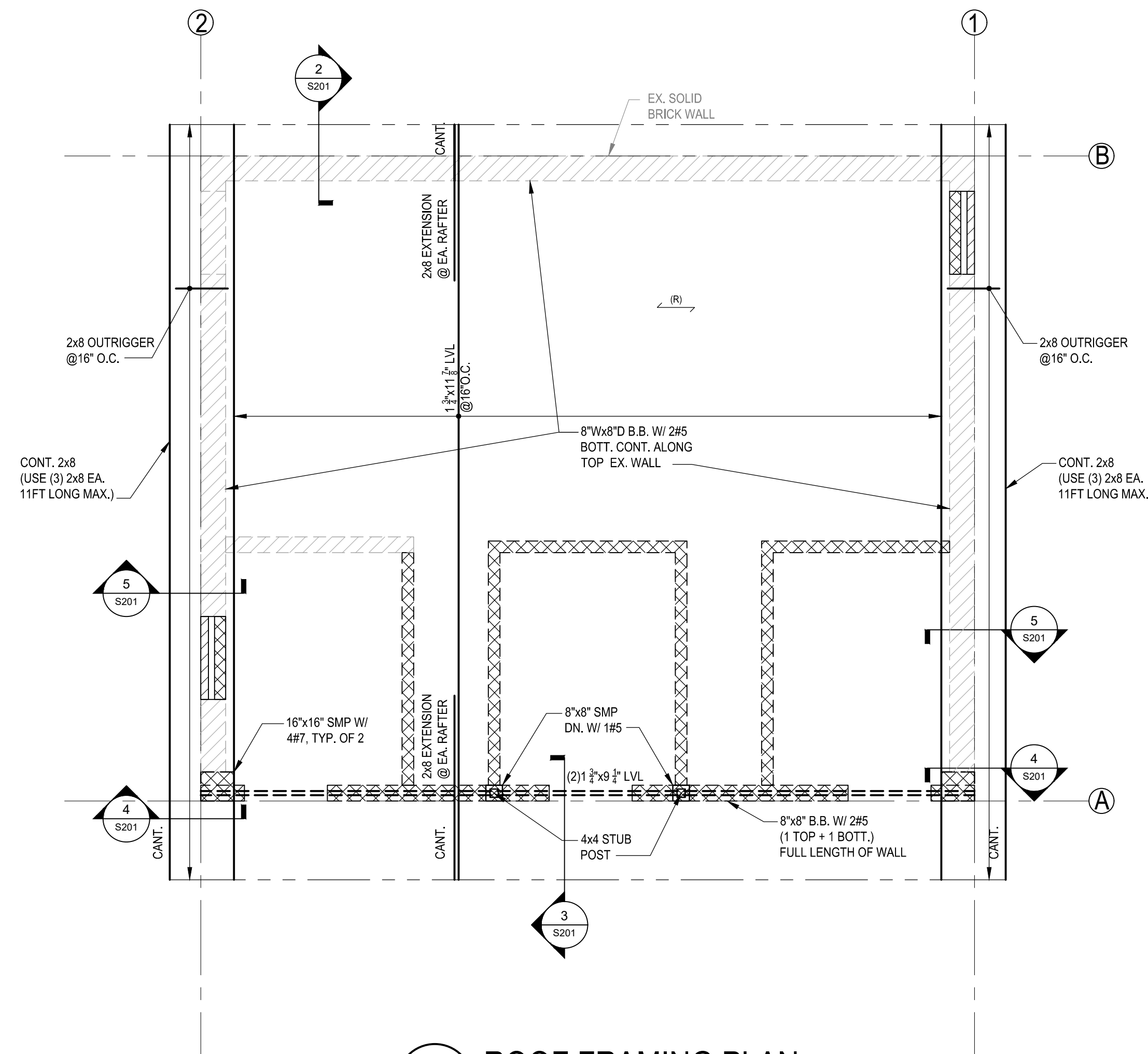
ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED SHEET: S-001



1 FOUNDATION PLAN
SCALE: 1/4"=1'-0"



2 ROOF FRAMING PLAN
SCALE: 1/4"=1'-0"

NOTES:
1. (R) DESIGNATES THE SPAN DIRECTION OF 5/8\"/>

ARLINGTON VIRGINIA

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21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II
Restroom Renovation

Sheet Title
FOUNDATION AND ROOF FRAMING PLAN

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions	Date
PERMIT SUBMISSION	03-30-21
BID SUBMISSION	09-21-21

Designed: JLF
Drawn: MA
Checked: DL

Filename:
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Scale: AS INDICATED
Date: 09/21/2021

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ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
Alcova Heights Park - Phase II - Restrooms Renovation 901 S George Mason Dr. Arlington County, Virginia	
SCALE: AS INDICATED	SHEET: S-100

21-DPR-ITB-291

Project Name and Location

Alcova
Heights Park
- Phase II

Restroom Renovation

Sheet Title

SECTIONS AND DETAILS

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

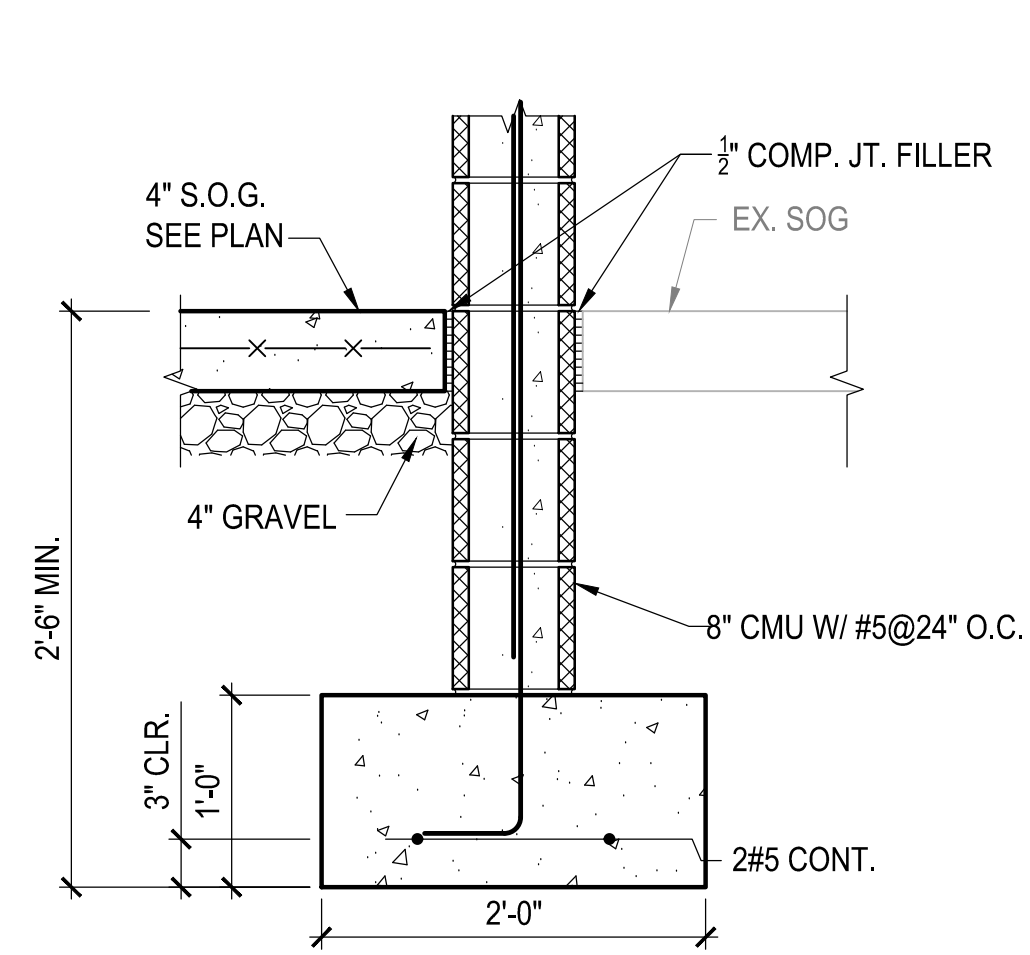
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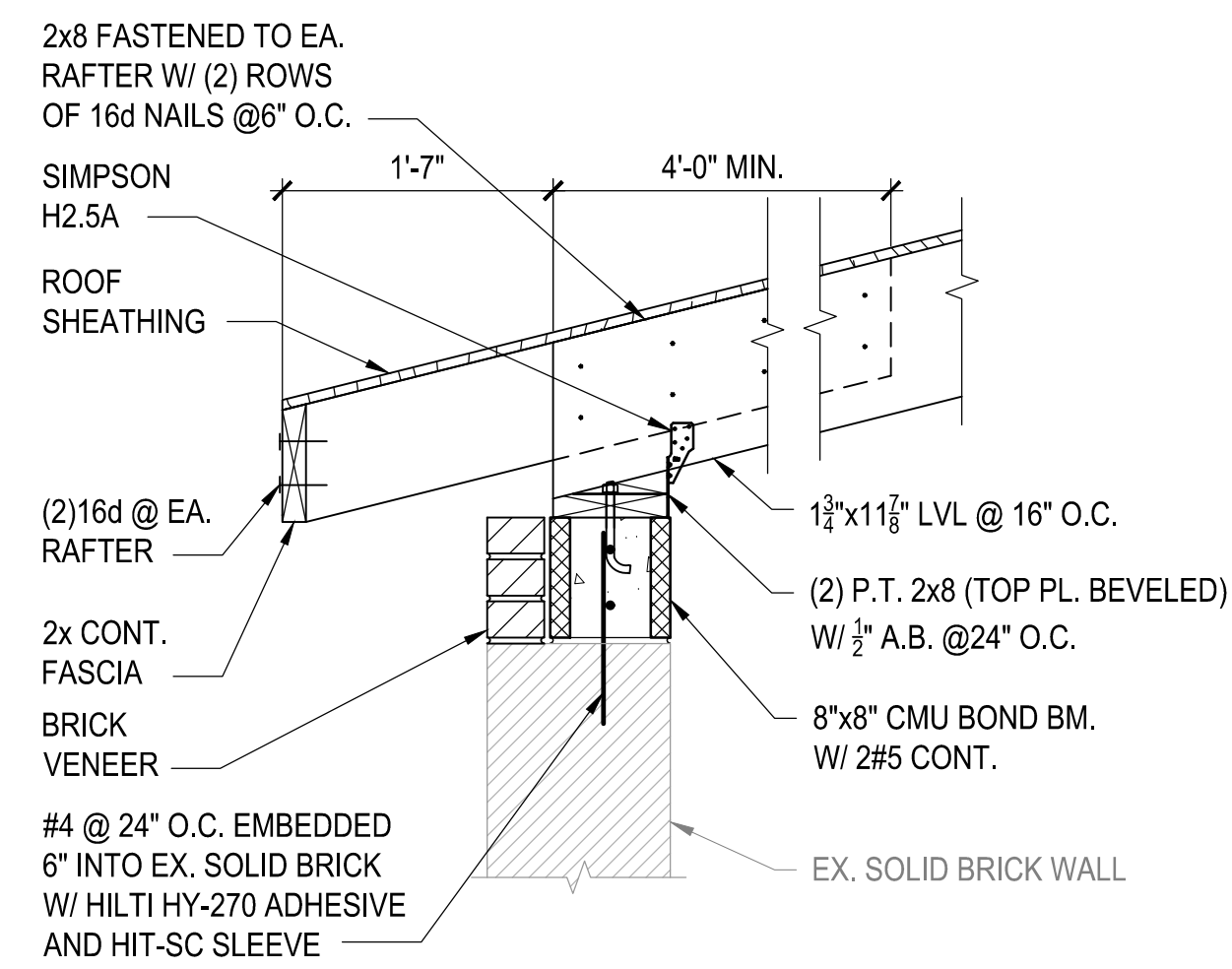
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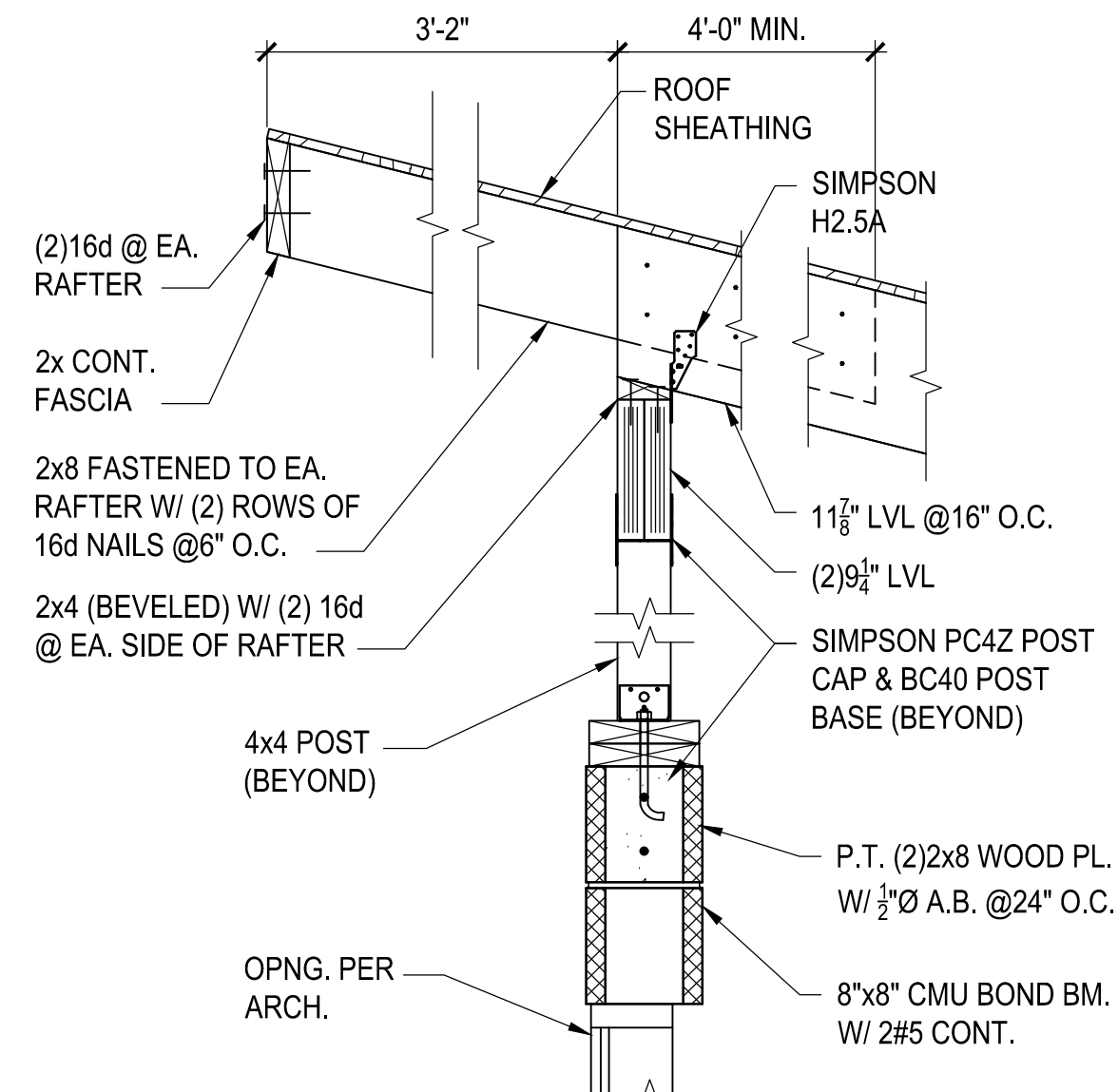
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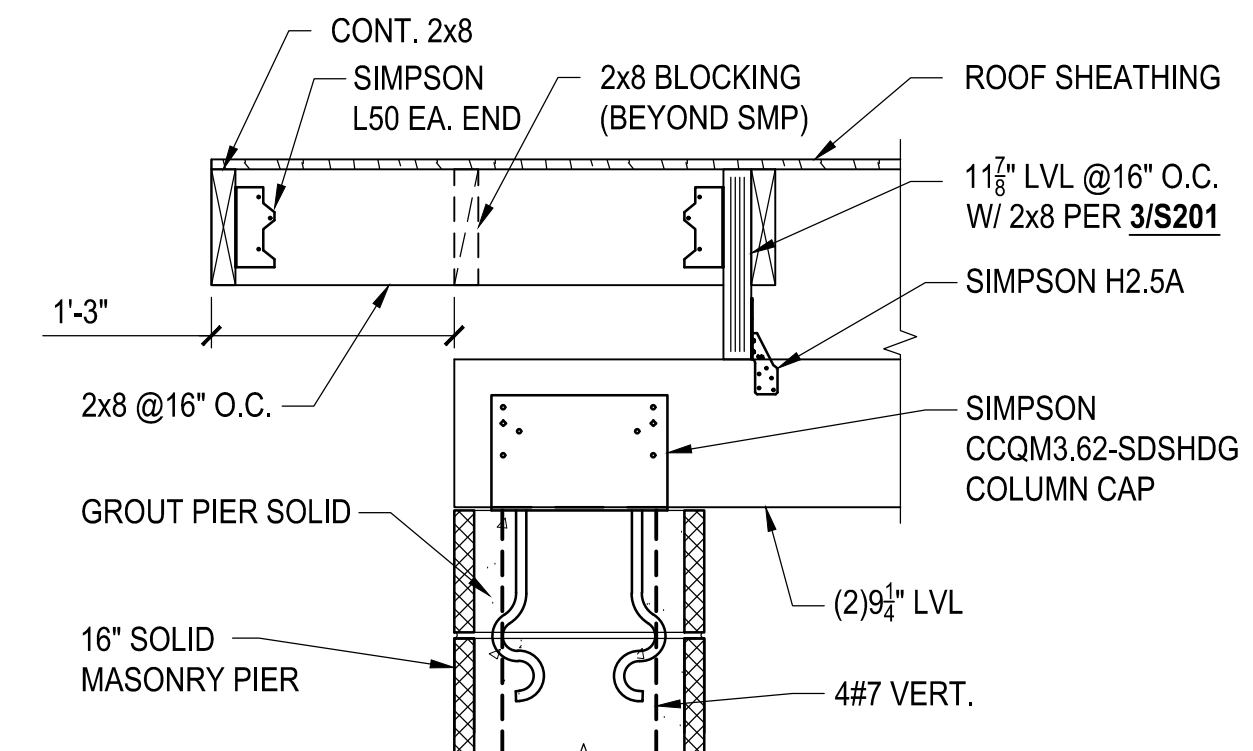
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S201
TYP. INTERIOR
WALL SECTION
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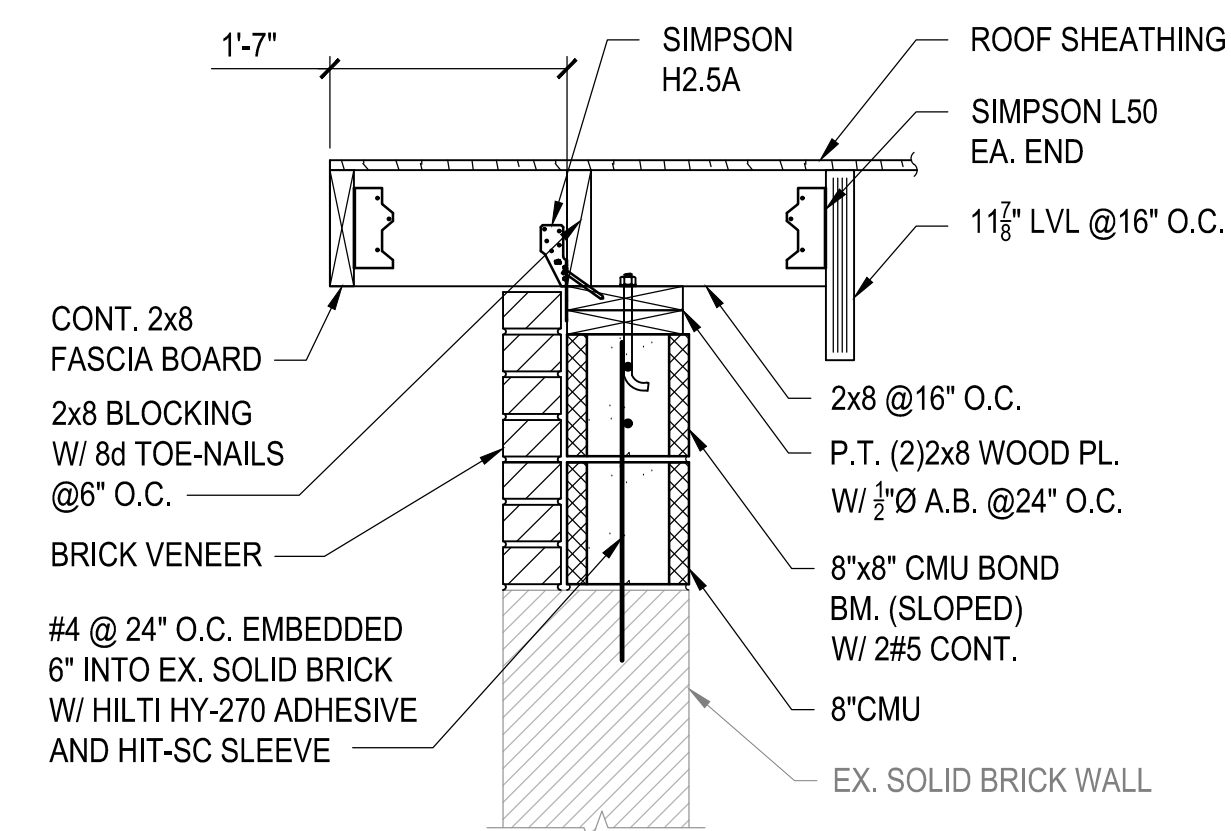
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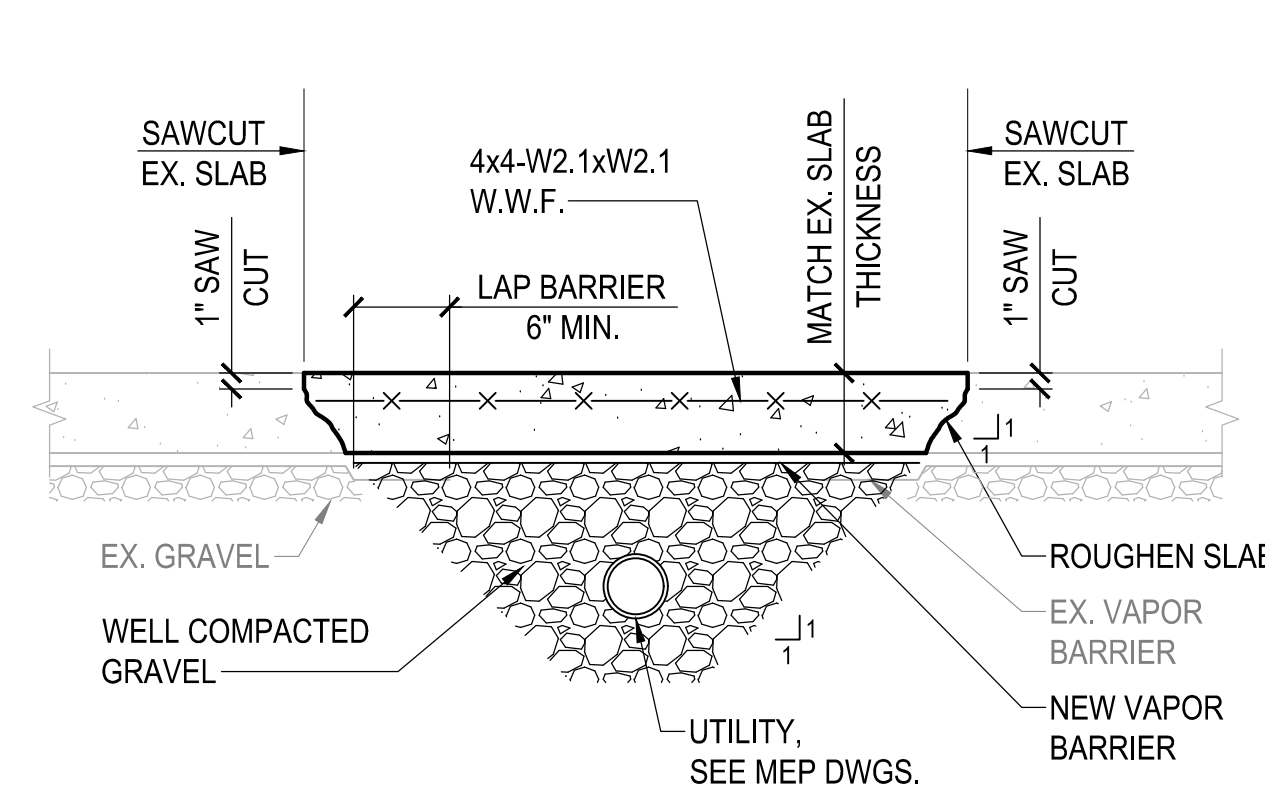
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SECTION
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SECTION
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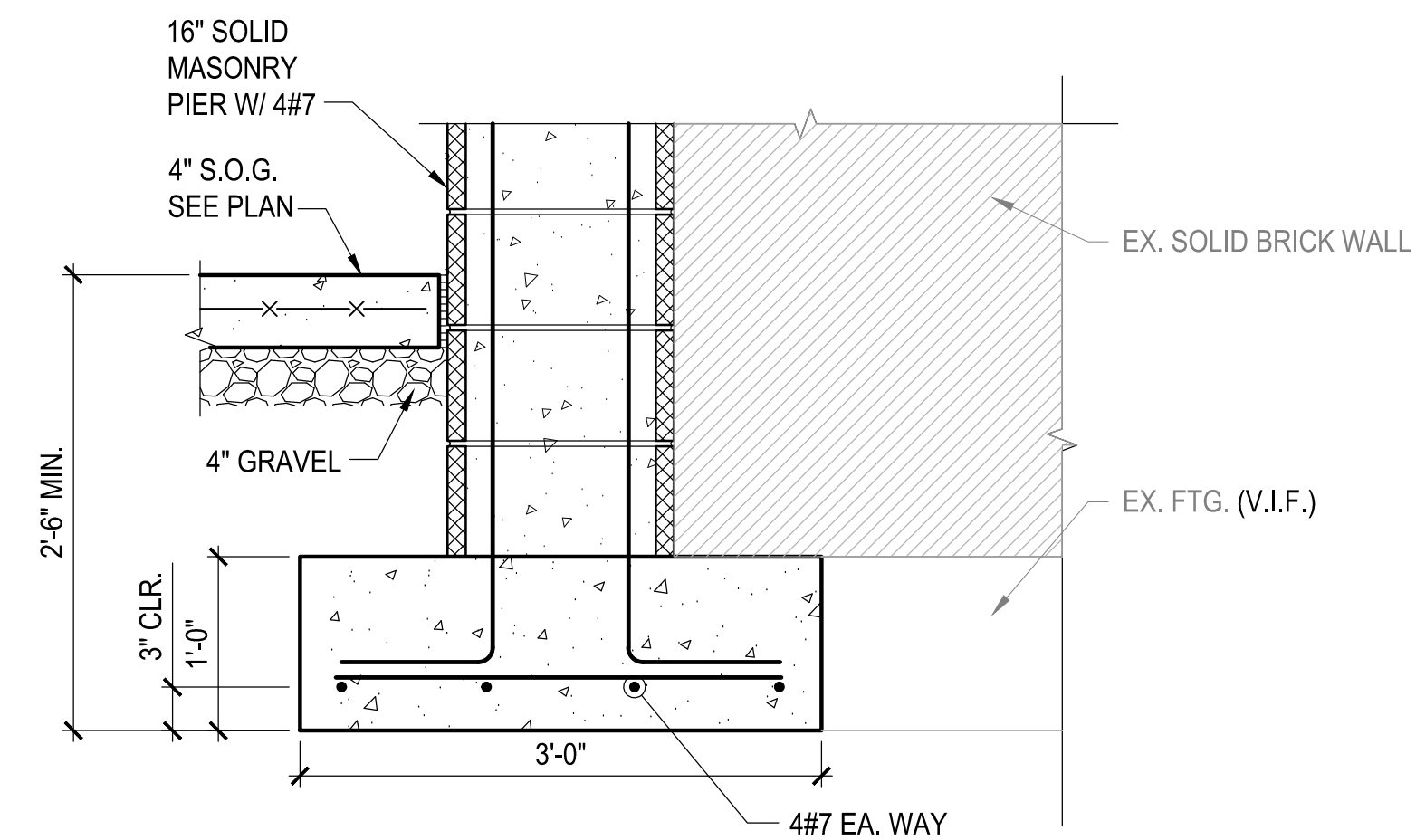


5
S201
SECTION
SCALE: 1" = 1'-0"



6
S201
TYP. S.O.G. PATCHING @ UTILITY TRENCH
SCALE: 1" = 1'-0"

NOTE:
CONTRACTOR SHALL COORDINATE UTILITY TRENCH SIZES AND LOCATIONS WITH PLUMBING AND ELECTRICAL DRAWINGS.



7
S201
SECTION
SCALE: 1" = 1'-0"

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: S-201

ABBREVIATIONS

A/E	ARCHITECT/ENGINEER	LWT	LEAVING WATER TEMPERATURE
ABV	ABOVE	LSD	LINEAR SLOT DIFFUSER
AD	ACCESS DOOR	MAU	MAKEUP AIR UNIT
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MBH	THOUSAND BTUH
ALT	ALTERNATE	MCA	MINIMUM CIRCUIT AMPS
APD	AIR PRESSURE DROP	MFR	MANUFACTURER
APPROX	APPROXIMATELY	MOP	MAXIMUM OVERCURRENT PROTECTION
ARCHL	ARCHITECTURAL	MTD	MOUNTED
BDV	BLOWDOWN VALVE	OA	OUTDOOR AIR
BLDG	BUILDING	OAD	OUTSIDE AIR DUCT
BTUH	BRITISH THERMAL UNITS PER HOUR	OAL	OUTSIDE AIR LOUVER
CD	CEILING DIFFUSER, CONDENSATE DRAIN	OBD	OPOSED BLADE DAMPER
CEG	CEILING EXHAUST GRILLE	NOM	NOMINAL
CFM	CUBIC FEET PER MINUTE	NPT	NATIONAL PIPE THREAD
CKT	CIRCUIT	PD	PRESSURE DROP
CLG	CEILING	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	RA	RETURN AIR
CRG	CEILING RETURN GRILLE	RAD	RETURN AIR DUCT
CV	CONSTANT VOLUME	RCP	REFLECTED CEILING PLAN
DB	DECIBELS; DRY BULB	RG	RETURN GRILLE
DIA	DIAMETER	SA	SUPPLY AIR
EA	EACH; EXHAUST AIR	SAD	SUPPLY AIR DUCT
EAD	EXHAUST AIR DUCT	SENS	SENSIBLE
EAL	EXHAUST AIR LOUVER	SIM	SIMILAR
EAT	ENTERING AIR TEMPERATURE	SP	STATIC PRESSURE
EF	EXHAUST FAN	SWRG	SIDEWALL RETURN GRILLE
ERV	ENERGY RECOVERY VENTILATOR	SWSG	SIDEWALL SUPPLY GRILLE
ESP	EXTERNAL STATIC PRESSURE	SWTG	SIDEWALL TRANSFER GRILLE
ET	EXPANSION TANK	TAD	TRANSFER AIR DUCT TO BE DETERMINED
ETR	EXISTING TO REMAIN	TBD	TRANSFER AIR
EUH	ELECTRIC UNIT HEATER	TA	TRANSFER AIR
EWT	ENTERING WATER TEMPERATURE	TE	TOTAL ENTHALPY
F	DEGREE FAHRENHEIT	TOD	TOP OF DUCT
FLA	FLOOR	TTL	TOTAL
FLR	FLOOR	TRNS	TRANSITION
FFM	FEET PER MINUTE	TYP	TYPICAL
FT	FEET OR FOOT	UNO	UNLESS NOTED OTHERWISE
GALV	GALVANIZED	V-PH	VOLTAGE-PHASE
HP	HEAT PUMP; HORSEPOWER	W	WATT
HVAC	HEATING, VENTILATING & AIR CONDITIONING	WB	WET BULB
IN	INCH, INCHES	WC	WATER COLUMN
LAT	LEAVING AIR TEMPERATURE	WPD	WATER PRESSURE DROP
		WWM	WOVEN WIRE MESH

MECHANICAL LEGEND

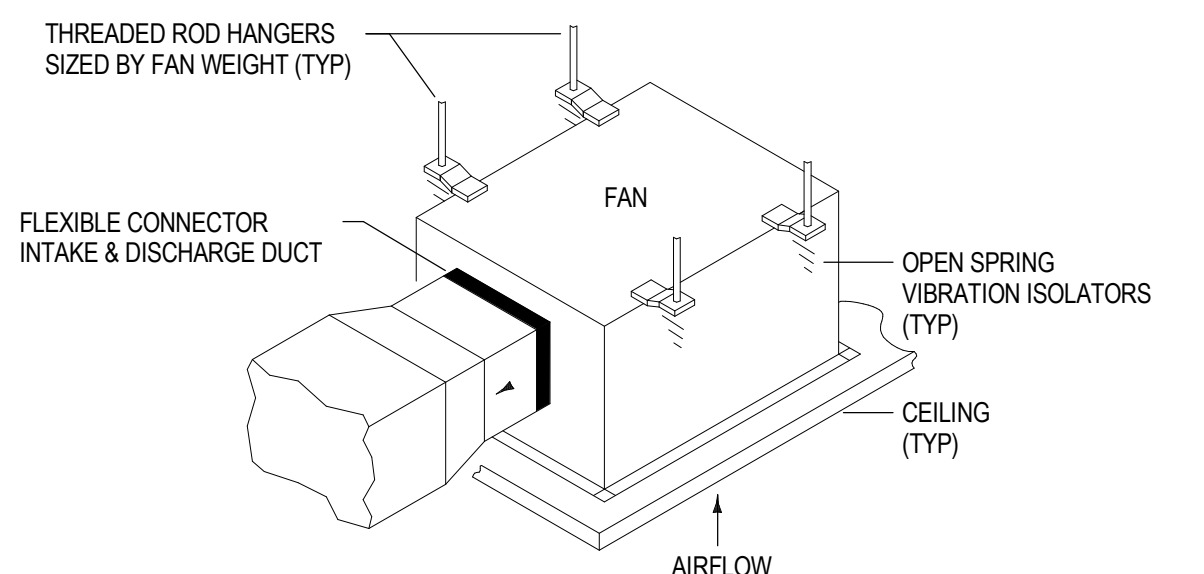
	WALL THERMOSTAT AT 48" AFF. COORDINATE EXACT LOCATION WITH A/E PRIOR TO ROUGH-IN. IDENTIFIERS INDICATE THE FOLLOWING FUNCTIONS: T TEMPERATURE ONLY SP SET POINT & OVERRIDE CONTROL X NO SET POINT & OVERRIDE CONTROL
	LINE-VOLTAGE THERMOSTAT
PIPING	
	RL REFRIGERANT LINESET
	CD CONDENSATE DRAIN
FITTINGS	
	CAP
	CONNECTION, BOTTOM
	CONNECTION, TOP
	ELBOW, 90° TURNED UP
	ELBOW, 90° TURNED DOWN
ARCHITECTURAL	
	FIRE-RATED PARTITION - 1 HOUR
	FIRE-RATED PARTITION - 2 HOUR
	DUCTWORK
	RECTANGULAR DUCT, FIRST DIMENSION IS SIDE SHOWN. DIMENSION IN INCHES
	ROUND DUCT, DIMENSION IN INCHES
	FLEXIBLE CONNECTION
	TRANSITION, SLOPE NOT TO EXCEED 4-TO-1. FOB = FLAT ON TOP, FOB = FLAT ON BOTTOM
	CHANGE OF ELEVATION IN DIRECTION OF AIR FLOW (R = RISE, D = DROP)
	DUCTWORK WITH INTERNAL SOUND LINING INSULATION
	TURNING VANES
	STANDARD BRANCH, SUPPLY OR RETURN, NO SPLITTER
	MANUAL VOLUME DAMPER
	MOTORIZED DAMPER
	FIRE DAMPER WITH SLEEVE. PROVIDE ACCESS DOOR.
	DUCT ACCESS DOOR
	RECTANGULAR DUCT SECTION (SUPPLY)
	RECTANGULAR DUCT SECTION (RETURN)
	RECTANGULAR DUCT SECTION (EXHAUST)
	RECTANGULAR ELBOW TURNING UP (SUPPLY)
	RECTANGULAR ELBOW TURNING UP (RETURN)
	RECTANGULAR ELBOW TURNING UP (EXHAUST)
	RECTANGULAR ELBOW TURNING DOWN (SUPPLY)
	RECTANGULAR ELBOW TURNING DOWN (RETURN)
	RECTANGULAR ELBOW TURNING DOWN (EXHAUST)
	ROUND DUCT SECTION (SUPPLY)
	ROUND DUCT SECTION (RETURN)
	ROUND DUCT SECTION (EXHAUST)
	ROUND ELBOW TURNING UP (RETURN)
	ROUND ELBOW TURNING UP (SUPPLY)
	ROUND ELBOW TURNING UP (EXHAUST)
	ROUND ELBOW TURNING DOWN (SUPPLY)
	ROUND ELBOW TURNING DOWN (RETURN)
	ROUND ELBOW TURNING DOWN (EXHAUST)
	RETURN GRILLE, TYPE AS INDICATED
	EXHAUST GRILLE, TYPE AS INDICATED
	RECTANGULAR CEILING SUPPLY DIFFUSER, ROUND CONNECTION, TYPE AS INDICATED
	SIDEWALL SUPPLY REGISTER
	SIDEWALL RETURN GRILLE

GENERAL NOTES (NEW WORK)

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2015, IMC 2015 AND IECC 2015.
- PROVIDE SINGLE THICKNESS, 1/12 INCHES SPACED, TURNING VANES IN ALL MITERED SUPPLY, RETURN, VENTILATION, AND EXHAUST DUCTWORK ELBOWS.
- COORDINATE LOCATIONS OF ALL WALL MOUNTED DEVICES, ACCESS PANELS, DIFFUSERS, GRILLES, & LOUVERS WITH ARCHITECTURAL REFLECTED CEILING PLANS, SECTIONS, INTERIOR & EXTERIOR ELEVATIONS.
- ALL DUCTWORK DIMENSIONS CITED ARE THE INSIDE CLEAR DIMENSIONS.
- ALL PIPING AND CONTROL WIRING SHALL BE CONCEALED IN WALLS OR ABOVE CEILINGS OF FINISHED SPACES, UNLESS NOTED OTHERWISE. ALL CONTROL WIRING SHALL BE RUN IN CONDUIT. CONDUIT FROM A WALL OUTLET BOX MAY TERMINATE SEVERAL INCHES ABOVE THE CEILING WHERE LAY-IN CEILING TILE IS USED. CABLING ABOVE THE CEILING SHALL BE NEATLY BUNDLED AND INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE ABOVE. WIRING OR CONDUIT SHALL NOT BE LAID ON THE CEILING SYSTEM OR ATTACHED TO THE CEILING SUSPENSION WIRE. IN FINISHED SPACES WITH EXPOSED STRUCTURE CEILINGS, CONTRACTOR SHALL CLOSELY COORDINATE ROUTING WITH OTHER TRADES.
- CONTRACTOR SHALL COORDINATE LOCATION OF ALL EQUIPMENT, PIPING AND DUCTWORK WITH OTHER TRADES. MAINTAIN REQUIRED SERVICE ACCESS.
- AIRFLOW QUANTITIES INDICATED ON THE PLANS ARE FOR OCCUPIED OPERATING MODE.
- VERIFY ROUTING OF DUCTS & PIPING WITH CEILING HEIGHTS, STRUCTURAL SYSTEMS AND OTHER TRADES PRIOR TO DUCT FABRICATION. UNLESS OTHERWISE NOTED, ALL DUCT & PIPING MAINS SHALL BE INSTALLED AS HIGH AS POSSIBLE TO UNDERSIDE OF STEEL STRUCTURE. ROUTE SYSTEMS WITHIN STRUCTURAL BAYS AND THROUGH WEBBING AS REQUIRED TO ALLOW FOR CEILING HEIGHTS INDICATED ON ARCHITECTURAL REFLECTED CEILING PLAN.
- HVAC CONTRACTOR(S) SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES PRIOR TO FABRICATIONS OF SYSTEMS AND COMMENCEMENT OF INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES INCLUDING, BUT NOT LIMITED TO CIVIL, ARCHITECTURAL, STRUCTURAL, FOOD SERVICE, PLUMBING, EQUIPMENT, FIRE PROTECTION, FIRE ALARM, AND ELECTRICAL) AS IT AFFECTS THEIR WORK, AND AS THEIR WORK AFFECTS OTHER TRADES, TO INSURE THAT THE CONSTRUCTION DOCUMENTS ARE CLOSELY FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
- FLEX-DUCT RUNS SHALL BE 3' MINIMUM AND 5' MAXIMUM LENGTH.
- PROVIDE MANUAL BALANCING DAMPERS IN EACH BRANCH OF SUPPLY, RETURN, VENTILATION, AND EXHAUST DUCTWORK. INSTALL DAMPERS IN ACCESSIBLE LOCATIONS. PROVIDE ACCESS PANELS WHERE REQUIRED.
- WATER SEAL ALL CEILING, FLOOR & WALL PENETRATIONS. PENETRATIONS THRU FIRE RATED CEILINGS, FLOORS & WALLS SHALL BE SEALED TO MAINTAIN FIRE RATINGS INTEGRITY. PROVIDE RADIATION DAMPERS FOR DIFFUSERS LOCATED IN RATED ASSEMBLIES. REFER TO ARCHITECTURAL DRAWINGS FOR FIRESTOPPING DETAILS.
- DO NOT INSTALL BULL HEAD TEES IN PIPING SYSTEMS.
- CONDENSATE DRAIN PIPING SHALL A MINIMUM OF:
A. 3/4" FOR PIPING SERVING UP TO 3 TONS (NOMINAL).
B. 1" FOR PIPING SERVING UP TO 90 TONS (NOMINAL).
C. DISCHARGE OF UNIT.
- CONTRACTOR SHALL PROVIDE COORDINATED SHOP DRAWINGS OF DIVISION 23 SYSTEMS. SHOP DRAWINGS SHALL BE PREPARED IN ELECTRONIC FORMAT AND SUBMITTED IN PRINTED FORM.
- THE DESIGN IS BASED ON MANUFACTURERS AND MODELS INDICATED, AND IS INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS AND/OR SUPPORT FOR EQUIPMENT OR SYSTEM OR SYSTEMS SPECIFIED WITH RELATION TO THE OTHER BUILDING SYSTEMS. SEE SPECIFICATION SECTIONS FOR TECHNICAL REQUIREMENTS.

GENERAL NOTES (DEMO)

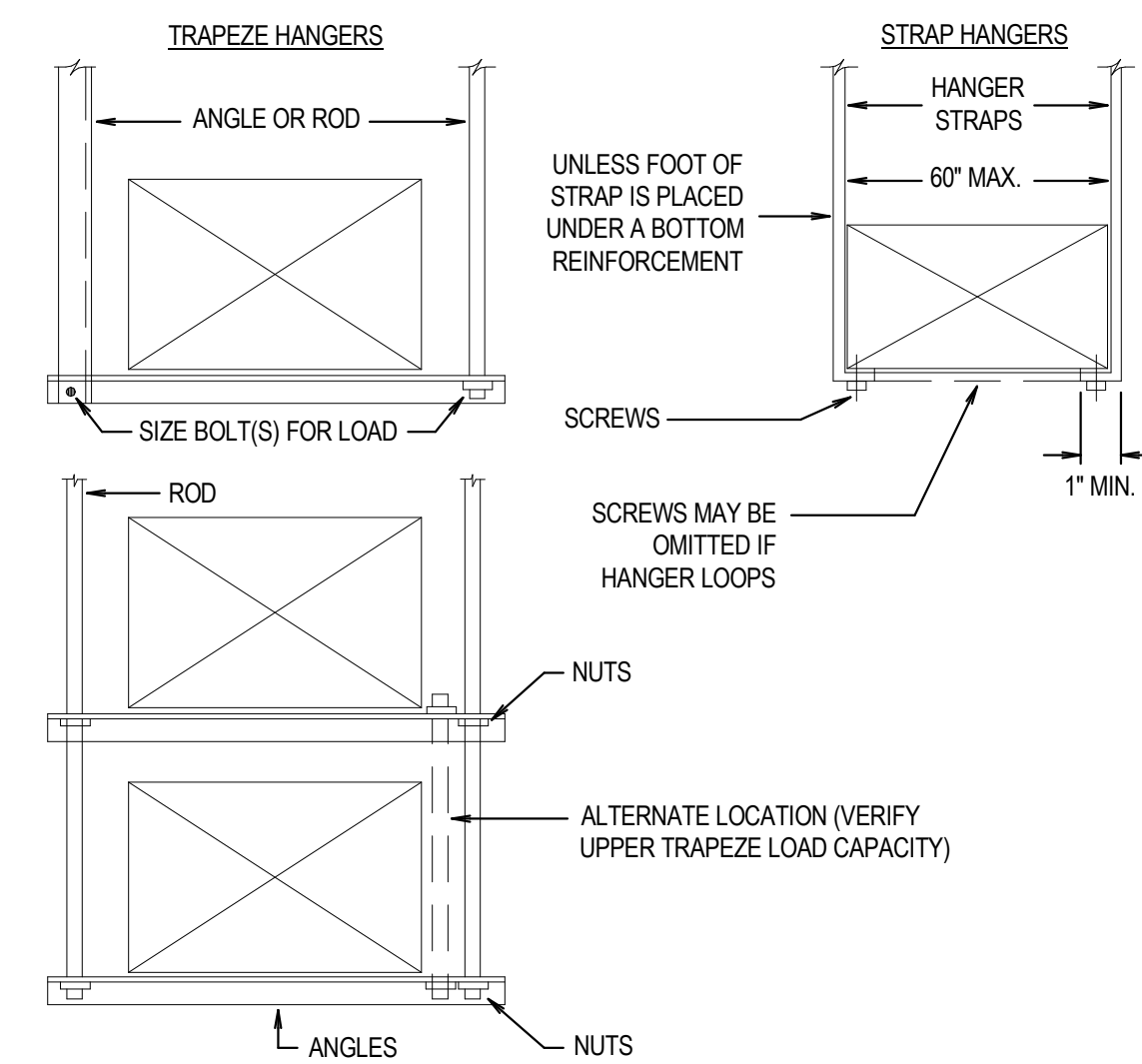
- PRIOR TO BIDDING, THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS, AND TO VERIFY LOCATION, SIZE AND QUANTITY OF ITEMS TO BE REMOVED. SUBMITTAL OF A BID SHALL SIGNIFY WILLINGNESS TO COMPLY WITH THE DESIGN AND ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
- DOCUMENTATION OF EXISTING SYSTEMS IS BASED ON AVAILABLE RECORD DRAWINGS AND CASUAL FIELD OBSERVATION. MAJOR DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK.
- EXISTING COMPONENTS EMBEDDED WITHIN OR BENEATH THE EXISTING STRUCTURE MAY BE ABANDONED IN PLACE. CUT BEHIND WALL/FLOOR/CEILING/ROOF SURFACE AS REQUIRED FOR PATCHING OF FINISH. SYSTEMS SHALL BE CAPPED WATER TIGHT.
- WHERE EXISTING MECHANICAL SYSTEMS BEING REMOVED PENETRATE EXTERIOR WALLS/ROOF, CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING SUCH PENETRATIONS TO MATCH EXISTING, UNO.
- PROVIDE TEMPORARY SUPPORT AND/OR MODIFY EXISTING MECHANICAL COMPONENTS WHERE ROOF DECK IS REPLACED TO ENSURE CONTINUED SYSTEM OPERATION DURING CONSTRUCTION. REFER TO ARCHL DRAWINGS FOR SCOPE OF ROOFING WORK AND ADDITIONAL DETAILS.
- PRIOR TO COMMENCING DEMOLITION, PRE-CONSTRUCTION TESTING ADJUSTING AND BALANCING (TAB) AIRFLOW AND WATER FLOW READINGS SHALL BE TAKEN AT ALL TERMINAL DEVICES AND AIRFLOW READINGS SHALL BE TAKEN AT ALL SUPPLY AND RETURN DIFFUSERS WITHIN AREA OF WORK. SUBMIT PRE-CONSTRUCTION TAB REPORT TO THE A/E FOR REVIEW.



1 CEILING EXHAUST FAN DETAIL

SCALE: NONE

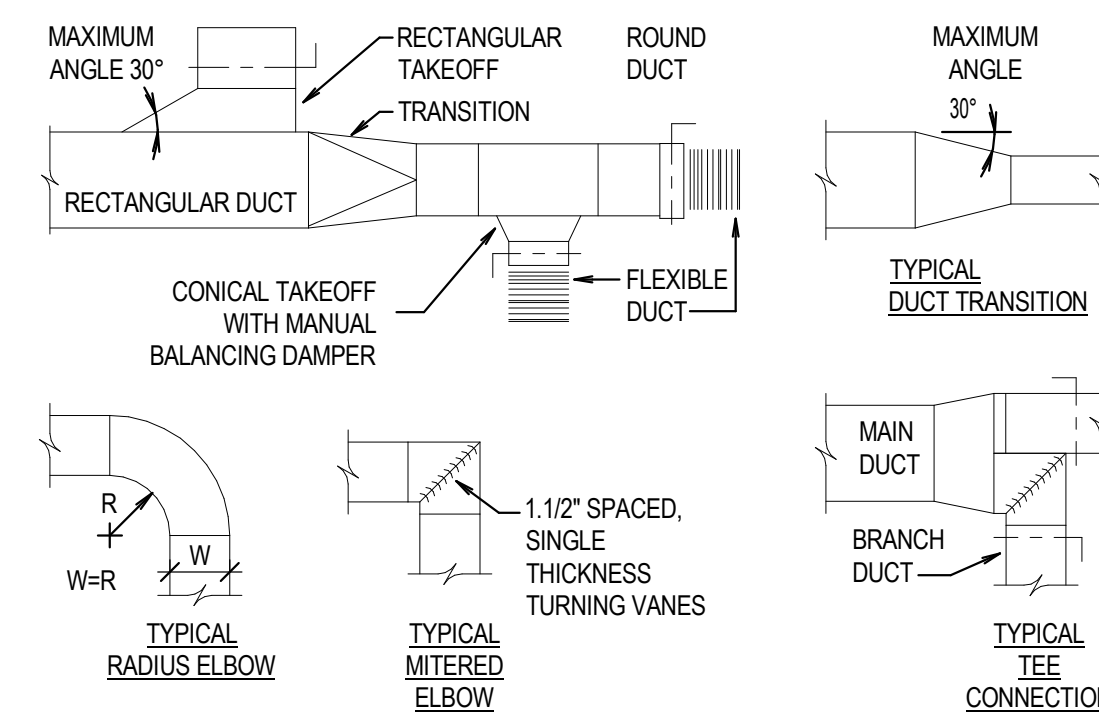
- NOTES:
1. PROVIDE FLEXIBLE DUCT CONNECTIONS FOR ALL AIR MOVING EQUIPMENT, UNO.



3 RECTANGULAR DUCT HANGER DETAILS

SCALE: NONE

- NOTES:
1. SUPPORT MATERIALS AND FASTENERS SHALL BE OF SAME MATERIAL AS SUPPORTED DUCTWORK.



2 TYP DUCT CONNECTION DETAILS

SCALE: NONE

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite 414
Arlington, VA 22201
Phone: 703.228.3323
Fax: 703.228.3328

21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II Restroom Renovation

Sheet Title

LEGEND, DETAILS

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Designed: **JJ**

Drawn: **LWH**

Checked: **LWH**

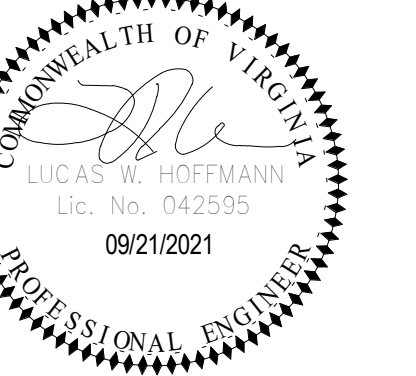
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Plotted:

Scale: AS INDICATED

Date: 09/21/21 (Bid Submission)

Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: M000

23 3423: FAN SCHEDULE

MARK	SERVICE	MODEL	TYPE	MOUNTING	MAX CFM	ESP IN WC	DRIVE	WATTS	INLET Dba	V-PH	NOTES
EF-1	WC-1	SP-B110	CENTRIFUGAL	CEILING	94	0.5	DIRECT	80	65	120-1	6.8
EF-2	WC-2	SP-B110	CENTRIFUGAL	CEILING	94	0.5	DIRECT	80	65	120-1	6.8
EF-3	WC-3	SP-B110	CENTRIFUGAL	CEILING	94	0.5	DIRECT	80	65	120-1	6.8
EF-4	STORAGE	SP-A510	CENTRIFUGAL	CEILING	400	0.3	DIRECT	224	-	120-1	7.8

NOTES:

1. DESIGN AND PERFORMANCE BASED ON GREENHECK.
2. ALL FANS - PROVIDE FACTORY SUPPLIED SOLID STATE SPEED CONTROL, MOUNT INDOORS IN CLOSE PROXIMITY TO FAN.
3. ALL FANS - PROVIDE FACTORY MEANS OF ELECTRICAL DISCONNECT AND THERMAL OVERLOAD PROTECTION.
4. ALL FANS - PROVIDE INTEGRAL BACK DRAFT DAMPER.
5. ALL FANS - PROVIDE MANUFACTURER VIBRATION ISOLATORS.
6. FAN CONTROLLED BY OCCUPANCY SENSOR FOR RESTROOM LIGHTING.
7. FAN CONTROLLED BY WALL MOUNTED LINE VOLTAGE THERMOSTAT.
8. TERMINATE FANS TO AN EXTERIOR ARCHITECTURAL EXHAUST LOUVER AS SHOWN ON THE FLOOR PLAN.

23 3100: DUCT & INSULATION SCHEDULE

SYSTEM	MATERIAL	PRESSURE CLASS, IN WC	INSULATION TYPE	THICKNESS, IN	NOTES
GENERAL EXHAUST	GALV	1	-	-	1

NOTES:

23 82 39: ELECTRIC UNIT HEATER SCHEDULE

MARK	SERVICE	MODEL	OUT MBH	KW	V-PH	AMPS	NOTES
EUH-1	STORAGE	LUH-02-21-34	8.85	2.6	240-1	11.1	1-3

NOTES:

1. ALL HEATERS - DESIGN AND PERFORMANCE BASED ON CHROMALOX.
2. ALL HEATERS - PROVIDE FACTORY MOUNTED TAMPER-PROOF THERMOSTAT.
3. ALL HEATERS - PROVIDE UNIT MOUNTED DISCONNECT SWITCH FOR EACH UNIT.

238239: ELECTRIC WALL HEATER SCHEDULE

MARK	SERVICE	MODEL	MOUNTING	OUTPUT MBH	KW	V-PH
EWH-RM.NO.	RESTROOM / PLUMBING ACCESS	3000 SERIES	WALL	5.1	1.5	120-1

NOTES:

1. DESIGN AND PERFORMANCE BASED ON MARKEL
2. PROVIDE FACTORY MOUNTED TAMPER-PROOF THERMOSTAT.
3. PROVIDE UNIT MOUNTED DISCONNECT SWITCH FOR EACH UNIT.
4. RECESSED FLUSH MOUNT IN WALL, UNO.

23 3700: AIR OUTLETS AND INLETS SCHEDULE

MARK	DESCRIPTION	MOUNTING	NECK	BASIS OF DESIGN		
				MFR	MODEL	MATERIAL
EAL, OAL	EXHAUST, OUTSIDE AIR LOUVER	WALL	-	GREENHECK	ESU-154	ALUMINUM

NOTES:

1. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
2. PROVIDE EAL, OAL WITH WWM INSECT SCREEN. PROVIDE MANUFACTURER ACCESSORIES AS NEEDED FOR INSTALLATION INTO EXTERIOR WALL.

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES

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21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II

Restroom Renovation

Sheet Title

SCHEDULES

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

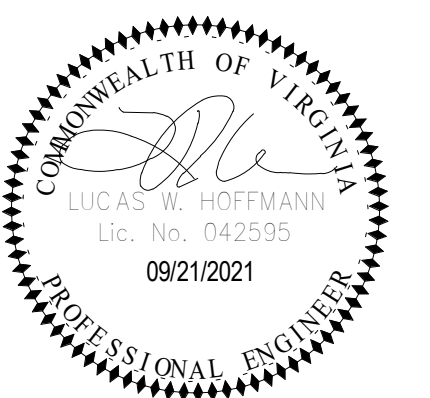
Revisions Date

Designed: JJ
Drawn: LWH
Checked: LWH

Filename:
Plotted:

Scale: AS INDICATED
Date: 09/21/21 (Bid Submission)

Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: M001

GENERAL NOTES

1. CONTRACTOR SHALL TAKE CARE TO SALVAGE ANY EXISTING EQUIPMENT AND CONTROLS FOR REUSE AS SHOWN OR TO THE OWNER.

KEY NOTES (DEMO)

1. REMOVE EXISTING CEILING EXHAUST FAN AND ASSOCIATED DUCTWORK, POWER, CONTROL WIRING.
2. REMOVE EXISTING ELECTRIC WALL HEATER AND ALL ASSOCIATED THERMOSTAT, POWER AND CONTROL WIRING.

KEY NOTES (NEW WORK)

1. INSTALL NEW CEILING EXHAUST FANS AND ALL ASSOCIATED DUCTWORK, POWER AND CONTROL WIRING PER MANUFACTURER'S RECOMMENDATIONS. FAN CONTROLLED BY OCCUPANY SENSOR E FOR RESTROOM LIGHTING.
2. PROVIDE ARCHITECTURAL EXHAUST LOUVER WITH 1.36 SQ FT MINIMUM FREE AREA. PROVIDE CONTINUOUS SHEET METAL PLENUM CONNECTION TO LOUVER NECK COMPLETE WITH INSECT SCREEN.
3. PROVIDE ARCHITECTURAL OUTSIDE AIR INTAK LOUVER WITH 0.8 SQFT MINIMUM FREE AREA. PROVIDE CONTINUOUS SHEET METAL PLENUM CONNECTION TO LOUVER NECK COMPLETE WITH INSECT SCREEN AND A BAROMETRIC RELIEF DAMPER.
4. COORDINATE EXPOSED DUCT WITH OTHER TRADES. COLOR/FINISH SHALL BE COORDINATED WITH THE ARCHITECT.
5. ELECTRIC WALL HEATERS SHALL BE SURFACE MOUNTED. PROVIDE FACTORY MOUNTED TAMPER-PROOF THERMOSTAT.

21-DPR-ITB-291

Project Name and Location

Alcova
Heights Park
- Phase II

Restroom Renovation

Sheet Title

**FLOOR PLANS -
DEMOLITION/NEW
WORK**

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

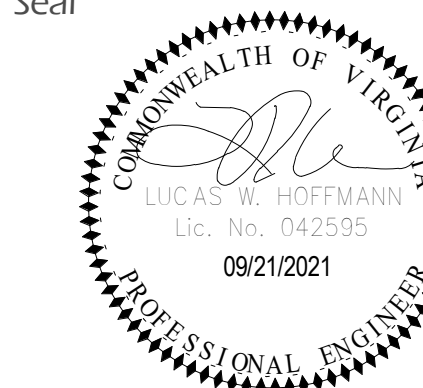
Revisions Date

Designed: JJ
Drawn: LWJ
Checked: LWJ

Filename:
Plotted:

Scale: AS INDICATED
Date: 09/21/21 (Bid Submission)

Seal

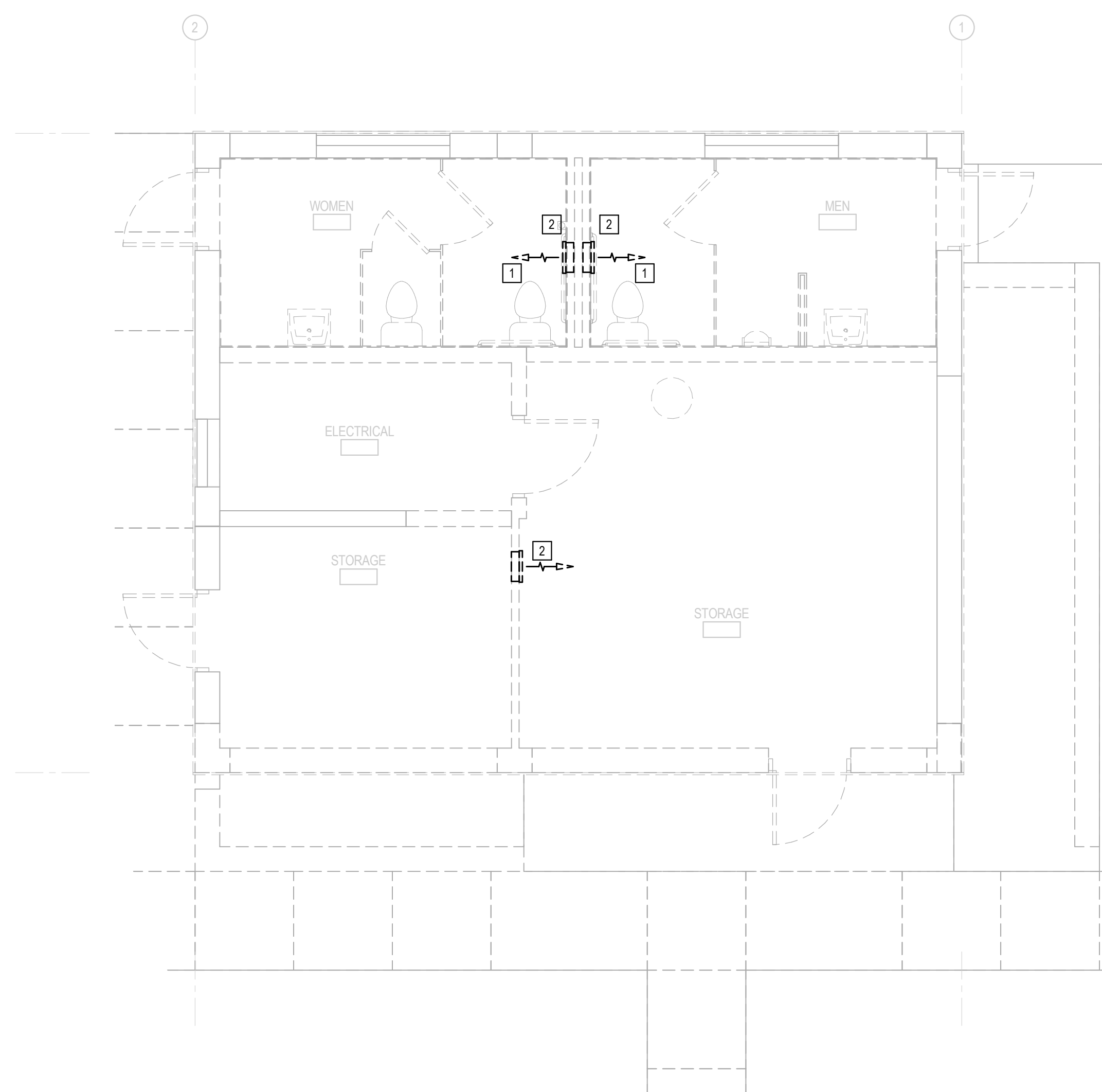


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

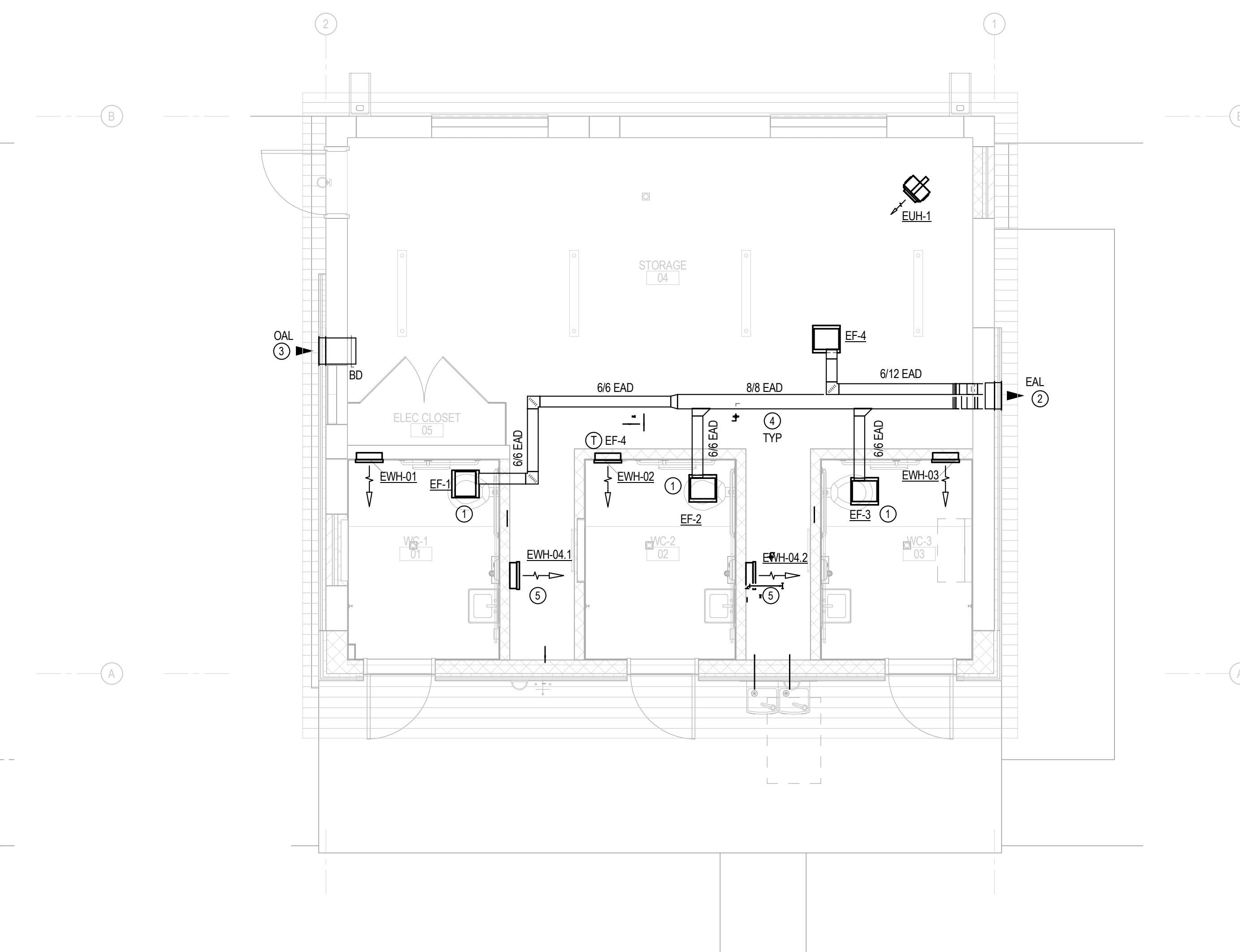
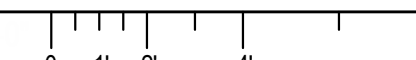
Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

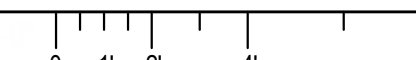
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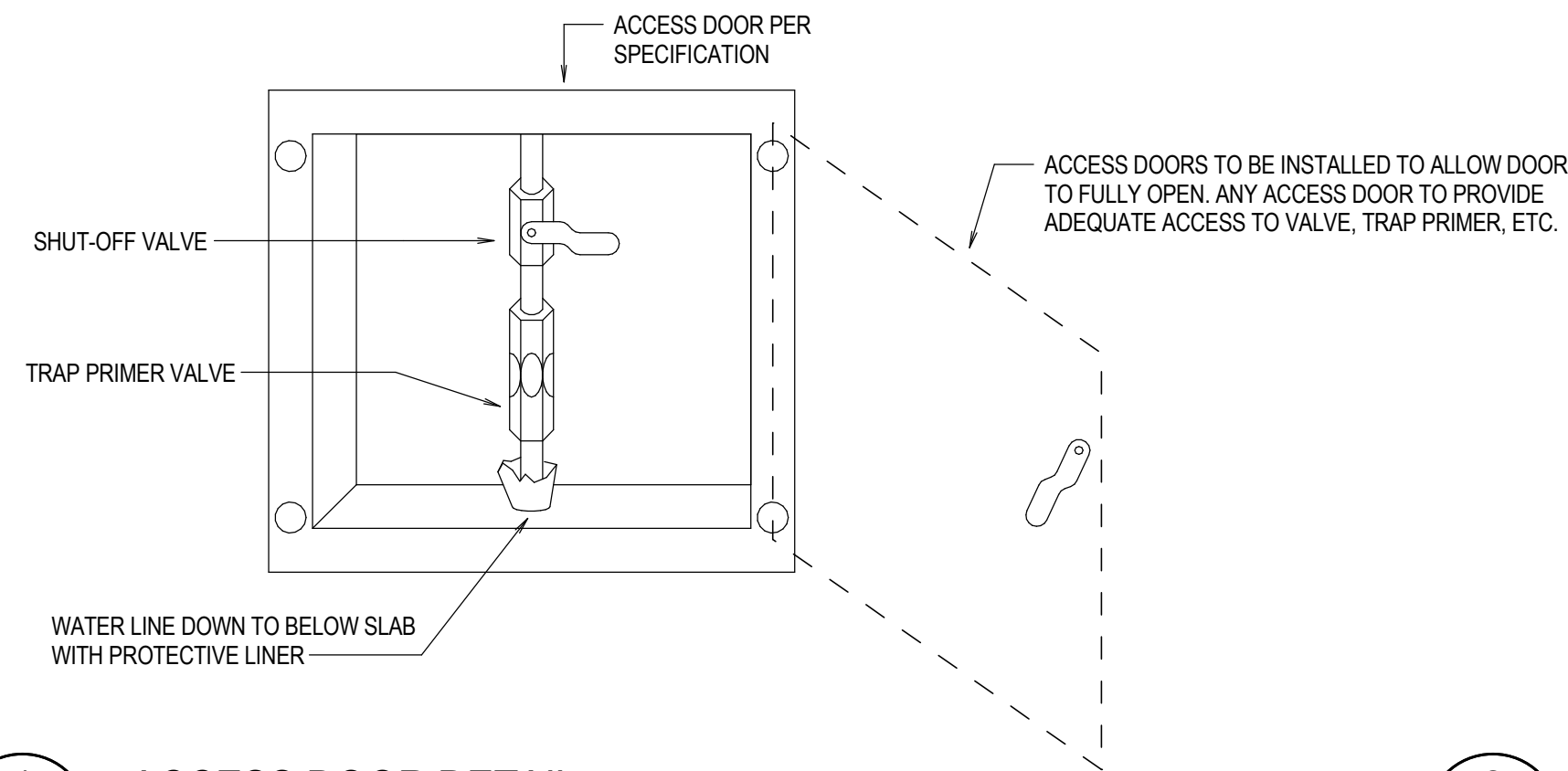


1 FLOOR PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



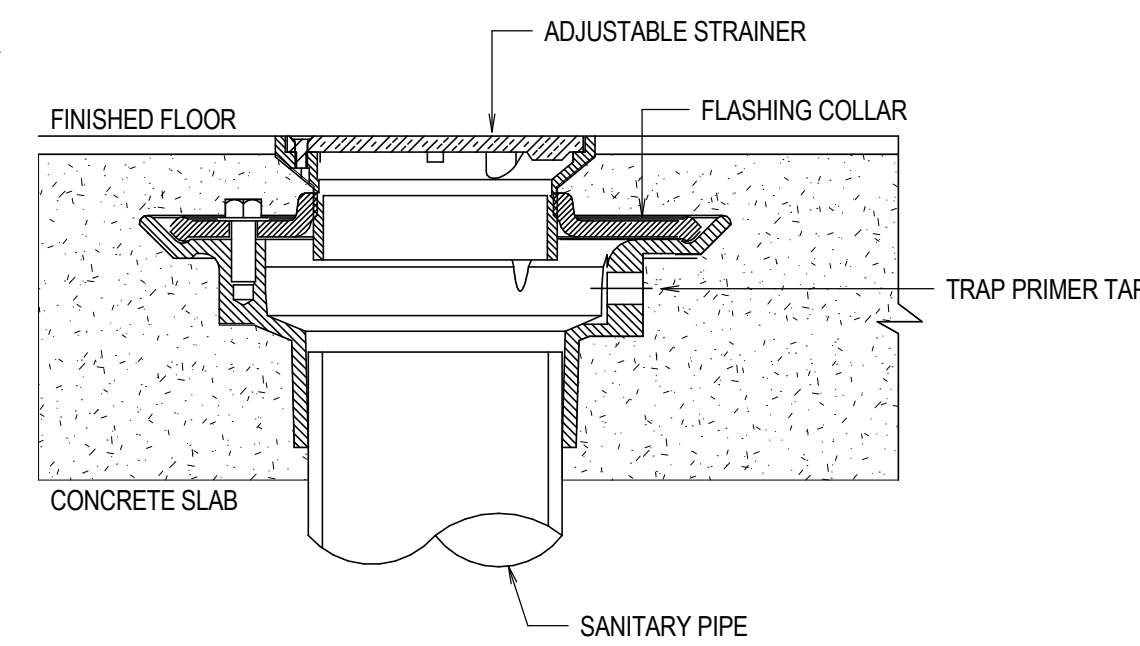
2 FLOOR PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



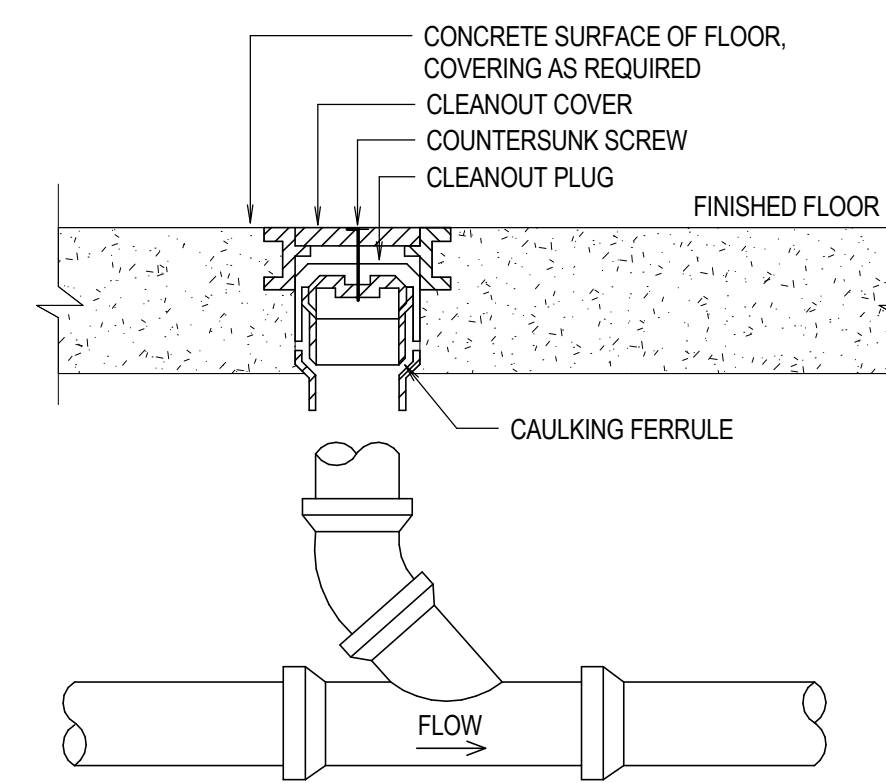


1 ACCESS DOOR DETAIL
SCALE: NONE

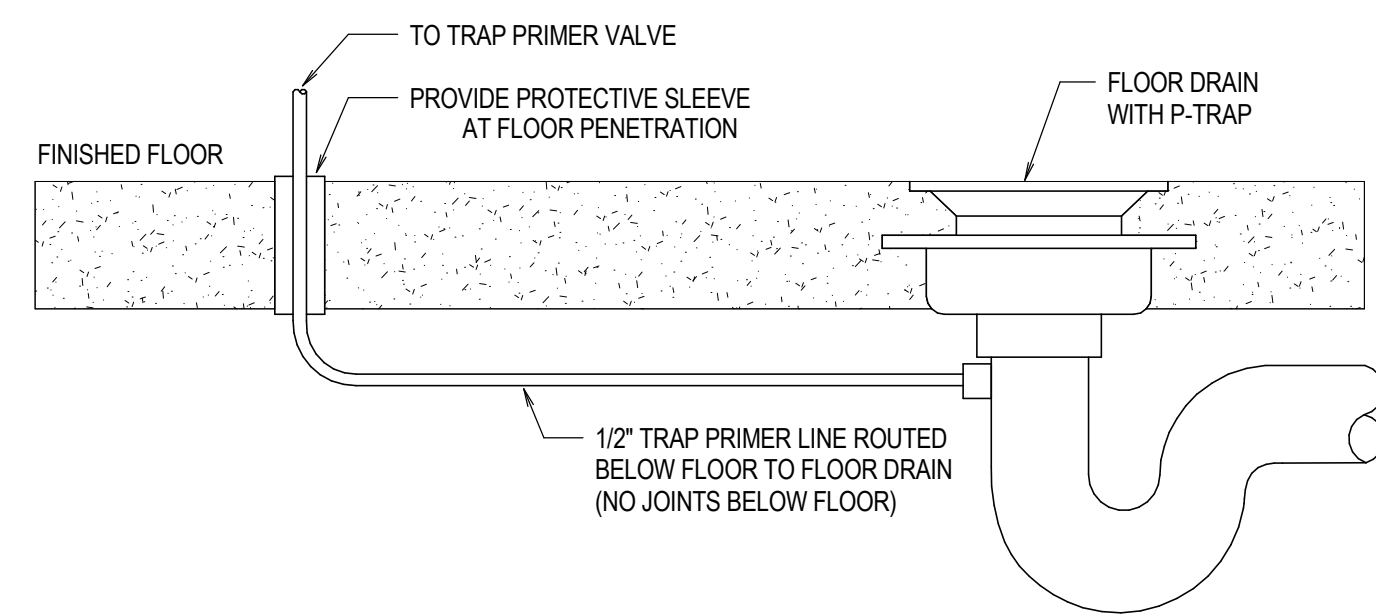
NOTES:
1. DETAIL IS SIMILAR FOR WATER HAMMER ARRESTOR ACCESS PANELS.



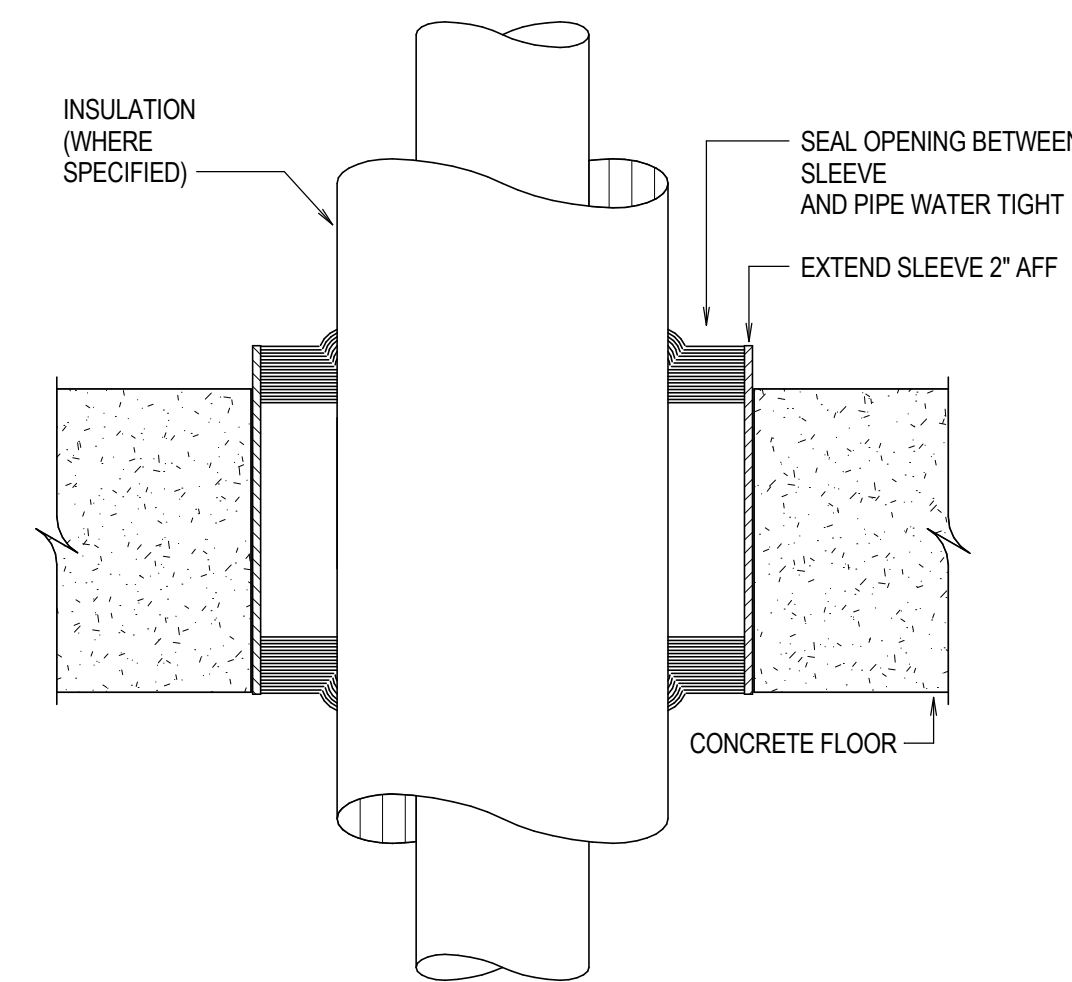
2 FLOOR DRAIN DETAIL
SCALE: NONE



3 FLOOR CLEAN OUT DETAIL
SCALE: NONE

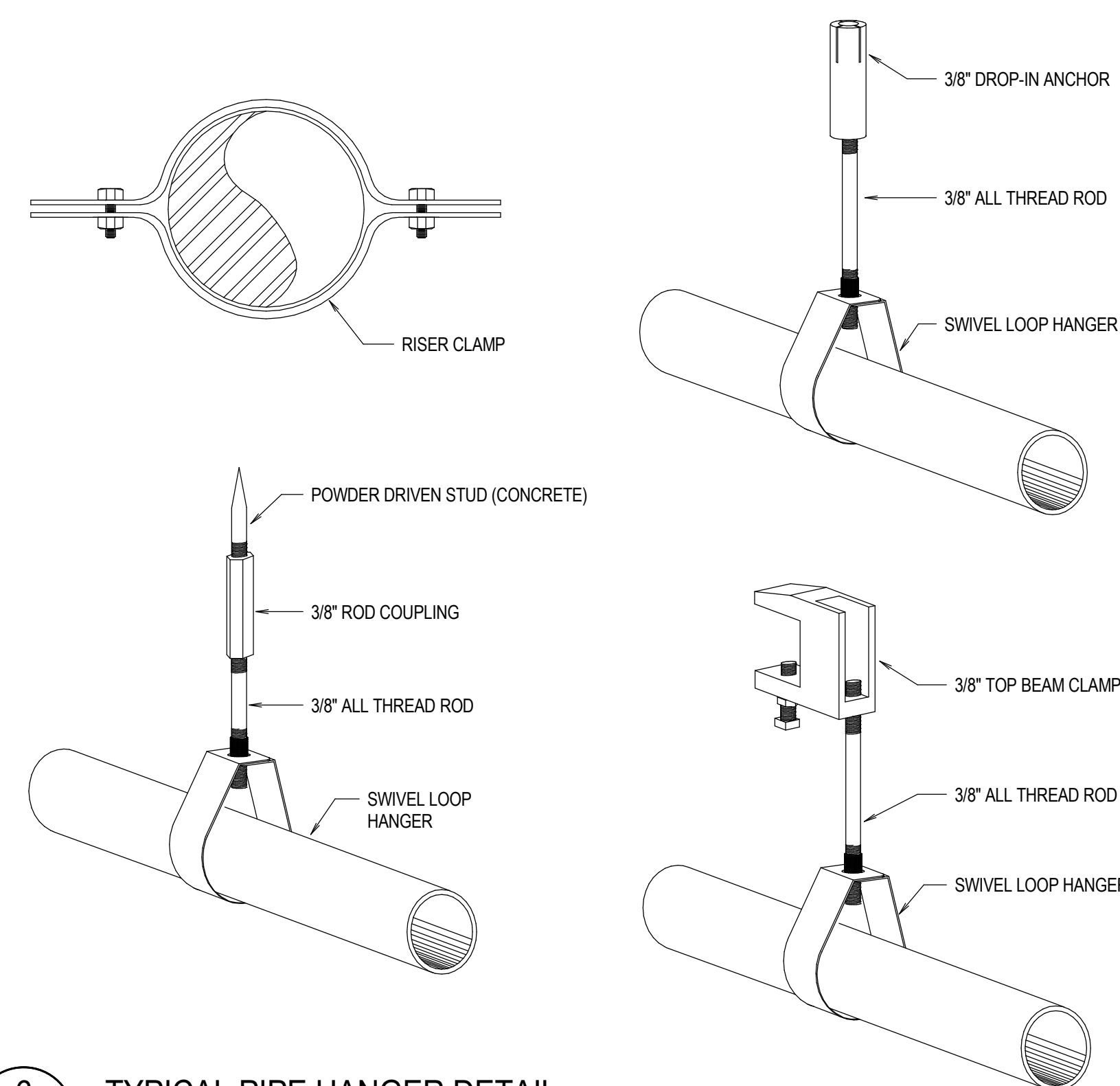


4 TRAP PRIMER LINE CONNECTION DETAIL
SCALE: NONE

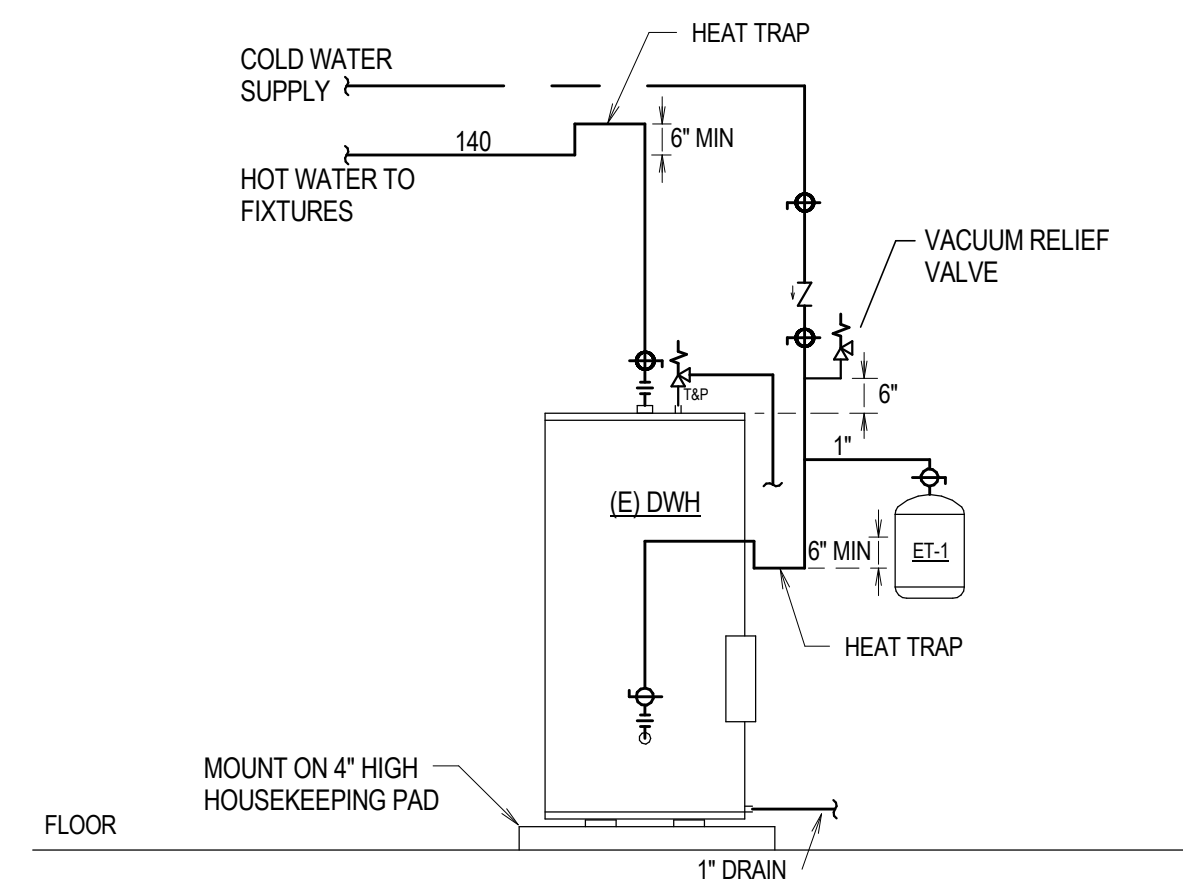


5 FLOOR PENETRATION DETAIL
SCALE: NONE

NOTE(S):
1. SIZE SLEEVE ONE SIZE LARGER THAN INSULATION / PIPE DIAMETER.



6 TYPICAL PIPE HANGER DETAIL
SCALE: NONE



NOTES:
1. ROUTE (E) DWH DRAIN TO NEAREST FLOOR DRAIN.
2. ROUTE PRESSURE & TEMPERATURE RELIEF VALVE DISCHARGES TO NEAREST FLOOR DRAIN.
3. SET WATER HEATER TEMPERATURE AT 140 DEG. F.

7 ELECTRIC WATER HEATER (E-DWH) INSTALLATION DETAIL
SCALE: NONE

GENERAL NOTES (NEW WORK)

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2015 AND IPC 2015.
- REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS OF ALL PLUMBING FIXTURES.
- UNDERGROUND WASTE PIPING SHALL BE MINIMUM SIZE OF 2".
- PENETRATIONS THRU FIRE RATED CEILINGS, FLOORS OR WALLS SHALL BE SEALED TO MAINTAIN FIRE RATING INTEGRITY. REFER TO ARCHITECTURAL DRAWINGS FOR FIRESTOPPING DETAILS AND PENETRATIONS THROUGH NON-FIRE RATED CEILINGS, FLOORS, AND WALLS.
- COORDINATE PLUMBING RISERS WITHIN WALLS WITH WALL CONSTRUCTION AND OTHER TRADES.
- ROUTE ALL PIPING ABOVE FINISHED CEILINGS, WITHIN WALLS OR BELOW FLOORS IN FINISHED AREAS. PIPING FOR PLUMBING SYSTEMS SHALL NOT BE INSTALLED EXPOSED WITHIN FINISHED SPACES, UNLESS OTHERWISE NOTED.
- IN GENERAL, ABOVE-FLOOR PLUMBING PIPING SHALL BE RUN AS HIGH AS POSSIBLE.
- THE PLUMBING CONTRACTOR SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION OF SYSTEMS AND COMMENCEMENT OF INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO, STRUCTURAL, ARCHITECTURAL, FIRE SPRINKLER, FIRE ALARM, HVAC, AND ELECTRICAL) AS IT AFFECTS THEIR WORK, AND AS THE PLUMBING CONTRACTOR'S WORK AFFECTS OTHER TRADES TO ENSURE THAT THE CONSTRUCTION DOCUMENTS ARE CLOSELY FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E PRIOR TO PROCEEDING FURTHER.
- THIS DESIGN IS BASED ON MANUFACTURERS AND MODELS INDICATED, AND IS INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS AND/OR SUPPORT FOR EQUIPMENT OR SYSTEMS SPECIFIED WITH RELATION TO THE BUILDING AND OTHER SYSTEMS. SEE SPECIFICATION SECTIONS FOR TECHNICAL REQUIREMENTS.
- SLOPE SANITARY, VENT, AND STORM PIPING PER IPC.
- PROVIDE WATER HAMMER ARRESTORS IN ALL BRANCH SUPPLY LINES SERVING WATER CLOSET AND URINAL FLUSH VALVES.
- LOCATE COMPONENTS REQUIRING ACCESS TO MINIMIZE THE USE OF ACCESS DOORS. WHERE SUCH COMPONENTS MUST BE INSTALLED IN CONCEALED LOCATIONS, PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL ALL ACCESS DOORS FOR ALL CONCEALED COMPONENTS, INCLUDING BUT NOT LIMITED TO, WATER HAMMER ARRESTORS, CLEANOUTS, TRAP PRIMERS, VALVES, ETC. ACCESS DOOR INSTALLATION SHALL BE COORDINATED WITH WALL CONSTRUCTION. WHERE ACCESS DOORS ARE IN MASONRY WALLS, THE WATER HAMMER ARRESTORS AND TRAP PRIMERS SHALL BE LOCATED IN SUCH A MANNER THAT THE ACCESS DOORS CAN BE INSTALLED IN A REGULAR MASONRY COURSE.

GENERAL NOTES (DEMO)

- DOCUMENTATION OF EXISTING SYSTEMS IS BASED ON ORIGINAL DRAWINGS AND CASUAL FIELD OBSERVATION.
- CERTAIN PLUMBING COMPONENTS ARE EMBEDDED BELOW OR WITHIN THE EXISTING STRUCTURE. AS MUCH AS POSSIBLE, THESE COMPONENTS ARE IDENTIFIED FROM ORIGINAL DRAWINGS AND CASUAL FIELD OBSERVATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE/IDENTIFY EMBEDDED COMPONENTS AS NECESSARY TO PERFORM THE WORK. THEY SHALL BE CUT FLUSH OR BEHIND WALL/FLOOR/CEILING/ROOF SURFACE AS REQUIRED FOR PATCHING OF FINISH, UNLESS NOTED OTHERWISE.
- WHERE PLUMBING SYSTEMS PENETRATE EXTERIOR WALLS/ROOF, CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING SUCH PENETRATIONS TO MATCH EXISTING.
- PRIOR TO BIDDING, THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS, AND TO VERIFY LOCATION, SIZE AND QUANTITY OF ITEMS TO BE REMOVED. SUBMITTAL OF A BID SHALL SIGNIFY WILLINGNESS TO COMPLY WITH THE DESIGN AND ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
- WHERE QUESTIONS OR DISCREPANCIES ARISE, THE A/E SHALL BE NOTIFIED IMMEDIATELY FOR RESOLUTION PRIOR TO PROCEEDING WITH THE WORK.

PLUMBING LEGEND

	POINT OF DISCONNECTION FOR DEMOLITION
	POINT OF CONNECTION NEW-TO-EXISTING
	EXISTING PIPING TO BE REMOVED
	EXISTING PIPING TO REMAIN
	PIPE UP
	PIPE DOWN
	BOTTOM PIPE TAP
	TOP PIPE TAP
	TOP OF MAIN
	DOMESTIC COLD WATER (CW)
	HOT WATER SUPPLY (XXX DENOTES TEMP)
	SANITARY WASTE (BLW FLR OR GRADE)
	SANITARY WASTE (ABV FLR OR GRADE)
	SANITARY VENT
	BALL VALVE
	WATER HAMMER ARRESTOR
	THERMOMETER
	TEMPERATURE & PRESSURE RELIEF VALVE
	CLEANOUT (FLOOR OR WALL)
	FLOOR DRAIN
	CAP

ABBREVIATIONS

A/E	ARCHITECT/ENGINEER
AAV	AIR ADMITTANCE VALVE
ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
BLW	BELOW
CW	COLD WATER (DOMESTIC)
DN	DOWN
DOM	DOMESTIC
FD	FLOOR DRAIN
FLR	FLOOR
GAL	GALLONS
HW	HOT WATER (DOMESTIC)
LAV	LAVATORY
PSI	POUNDS PER SQUARE INC
SAN	SANITARY
SQ.FT.	SQUARE FEET
SS	STAINLESS STEEL
TYP	TYPICAL
V	VENT
WC	WATER COOLER/WATER COLUMN/WATER CLOSET
WHA	WATER HAMMER ARRESTOR

ARLINGTON VIRGINIA

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21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II

Restroom Renovation

Sheet Title

LEGEND, DETAILS

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Designed: JJ
Drawn: LWH
Checked: LWH

Filename:
Plotted:

Scale: AS INDICATED
Date: 09/21/21 (Bid Submission)

Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: P000

22 0719 PIPE INSULATION SCHEDULE

SYSTEM	INSULATION			
	TYPE	PIPE SIZE, IN	THICKNESS, IN	JACKET
CW	GLASS FIBER, ELASTOMERIC	LESS THAN 1.1/2	1/2	VAPOR BARRIER
CW	GLASS FIBER, ELASTOMERIC	1.1/2 OR GREATER	1	VAPOR BARRIER
HW	GLASS FIBER, ELASTOMERIC	ALL	1	VAPOR BARRIER

22 1006 - PLUMBING PIPING SPECIALTIES SCHEDULE

MARK	DESCRIPTION	MINIMUM BRANCH PIPING SIZES				FLOW	MOUNTING / REMARKS	BASIS OF DESIGN
		CW	HW	SAN	V			
CO	FLOOR CLEANOUT	-	-	-	-	-	FLOOR, SAME SIZE AS SAN LINE, NICKEL BRONZE	WATTS CO200-R-6
ECO	EXTERIOR CLEANOUT	-	-	-	-	-	(NOTE 2)	WATTS CO-300-MF, CO-380
FD-1	FLOOR DRAIN, ROUND	-	-	3"	-	-	FLOOR, PROVIDE TRAP GUARD, NICKEL BRONZE VANDAL PROOF STRAINER	WATTS FD-100-A-6
WH-1	FREEZELESS WALL HYDRANT	3/4"	-	-	-	-	20" AFG, KEYED, RECESSED, FREEZELESS, CHROME, COORD WITH WALL ASSEMBLY - (NOTE 1)	WATTS HY-725
TMV-1	THERMOSTATIC MIXING VALVE (POINT OF USE)	1/2"	1/2"	-	-	0.25-4 GPM	INSTALL EXPOSED IN ACCESSIBLE LOCATION BELOW SINK, SET AT 109°F, ASSE 1070 (NOTE 4)	LAWLER TMM-1070
TP-1	TRAP PRIMER VALVE	1/2"	-	-	-	-	PROVIDE ACCESS BOX AND DISTRIBUTION AS NEEDED (NOTE 3)	PPP PRO1-500-DU-4

NOTES:
 1. PROVIDE ACCESSIBLE ISOLATION VALLY WITHIN BUILDING.
 2. MOUNT ACCESS HOUSING FLUSH WITH FINISHED SURFACE.
 3. COORDINATE TRAP PRIMER CONNECTION TO TRAP.
 4. COORDINATE FINAL CONNECTIONS TO EQUIPMENT SUPPLIED.

22 4000 - PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MINIMUM BRANCH PIPING SIZES				FLOW	MOUNTING / REMARKS	BASIS OF DESIGN
		CW	HW	SAN	V			
WC-1	WATER CLOSET, WALL MOUNT, ACCESSIBLE	1"	-	4"	2"	1.28 GPF	RIM 17" AFF, RECESSED SENSOR AND CONCEALED FLUSHOMETER/PIPING, SEAT, CARRIER - (NOTE 3)	SLOAN WETS-2460.1320, CHURCH 9500C
L-1	LAVATORY, ACCESSIBLE	-	1/2"	1-1/2"	1-1/2"	0.5 GPM	WALL, RIM 34" AFF, GRID STRAINER, SENSOR FAUCET, FLR CARRIER - (NOTES 3,4)	SLOAN SS-3103, ETF-610, WATTS WCA-411
DF-1	DRINKING FOUNTAIN, ACCESSIBLE	1/2"	-	1-1/2"	1-1/2"	-	WALL, BI-LEVEL, LOWER SPOUT OUTLET 33" AFF, MECHANICALLY-ACTIVATED BUBBLERS, HIGH/LOW, EXTERIOR, NON-REFRIGERATED, NON-FILTERED, FREEZELESS	ELKAY VRCTLFRDDSC

NOTES:
 1. ALL FIXTURES - COORDINATE FINAL CONNECTIONS TO EQUIPMENT SUPPLIED.
 2. ALL FIXTURES - PROVIDE INTERNAL CLEANOUT IN ALL ACCESSIBLE TRAPS.
 3. COORDINATE CARRIER INSTALLATION WITH WALL CONSTRUCTION.
 4. PROVIDE ASSE 1070 COMPLIANT TMV-1.

HOT WATER SUPPLY REQUIREMENTS (E)DWH

Proposed Equipment	# of items	GPH	GPH
Lavatory sinks *	3	x 6	= 18 GPH
Facility Peak Demand			18 GPH

Required Hourly Demand/Recovery Rate (40% of Facility Peak Demand) ** = 7.2 GPH
 Required Storage (100% of Hourly Demand) ** = 7.2 GPH

Existing Water Heater Size: 40 Gallons of Storage & 9 KW (36 GPH of Recovery)

* Based on low-flow (0.5 GPM) faucets

** Based on 2015 ASHRAE Handbook

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21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II

Restroom Renovation

Sheet Title

SCHEDULES

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Design Unit Supervisor

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ARLINGTON COUNTY, VIRGINIA
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Alcova Heights Park - Phase II - Restrooms Renovation
 901 S George Mason Dr.
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21-DPR-ITB-291

Project Name and Location

Alcova
Heights Park
- Phase II

Restroom Renovation

Sheet Title

FLOOR PLANS AND RISER
DIAGRAMS -
DEMOLITION/NEW
WORK

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

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GENERAL NOTES

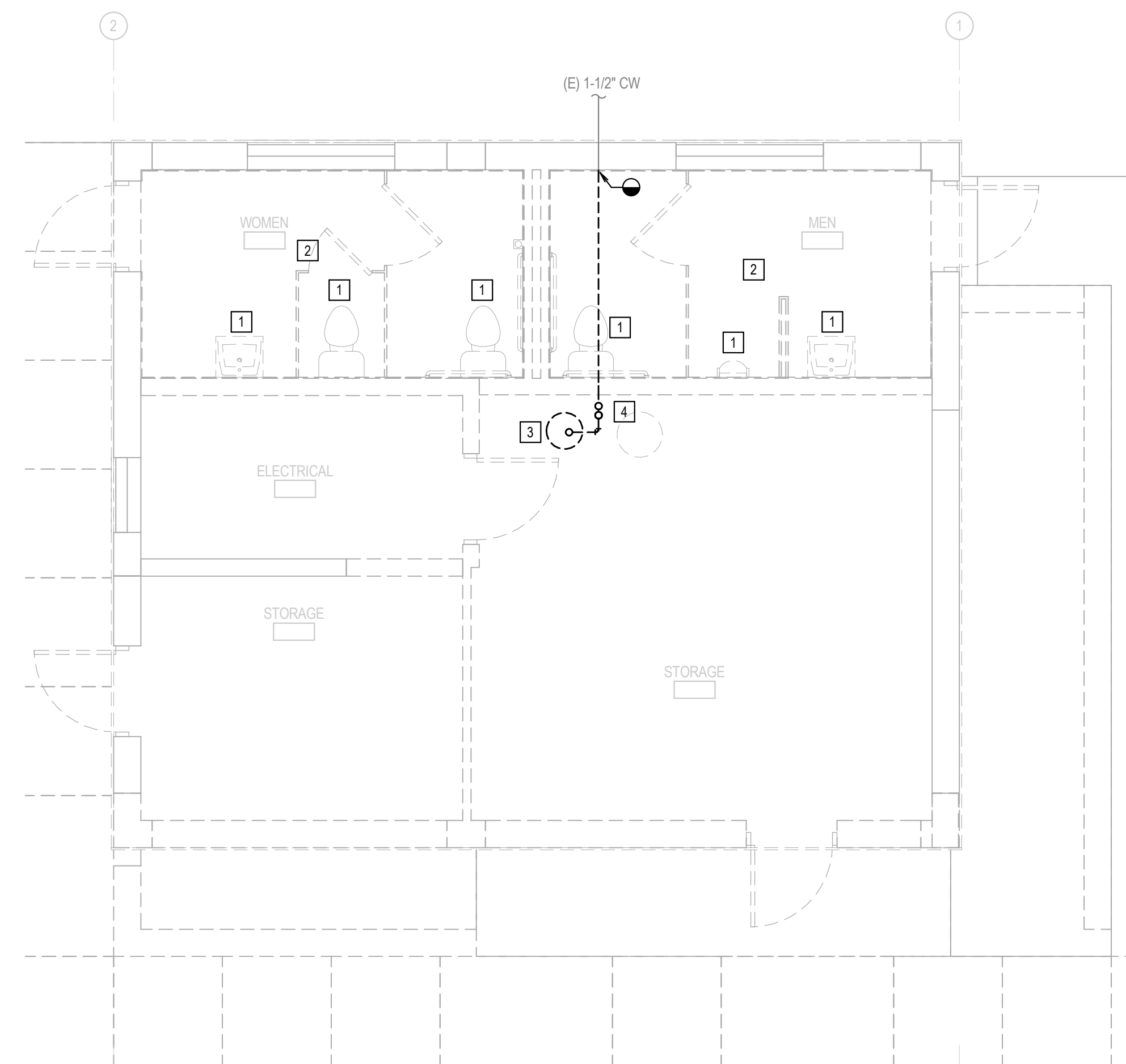
- REMOVE ALL EXISTING ABANDONED PIPING WITHIN THE RENOVATED SPACE. PATCH AND REPAIR FLOOR SLAB / WALLS AT THE POINT OF DEMOLITION. REFER TO ARCHITECTURAL DETAILS AND SPECIFICATIONS FOR MORE INFORMATION.

KEY NOTES (DEMO)

- REMOVE EXISTING PLUMBING FIXTURE. REMOVE ALL ASSOCIATED SANITARY, VENT AND WATER PIPES AND CAP AT THE NEAREST MAINS. SANITARY PIPES SHALL BE CONNECTED IN SUCH A WAY TO AVOID DEAD-LEG SITUATION.
- REMOVE EXISTING FLOOR DRAIN. REMOVE AND CAP ALL ASSOCIATED SANITARY AND VENT PIPING AT THE NEAREST MAINS.
- REMOVE AND RELOCATE EXISTING WATER HEATER AND ASSOCIATED DISCONNECT SWITCH. REFER TO NEW WORK PLANS FOR NEW LOCATION.
- REMOVED EXISTING 1-1/2" INCOMING WATER SERVICE SHUT-OFF VALVE. PREPARE TO RELOCATE TO EXTERIOR WALL PER NEW LAYOUT. FIELD VERIFY EXISTING ROUTING OF PIPING AND COORDINATE NEW LOCATION.

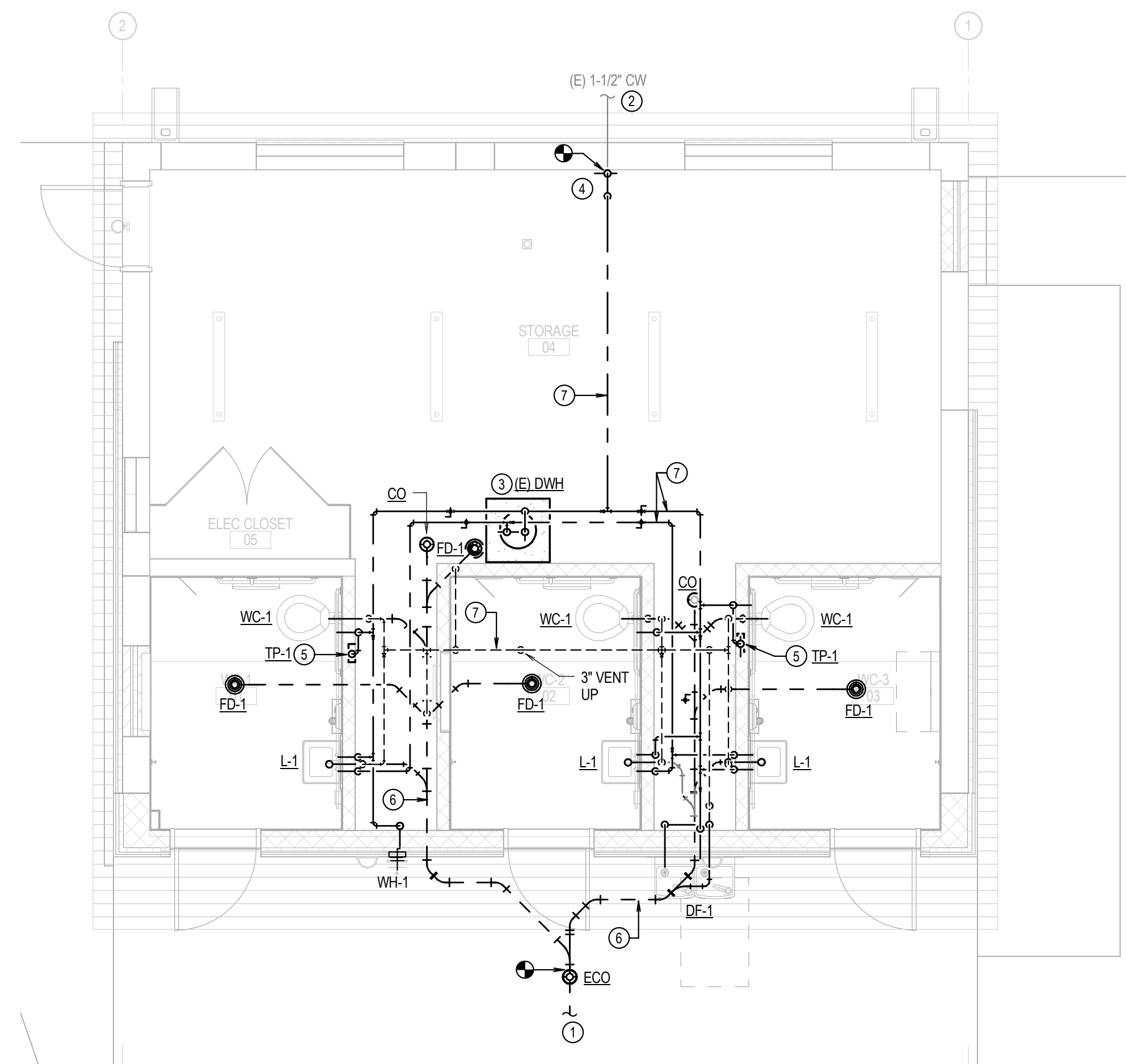
KEY NOTES (NEW WORK)

- FIELD VERIFY EXACT INSTALLATION LOCATION. INVERT ELEVATION AND CONNECT TO EXISTING SANITARY. SEE CIVIL DRAWINGS FOR CONTINUATION.
- CONNECT TO EXISTING 1-1/2" WATER METER. SEE CIVIL DRAWINGS FOR CONTINUATION.
- RELOCATED EXISTING ELECTRIC WATER HEATER INSTALLED ON HOUSEKEEPING PAD AND DISCONNECT SWITCH. PROVIDE A NEW 2.1 GALLONS EXPANSION TANK (ET-1). MODEL SHALL BE WESSELS T-5 OR APPROVED EQUAL. REFER TO DETAIL 7 ON P000.
- PROVIDE SHUT-OFF VALVE AT 1'-0" A.F.F. ON INCOMING WATER SERVICE. PROVIDE 1-1/2" WATTS MODEL 25AUB PRESSURE REDUCING VALVE ON INCOMING WATER SERVICE.
- PROVIDE TRAP PRIMER VALVE (TP-1) IN WALL. INSTALL ALL ASSOCIATED PIPING AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. REFER TO DETAIL 1/P000 AND SCHEDULES FOR MORE INFORMATION.
- PIPE ROUTED BELOW FLOOR SLAB.
- PIPE ROUTED IN CEILING.



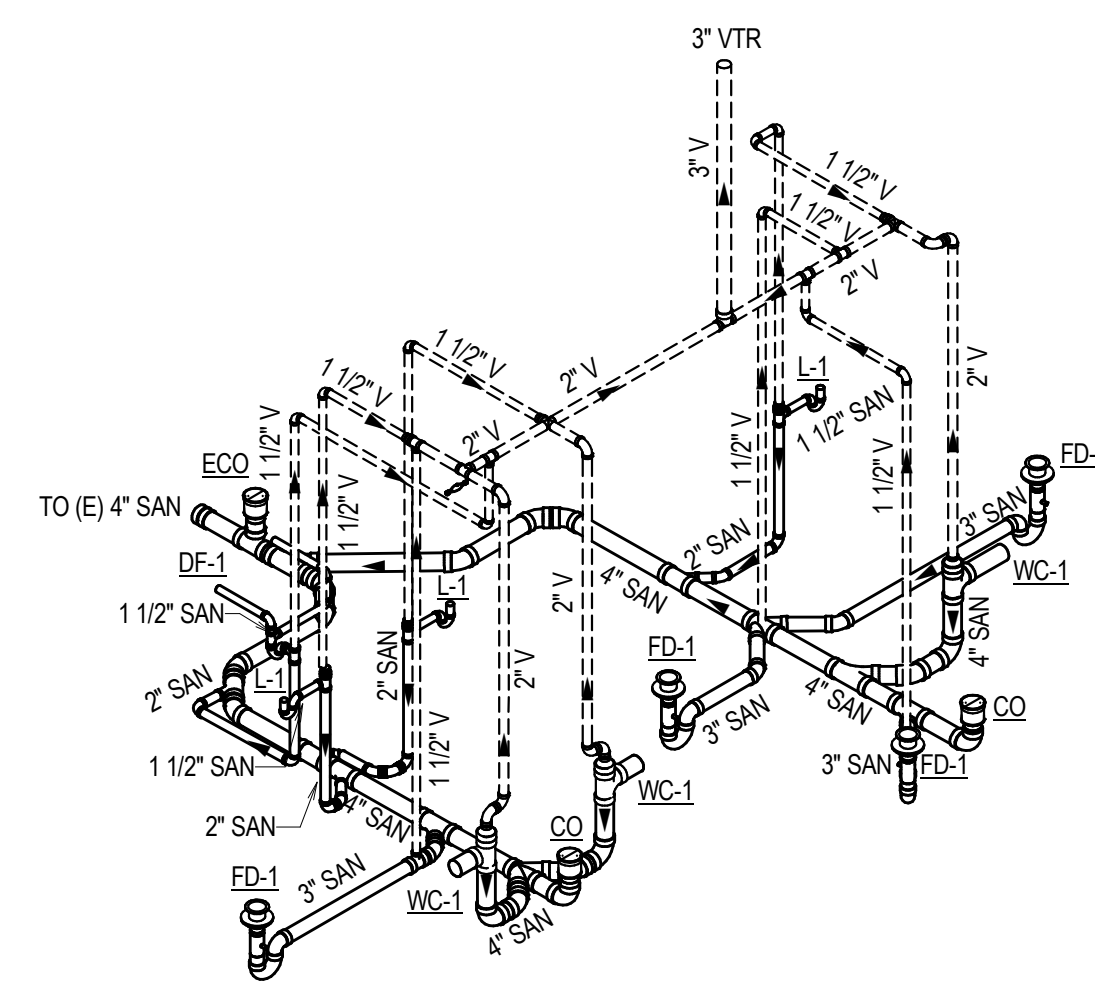
1 FLOOR PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"



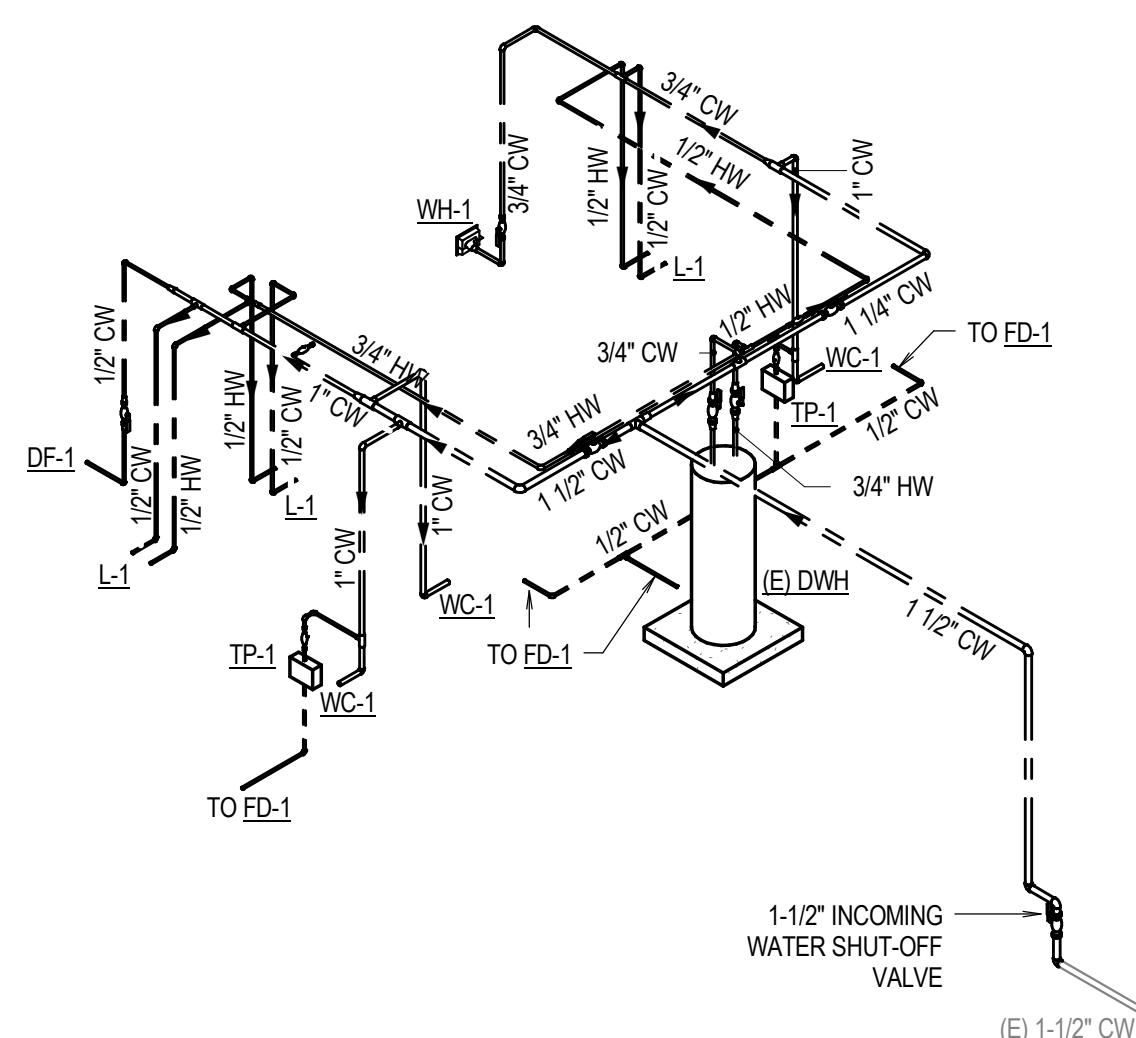
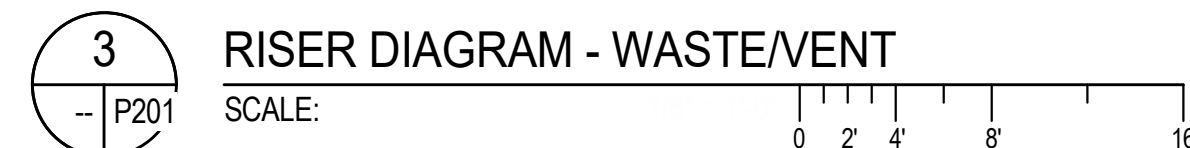
2 FLOOR PLAN - NEW WORK

SCALE: 1/4" = 1'-0"



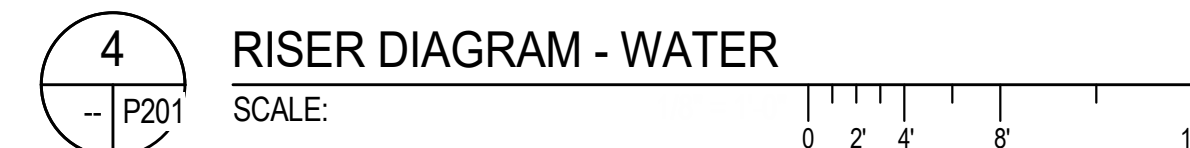
3 RISER DIAGRAM - WASTE/VENT

SCALE:



4 RISER DIAGRAM - WATER

SCALE:



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ELECTRICAL LEGEND

ABBREVIATIONS

GENERAL NOTES (NEW WORK)

CONDUIT SYMBOLS

○ CONDUIT OR CABLE UP

● CONDUIT OR CABLE DOWN

↪ CIRCUIT HOMERUN

⤴ SWITCHED CIRCUIT LEG (LIGHTING)

⤵ UNSWITCHED CIRCUIT LEG (LIGHTING)

--- CONDUIT UNDERGROUND OR UNDERSLAB

⚡ BREAK

⏏ GROUNDING CONNECTION

WIRING DEVICE SYMBOLS

Ⓢ WALL SWITCH, AT 48" AFF UNO. SUBSCRIPTS INDICATE THE FOLLOWING: (NONE) SINGLE POLE K KEVED

Ⓢ CEILING MOUNTED OCCUPANCY SENSOR. SUBSCRIPTS INDICATE THE FOLLOWING:

☒ ROOF MOUNTED PHOTOCELL

Ⓢ DUPLEX RECEPTACLE AT 18" AFF OR GRADE, UNO. SUBSCRIPTS INDICATE THE FOLLOWING: GF GROUND FAULT CIRCUIT INTERRUPTER S SURFACE MOUNTED WP WEATHERPROOF AND GFCI TYPE

Ⓢ DUPLEX RECEPTACLE MOUNTED ABOVE BACKSPLASH, 2" FROM TOP OF BACKSPLASH TO BOTTOM EDGE OF FACEPLATE.

POWER DISTRIBUTION

▭ PANELBOARD, SURFACE MOUNTED, 120/240V

▭ DASHED LINES INDICATE REQUIRED CLEARANCES AROUND ELECTRICAL EQPT

○ JUNCTION BOX

○ EQUIPMENT CONNECTION.

⏏ DISCONNECT SWITCH
NF NON FUSED
F.# FUSED, # INDICATES FUSE SIZE
CB,# CIRCUIT BREAKER, # INDICATES TRIP

Ⓢ METER

LIGHT FIXTURES

▭ WALL MOUNTED FIXTURES

⊙ WALL MOUNTED EXTERIOR LIGHT FIXTURE

▭ 1' X 4' LIGHT FIXTURE

A AMPERE

AFF ABOVE FINISHED FLOOR

AUX AUXILIARY

AWG AMERICAN WIRE GAUGE

AE ARCHITECT/ENGINEER

BLDG BUILDING

BRKR BREAKER

CKT CIRCUIT

CLG CEILING

CT CURRENT TRANSFORMER

CTR CENTER

CTRL CONTROL

CU COPPER

DIA DIAMETER

DISC DISCONNECT

DIV DIVISION

DN DOWN

DWG DRAWING

DWH DOMESTIC WATER HEATER

EC ELECTRICAL CONTRACTOR

EF EXHAUST FAN

EGC EQUIPMENT GROUNDING CONDUCTOR

ELEC ELECTRIC

EMT ELECTRIC METALLIC TUBING

EQPT EQUIPMENT

EUH ELECTRIC UNIT HEATER

FLR FLOOR

FT FOOT FEET

GEC GROUNDING ELECTRODE CONDUCTOR

GFCI GROUND FAULT CIRCUIT INTERRUPTER

GND GROUND

HVAC HEATING, VENTILATION, AIR CONDITIONING

HERTZ

JB JUNCTION BOX

KAIC 1,000 AMPERE INTERRUPTING CURRENT THOUSAND CIRCULAR MILS

KCMIL KILOWATT

KVA KILOVOLT AMPERE

LTG LIGHTING

LVS LIGHTS

LV LOW VOLTAGE

MAX MAXIMUM

MB MAIN BREAKER

MFR MANUFACTURER

MH MOUNTING HEIGHT (AFF UNO)

MIN MINIMUM

MLO MAIN LUGS ONLY

MTD MOUNTED

N NEUTRAL

NEMA NATIONAL ELECTRICAL MFRS ASSOCIATION

NFPA NATIONAL FIRE PROTECTION AGENCY

NTS NOT TO SCALE

OCPD OVER CURRENT PROTECTIVE DEVICE

P POLE

PH PHASE

PNL PANEL

PWR POWER

QTY QUANTITY

REC RECEPTACLE

REQD REQUIRED

RM ROOM

SE SERVICE ENTRANCE

SF SQUARE FEET

SQ SQUARE

SURF SURFACE

THRU THROUGH

TYP TYPICAL

UG UNDERGROUND

UL UNDERWRITER LABORATORIES

UNO UNLESS NOTED OTHERWISE

V VOLTS

VUSBC VIRGINIA UNIFORM STATEWIDE BUILDING CODE

W WATTS

WP WEATHERPROOF

WTR WATER

XFMR TRANSFORMER

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH VUSBC 2015, 2014 NEC.
- WORK SHALL COMPLY WITH ANSI/ASME A17.1 AND THE AMERICANS WITH DISABILITIES ACT, ASAD, SEPTEMBER 15, 2010.
- WHERE DIGGING IS REQUIRED, CONTACT MISS UTILITY AT 811, 1-800-552-7001 OR HTTP://WWW.MISSUTILITYOFVIRGINIA.COM NO LESS THAN 72 HOURS PRIOR TO EXCAVATION. DO NOT DISTURB SOIL UNTIL DIG TICKET HAS BEEN PROCESSED
- COORDINATE ALL WORK WITH THE CONSTRUCTION COMPLETION SCHEDULE SPECIFIED FOR THE PROJECT AND WITH ALL OTHER TRADES TO ENSURE THAT PROJECT IS COMPLETED ON SCHEDULE.
- PAY FOR AND OBTAIN ALL PERMITS UPON COMPLETION OF WORK. PRESENT THE OWNER WITH A CERTIFICATE FOR FINAL INSPECTION FROM THE LOCAL AUTHORITY.
- IN THE PANELBOARD SCHEDULES, THE ROOM NUMBER INDICATES THE LOCATION ON THE DRAWING OF THE FIRST ITEM TO BE ENERGIZED BY THE CIRCUIT. FINAL PANEL DIRECTORIES SHALL REFLECT ALL FINAL ROOM NUMBERS FOR LOADS SERVED.
- MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED, ARE TO CENTER LINE OF EQUIPMENT, UNLESS NOTED OTHERWISE.
- ALL CND AND WIRING SHALL BE RUN CONCEALED ABOVE FINISHED CEILINGS, WITHIN WALLS, OR BELOW FLOORS IN FINISHED SPACES.
- PLACE JUNCTION BOXES IN ACCESSIBLE LOCATIONS ABOVE CEILINGS.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES. REFER TO ARCHITECTURAL ELEVATIONS FOR SPECIFIC LOCATIONS OF WALL-MOUNTED DEVICES AND FIXTURES. COORDINATE INSTALLATION IN THE FIELD WITH AND WALLS.
- ELECTRICAL CONNECTIONS INDICATED FOR PLUMBING AND MECHANICAL EQUIPMENT ARE BASED ON THE SCHEDULED BASIS-OF-DESIGN EQUIPMENT. CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS AS MAY BE REQUIRED TO ACCOMMODATE ACTUAL FIELD CONDITIONS DURING CONSTRUCTION FOR THE EQUIPMENT ACTUALLY PROVIDED.
- PROVIDE FUSES IN ALL FUSED SWITCHES. FUSE RATINGS SHALL BE IN ACCORDANCE WITH EQPT MANUFACTURER'S RECOMMENDATIONS.
- CONNECT ALL HVAC, PLUMBING AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT. CHECK EQUIPMENT SHOP DRAWINGS AND COORDINATE WITH HVAC, PLUMBING AND ALL OTHER EQUIPMENT CONTRACTORS FOR DISCONNECT SWITCH, CONDUIT, WIRING REQUIREMENTS, FUSE AND BREAKER SIZES AND VOLTAGE REQUIREMENTS. PROVIDE CONNECTION TO ACTUAL EQUIPMENT USED ON THIS PROJECT AT NO ADDITIONAL COST TO THE OWNER.
- ELECTRICAL CONTRACTOR(S) SHALL COORDINATE THEIR WORK WITH ALL TRADES PRIOR TO FABRICATION OF SYSTEMS AND COMMENCEMENT OF INSTALLATION. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO REVIEW THE WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO STRUCTURAL, ARCHITECTURAL, CIVIL, MECHANICAL, CONTROLS, PLUMBING, AS IT AFFECTS OTHER TRADES, TO BE FOLLOWED. WHERE DISCREPANCIES ARISE, THEY SHALL BE REFERRED TO THE A/E FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
- THE DESIGN IS BASED ON MANUFACTURERS AND MODELS INDICATED AND IS INTENDED TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS, AND/OR SUPPORT FOR EQUIPMENT OR SYSTEMS WITH RELATION TO THE OTHER BUILDING/SYSTEMS. SEE SPECIFICATION SECTIONS FOR TECHNICAL REQUIREMENTS.
- REFER TO ARCHITECTURAL FP DRAWINGS FOR ADDITIONAL INFORMATION REGARDING RATED WALLS, CONSTRUCTION TYPE AND UL REFERENCES.

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Alcova Heights Park - Phase II

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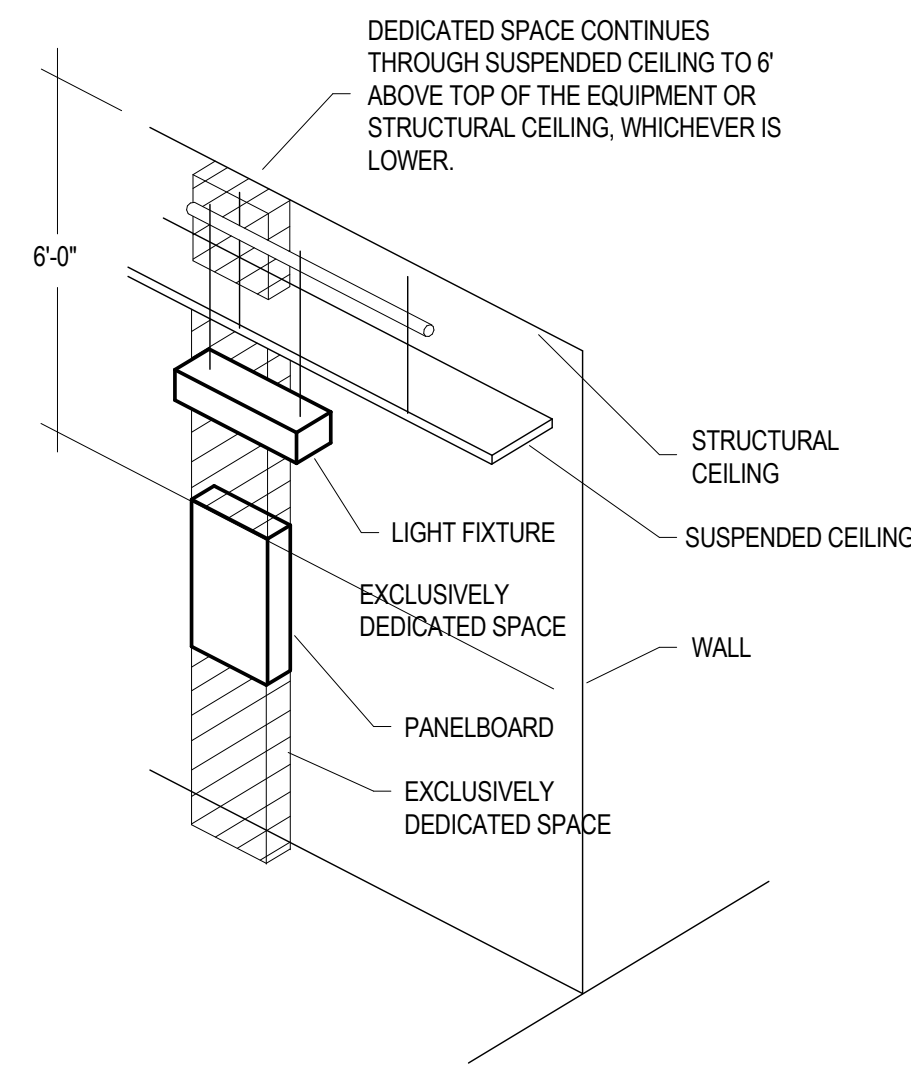
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ARLINGTON COUNTY, VIRGINIA
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Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED SHEET: E000



NOTE:
THIS FIGURE ILLUSTRATES THE ADDITIONAL EXCLUSIVELY DEDICATED SPACE REQUIRED OVER AND UNDER PANELBOARDS FOR CABLES, RACEWAYS, ETC. TO AND FROM PANELBOARDS REQUIRED BY SECTION 110-26 (f) OF THE NATIONAL ELECTRICAL CODE.

PANELBOARDS

TABLE "A" - WORKING CLEARANCES			
VOLTAGE TO GROUND, NOMINAL	CONDITION:		
	1	2	3
0-150 151-600	MIN. CLEAR DISTANCE (FT)		
	3	3	3
	3	3.5	4

WHERE THE CONDITIONS ARE AS FOLLOWS:

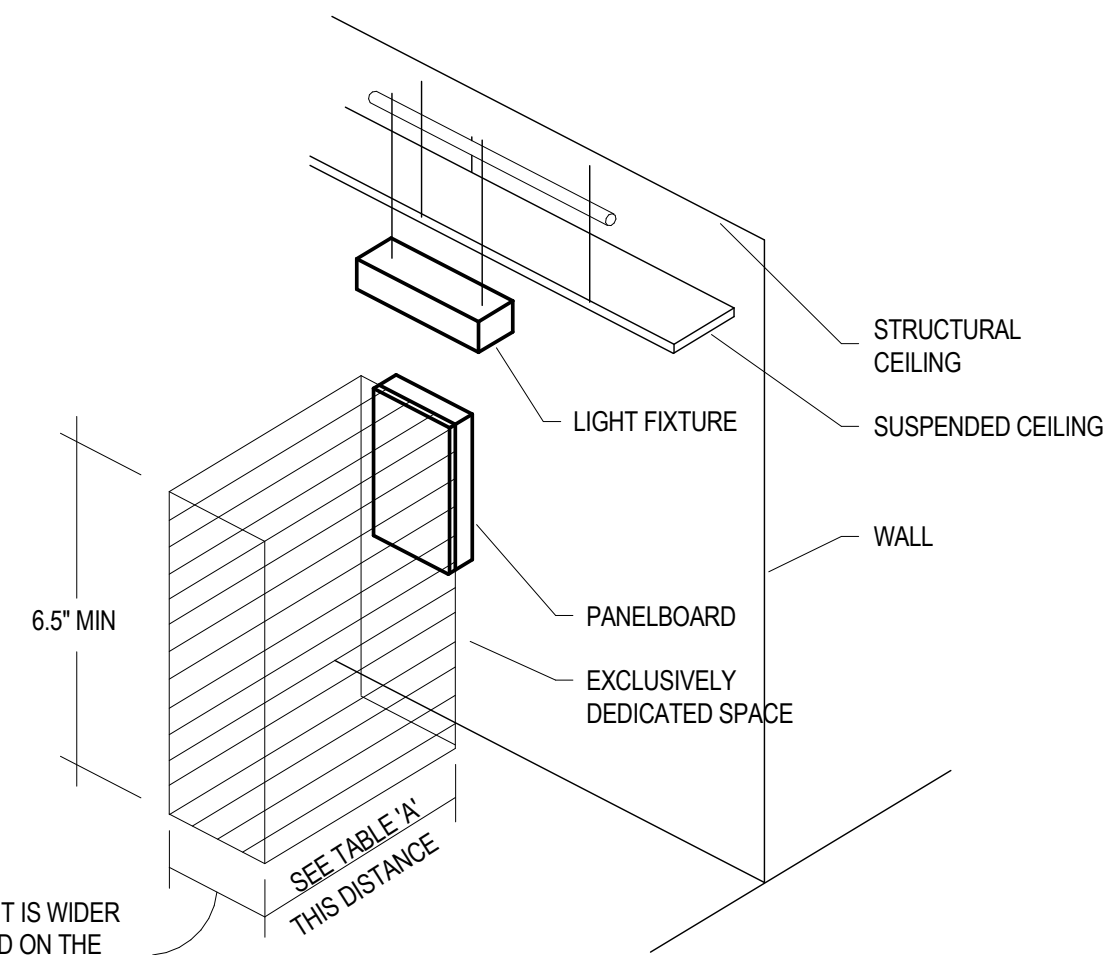
1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300 VOLTS SHALL NOT BE CONSIDERED LIVE PARTS.

2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.

3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

30" OR WIDTH OF EQUIPMENT IF EQUIPMENT IS WIDER THAN 30" DOES NOT HAVE TO BE CENTERED ON THE EQUIPMENT BUT AT LEAST EVEN WITH ONE EDGE. EQUIPMENT DOOR SHALL BE ABLE TO OPEN AT LEAST 90 DEG.

NOTE: THIS INCLUDES BUT IS NOT LIMITED TO PANELBOARDS, SAFETY SWITCHES, MOTOR STARTERS, JUNCTION BOXES AND OTHER ELECTRIC EQUIPMENT.



NOTE:
THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF ELECTRIC EQUIPMENT REQUIRED BY SECTION 110-26 (a) OF THE NATIONAL ELECTRICAL CODE.

ALL ELECTRICAL EQUIPMENT

3
- E001

POWER RISER DIAGRAMS AND SCHEDULES

SCALE: NONE

1
- E001

POWER RISER DIAGRAM - DEMOLITION

SCALE: NONE

KEY NOTES (DEMO)

- EXISTING SERVICE HEAD AND SERVICE ENTRANCE CONDUCTOR TO REMAIN. DE-ENERGIZE AND PROVIDE TEMPORARY SUPPORT DURING CONSTRUCTION. COORDINATE EXACT REQUIREMENTS WITH UTILITY POWER COMPANY.
- EXISTING METER TO REMAIN.
- EXISTING SERVICE GROUNDING TO REMAIN AND BE RE-USED.
- REMOVE EXISTING PANEL AND ITS ASSOCIATED BRANCH CIRCUITS.
- REMOVE EXISTING BBC CONTACTOR AND ITS ASSOCIATED WIRING.
- REMOVE EXISTING LOAD CENTER AND ITS ASSOCIATED WIRING.
- REMOVE EXISTING CONTROL PANEL.
- REMOVE EXISTING FEEDER.

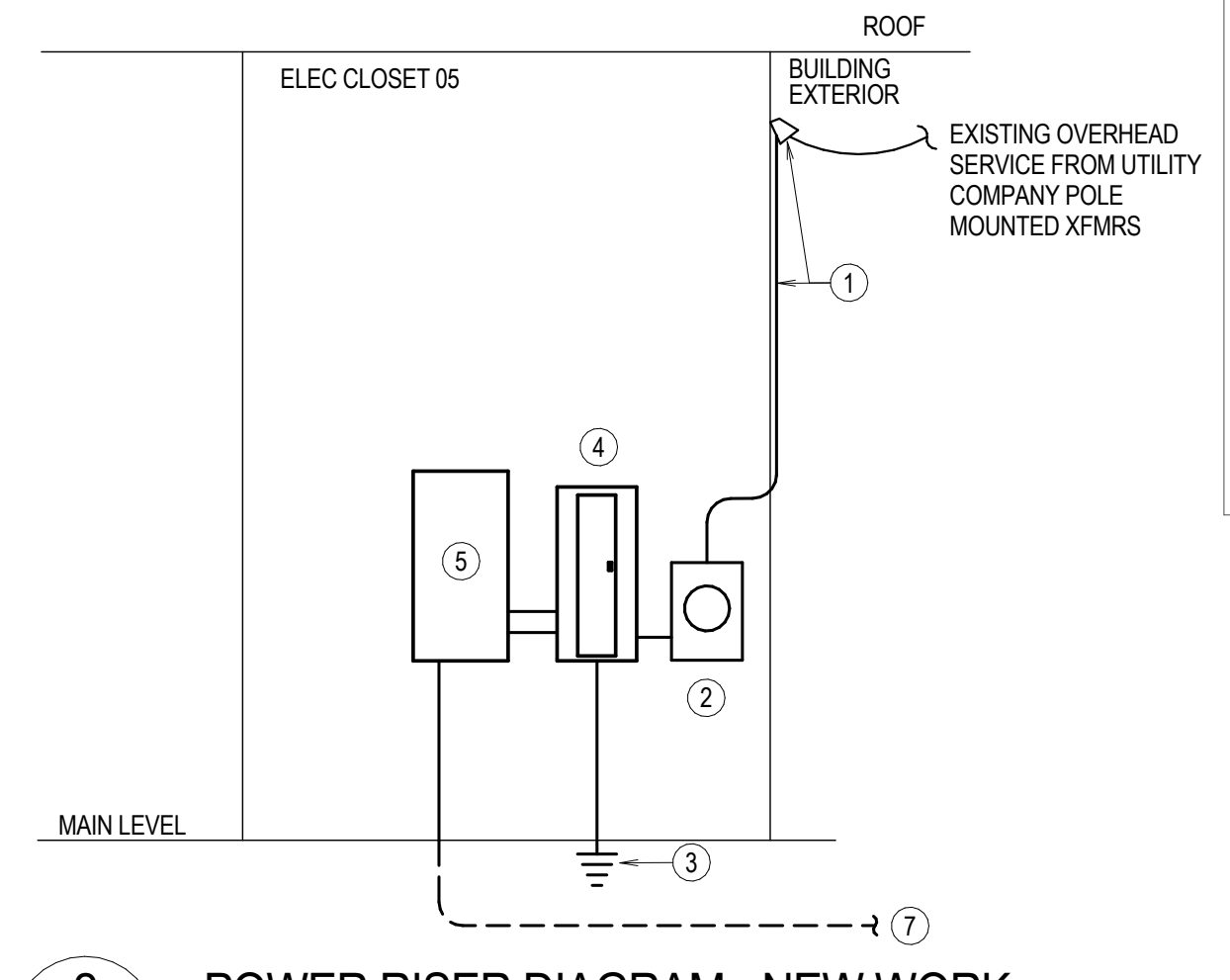
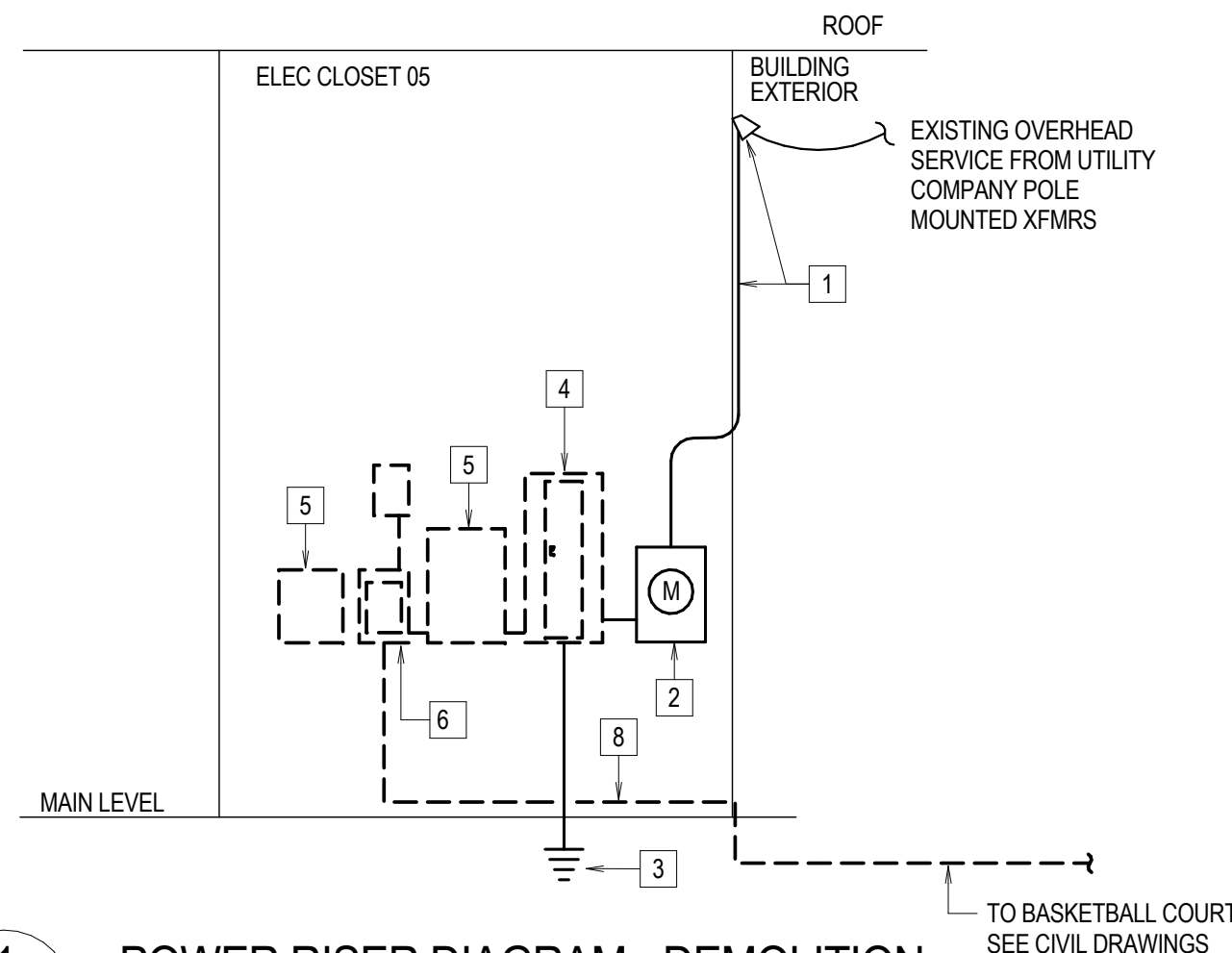
2
- E001

POWER RISER DIAGRAM - NEW WORK

SCALE: NONE

KEY NOTES

- REATTACHED EXISTING SERVICE HEAD AND SERVICE ENTRANCE CONDUCTOR TO NEW STRUCTURE. COORDINATE EXACT REQUIREMENTS WITH UTILITY POWER COMPANY.
- EXISTING METER TO REMAIN.
- EXISTING SERVICE GROUNDING TO BE RECONNECTED.
- NEW SERVICE RATED PANEL "P" TO REPLACE THE EXISTING ONE.
- NEW MUSCO LIGHTING CONTROL AND MONITORING CABINET. SEE CIVIL ELECTRICAL DRAWINGS.
- TO BASKETBALL COURT LIGHTING. SEE CIVIL ELECTRICAL DRAWINGS.



PANEL NO.:		BUS AMPS:		SERVICE RATED		FED FROM:		TYPICAL XFMR		INTEGRAL SPD:		NONE									
P		225A						SURFACE		LOCATION:		ELEC CLOSET 05									
PHASES: 1		MAIN CB AMPS: 150A				MOUNTING: SURFACE		POWER DISTRIBUTION		USAGE:		BRANCH CIRCUIT									
VOLTS 240V		AIC RATING: 10,000 MINIMUM				PANEL TYPE:															
CIRCUIT	SETS	WIRE	NEUT.	GND.	CND.	LOAD AMPS.	DESCRIPTION	NOTES	BREAKER POLE	AMP.	CKT. #	CT. #	BREAKER AMP. POLE	NOTES	DESCRIPTION	LOAD AMPS.	SETS	WIRE	NEUT.	GND.	CND.
1	#12	#12	#12	#12	3/4"	4.7	LIGHTING & EF-1-3 STORAGE 04		1	20	1	A	2		DWH (EXISTING) STORAGE 04	18.8	1	#10	#10	#10	3/4"
1	#12	#12	#12	#12	3/4"	0.8	EXTERIOR LIGHTING		1	20	3	B	4			18.8					
1	#12	#12	#12	#12	3/4"	4.5	RECEPT. STORAGE 04, EXTERIOR		1	20	5	A	6			10.8	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	4.5	RECEPT. ELEC CLOSET 05		1	20	7	B	8			10.8					
1	#12	#12	#12	#12	3/4"	4.5	RECEPT. WC-1,2,3		1	20	9	A	10		EF-4	1.9	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	14.4	HAND DRYER WC-1		1	20	11	B	12		EW-01 WC-1	12.5	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	14.4	HAND DRYER WC-2		1	20	13	A	14		EW-02 WC-2	12.5	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	14.4	HAND DRYER WC-3		1	20	15	B	16		EW-04-1	12.5	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	4.0	LIGHTING BASKETBALL COURT VIA CTRL/MONITORING CAB.		2	20	17	A	18		EW-04-2	12.5	1	#12	#12	#12	3/4"
						4.0	CTRL POWER CTRL/MONITORING CAB.		1	20	21	A	22		EW-03 WC-3	12.5	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	4.2	CTRL POWER CTRL/MONITORING CAB.		1	20	21	A	22		RECEPT. STORAGE 04, EXTERIOR	4.5	1	#12	#12	#12	3/4"
1	#12	#12	#12	#12	3/4"	1.5	DOOR HARDWARE - WC-1,2,3		1	20	23	B	24		SPACE	0.0					
1	#12	#12	#12	#12	3/4"	4.0	LIGHTING BASKETBALL COURT VIA CTRL/MONITORING CAB.		2	20	25	A	26		SPACE	0.0					
						4.0	LIGHTING BASKETBALL COURT VIA CTRL/MONITORING CAB.				27	B	28		SPACE	0.0					
						0.0	SPACE		1		29	A	30		SPACE	0.0					
						0.0	SPACE		1		31	B	32		SPACE	0.0					
						0.0	SPACE		1		33	A	34		SPACE	0.0					
						0.0	SPACE		1		35	B	36		SPACE	0.0					
						0.0	SPACE		1		37	A	38		SPACE	0.0					
						0.0	SPACE		1		39	B	40		SPACE	0.0					
						0.0	SPACE		1		41	A	42		SPACE	0.0					

PANEL NOTES:

- ADJUST ALL CONDUCTOR SIZES FOR VOLTAGE DROP PER SPECIFICATIONS.
- WIRE SIZE LISTED IS FROM THE PANEL TO THE MUSCO CONTROL CABINET. REFER TO CIVIL ELECTRICAL DRAWINGS FOR WIRING FROM MUSCO CABINET TO THE LIGHT POLES.
-
-
-
-

TOTAL KVA 25.4
TOTAL AMPS 106.0

CONN. 25.4
DEM. 25.4

21-DPR-ITB-291

Project Name and Location
Alcova Heights Park - Phase II
Restroom Renovation

Sheet Title

POWER RISER DIAGRAMS AND SCHEDULES

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Designed: JTP
Drawn: LWH
Checked: LWH

Filename:
Plotted:

Scale: AS INDICATED
Date: 09/21/21 (Bid Submission)

Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED SHEET: E001

GENERAL NOTES

1. X

[X] KEY NOTES (DEMO)

1. EXISTING SERVICE METER TO REMAIN.
2. REMOVE EXISTING ELECTRICAL PANEL AND ITS ASSOCIATED FEEDER BACK TO SOURCE.
3. REMOVE EXISTING B.B.C CONTACTOR, TIME CONTROL AND ITS ASSOCIATED WIRING BACK TO SOURCE.
4. REMOVE EXISTING LOAD CENTER AND ITS ASSOCIATED WIRING BACK TO SOURCE.
5. REMOVE EXISTING CONTROL PANEL AND ITS ASSOCIATED WIRING BACK TO SOURCE.
6. EXISTING WATER HEATER AND ITS ASSOCIATED DISCONNECT SWITCH TO BE RELOCATED. REFER TO NEW WORK FOR NEW LOCATION.
7. REMOVE EXISTING LIGHTING FIXTURE, LIGHTING CONTROLS AND ALL ASSOCIATED BACK TO SOURCE.
8. EXISTING SERVICE HEAD AND SERVICE ENTRANCE TO REMAIN. PROVIDE TEMPORARY SUPPORT UNTIL IT CAN BE REATTACH TO NEW STRUCTURE. COORDINATE EXACT REQUIREMENTS WITH UTILITY POWER COMPANY. SEE POWER RISER DIAGRAMS FOR ADDITIONAL REQUIREMENTS.

21-DPR-ITB-291

Project Name and Location

**Alcova
Heights Park
- Phase II**

Restroom Renovation

Sheet Title

**FLOOR PLAN -
DEMOLITION**

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Designed:

Drawn: **JTP**

Checked: **LWH**

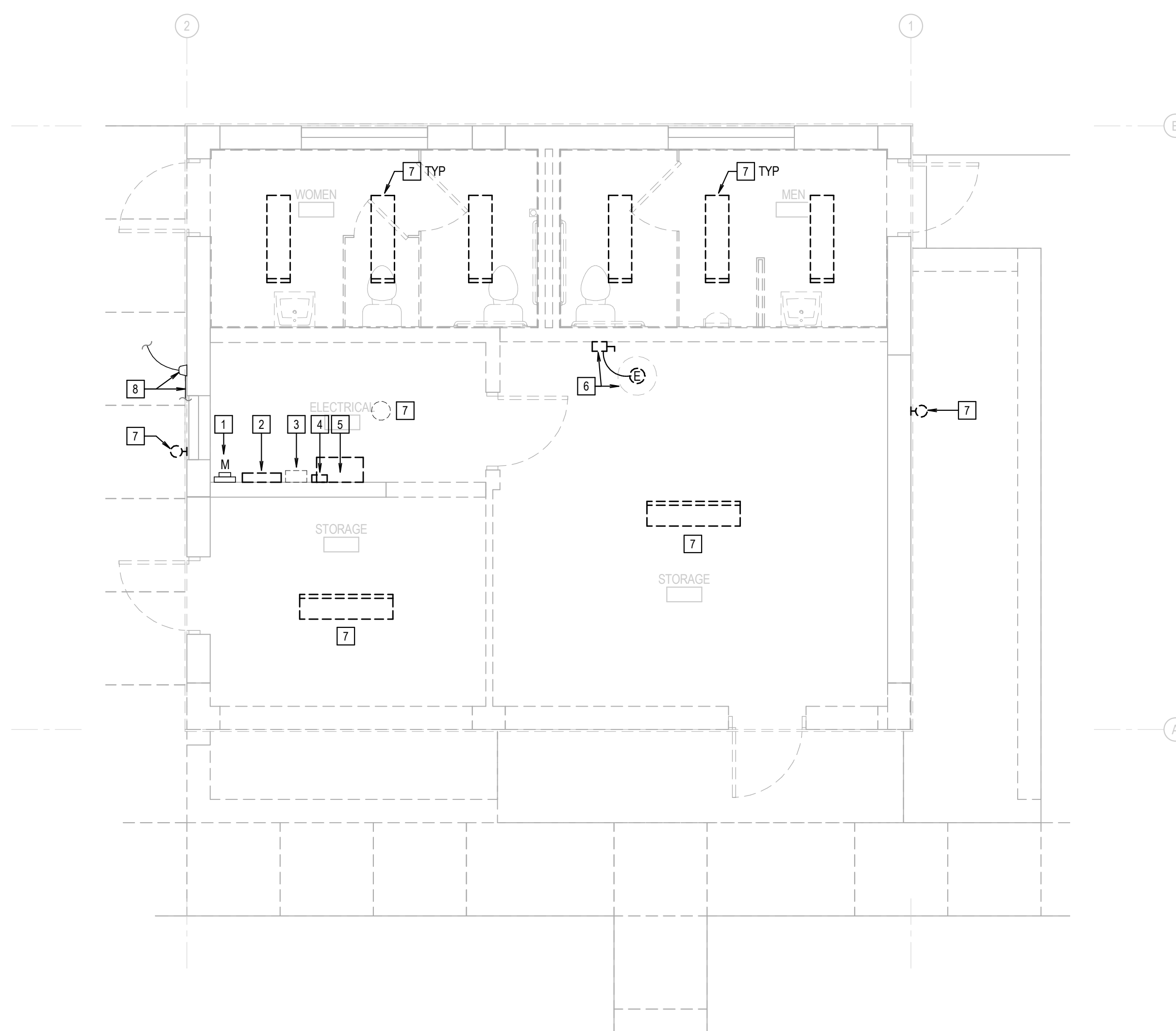
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Plotted:

Scale: AS INDICATED

Date: 09/21/21 (Bid Submission)

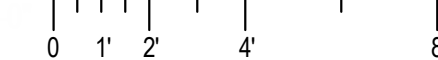
Seal



1
- E101

FLOOR PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: **E101**

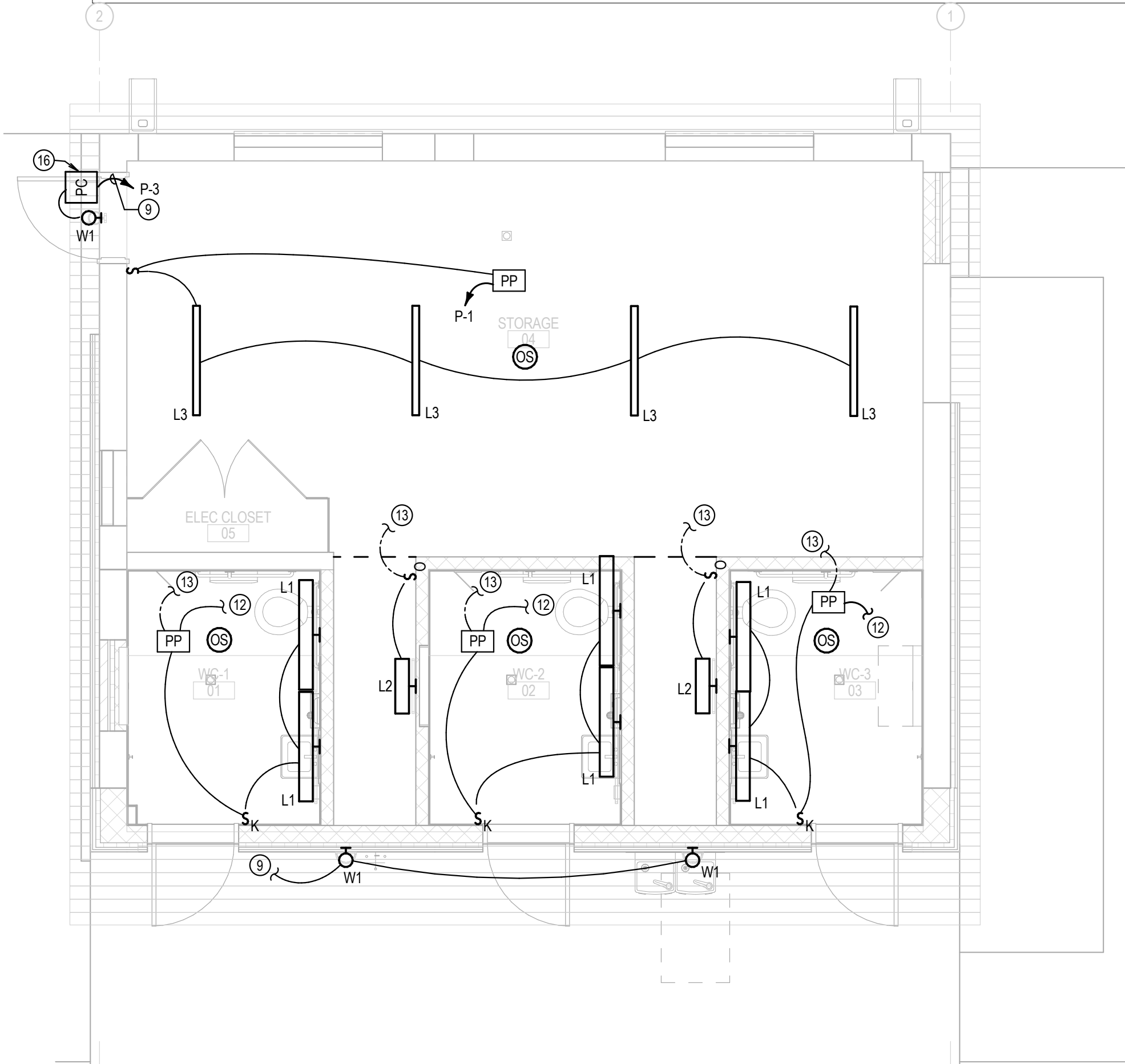
LIGHTING FIXTURE SCHEDULE

MARK	DESCRIPTION	MFR/MODEL (BASIS OF DESIGN)	MTG	SOURCE	REMARKS
L1	4' LED STRIP WALL-MOUNTED FIXTURE 3500K, 3000 NOMINAL LUMENS OUTPUT, 33W POWER CONSUMPTION, UL LISTED.	LITHONIA ZL1N L48 3000LM FST 120V 35K 90CRI WH	S/W	33W LED	
L2	2' LED STRIP WALL-MOUNTED FIXTURE 3500K, 2500 NOMINAL LUMENS OUTPUT, 22W POWER CONSUMPTION, UL LISTED.	LITHONIA ZL1N L24 2500LM FST 120V 35K 90CRI WH	S/W	22W LED	
L3	SAME AS L1, EXCEPT SURFACE MOUNT	LITHONIA ZL1N L48 3000LM FST 120V 35K 90CRI WH	S/U	33W LED	
W1	WALL MOUNTED EXTERIOR LUMENS, 33W LED, 120V	BEGA 24 593	S/W	33W LED	FINISHES/COLOR TO BE SELECTED BY ARCHITECT

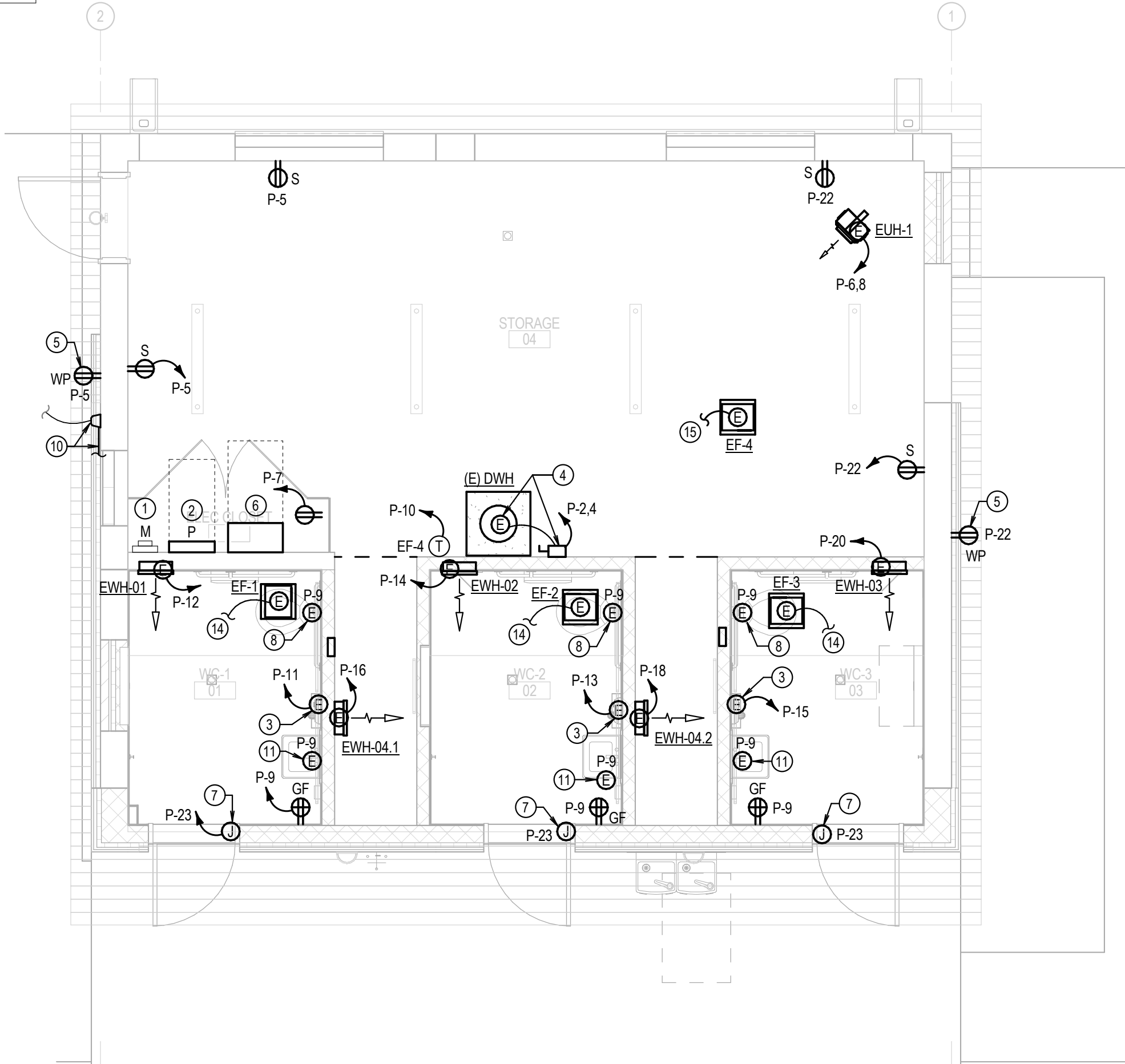
BASIS OF DESIGN STATEMENT:
THE DESIGN SHOWN IS BASED ON THE MANUFACTURERS AND MODELS INDICATED AND IS INTENDED ONLY TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS AND/OR SUPPORT FOR THE EQUIPMENT OR SYSTEMS SPECIFIED WITH RELATION TO THE OTHER BUILDING SYSTEMS. SEE DIV 26 SPECIFICATION SECTIONS FOR ADDITIONAL TECHNICAL REQUIREMENTS.

KEY:
S/U SURFACE / TO UNISTRUT
S/W SURFACE / WALL
W WALL

NOTES:
1. REFER TO LIGHTING PLANS FOR CHEVRONS AND FACES.
2. FIXTURES ON SCHEDULE ARE TYPICALLY INDICATED FOR GRID TYPE INSTALLATION. IN INSTANCES WHERE CEILING TYPE DIFFERS, PROVIDE FIXTURES AS INDICATED AND DESIGNED FOR THAT APPLICATION. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS.
3. ALL FIXTURES SHALL BE PROVIDED COMPLETE WITH ALL NECESSARY ACCESSORIES.
4. LED FIXTURES SHALL HAVE RATED LIFE BASED ON IESNA LM-80 AND PHOTOMETRIC PERFORMANCE TESTED IN ACCORDANCE WITH IESNA 79.
5. ALL LIGHT SOURCES SHALL HAVE MINIMUM CRI OF 80 UNO.
6. ALL FIXTURES SHALL BE RATED 120/277 MULTI-VOLT UNO.
7. PROVIDE EMERGENCY BATTERY BACKUP FOR FIXTURES WHERE INDICATED ON PLANS. MINIMUM 1300 LUMEN OUTPUT, EXCEPT DOWNLIGHTS, 700 LUMEN OUTPUT.
8. SUBSTITUTE FIXTURES, IF PERMITTED, SHALL BE WITHIN:
5% +/- OF SPECIFIED FIXTURE(S) LUMEN OUTPUT AND POWER CONSUMPTION FOR FIXTURES 2000 LUMENS AND BELOW
10% +/- OF SPECIFIED FIXTURE(S) LUMEN OUTPUT AND POWER CONSUMPTION FOR FIXTURES ABOVE 2000 LUMENS



1 FLOOR PLAN - LIGHTING - NEW WORK
SCALE: 1/4" = 1'-0"



2 FLOOR PLAN - POWER AND SPECIAL SYSTEMS - NEW WORK
SCALE: 1/4" = 1'-0"

BUILDING MOUNTED EXTERIOR LIGHT CONTROL

BUILDING EXTERIOR FIXTURES (W1 FIXTURES) SHALL BE CONTROLLED BY LOCAL PHOTOCELL.

KEY NOTES (NEW WORK)

- EXISTING SERVICE METER TO REMAIN.
- NEW PANEL 'P'.
- POWER CONNECTION FOR ELECTRIC HAND DRYER.
- EXISTING WATER HEATER AND ITS ASSOCIATED DISCONNECT SWITCH RELOCATED.
- RUN CONDUIT ON THE INTERIOR WALL.
- MUSCO CONTROL AND MONITORING SYSTEM CABINET. COORDINATE ALL WIRING AND INSTALLATION WITH MUSCO VENDOR. REFER TO CIVIL ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- J-BOX FOR DOOR SECURITY HARDWARE. COORDINATE ROUGH-INS WITH DOOR VENDOR.
- ELECTRICAL CONNECTION FOR WATER CLOSET SENSOR FLUSH VALVE. COORDINATE WITH PLUMBING DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- CONNECT TO EXTERIOR LIGHTING BRANCH CIRCUIT P-3 THROUGH THE LOCAL PHOTOCELL INDICATED.
- EXISTING SERVICE HEAD REATTACHED TO NEW STRUCTURE. COORDINATE EXACT REQUIREMENTS WITH UTILITY POWER COMPANY. SEE POWER RISER DIAGRAM FOR ADDITIONAL REQUIREMENTS.
- ELECTRICAL CONNECTION FOR LAVATORY FAUCET SENSOR. COORDINATE WITH PLUMBING DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- CONNECT TO EXHAUST FAN (EF) IN THIS SPACE.
- CONNECT TO LIGHTING CIRCUIT P-1.
- TO POWER PACK. SEE NOTE 12. FAN SHALL BE ACTIVATED WHEN SENSOR DETECT OCCUPANCY.
- TO THERMOSTAT CONTROLLING EF-4 PROVIDE BY MECHANICAL.
- PROVIDE LINE VOLTAGE, WEATHERPROOF LINE VOLTAGE, FAN SAFE, ADJUSTABLE SET POINT PHOTOCELL. COORDINATE EXACT EXTERIOR LOCATION WITH THE BUILDING STRUCTURE AND ARCHITECT.

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite 414
Arlington, VA 22201
Phone: 703.228.3323
Fax: 703.228.3328

21-DPR-ITB-291

Project Name and Location

Alcova Heights Park - Phase II

Restroom Renovation

Sheet Title

FLOOR PLANS - NEW WORK

Approvals Date

Department Director

Park Development Division Chief

Design Unit Supervisor

Revisions Date

Designed: JTP

Drawn: LWH

Checked:

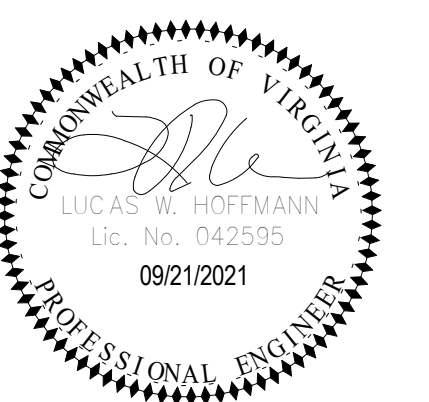
Filename:

Plotted:

Scale: AS INDICATED

Date: 09/21/21 (Bid Submission)

Seal



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park - Phase II - Restrooms Renovation
901 S George Mason Dr.
Arlington County, Virginia

SCALE: AS INDICATED

SHEET: E201



Attachment D - Civil Bid Plans

OWNER
DEPARTMENT OF
PARKS AND RECREATION

LANDSCAPE ARCHITECT
MAHAN RYKIEL
ASSOCIATES, INC.

Civil Engineer
Bowman Consulting
Group, LTD.

2100 Clarendon Boulevard, Suite 414, Arlington, VA 22201
Phone: 703.228.4715 Fax: 703.228.3328 www.arlingtonva.us

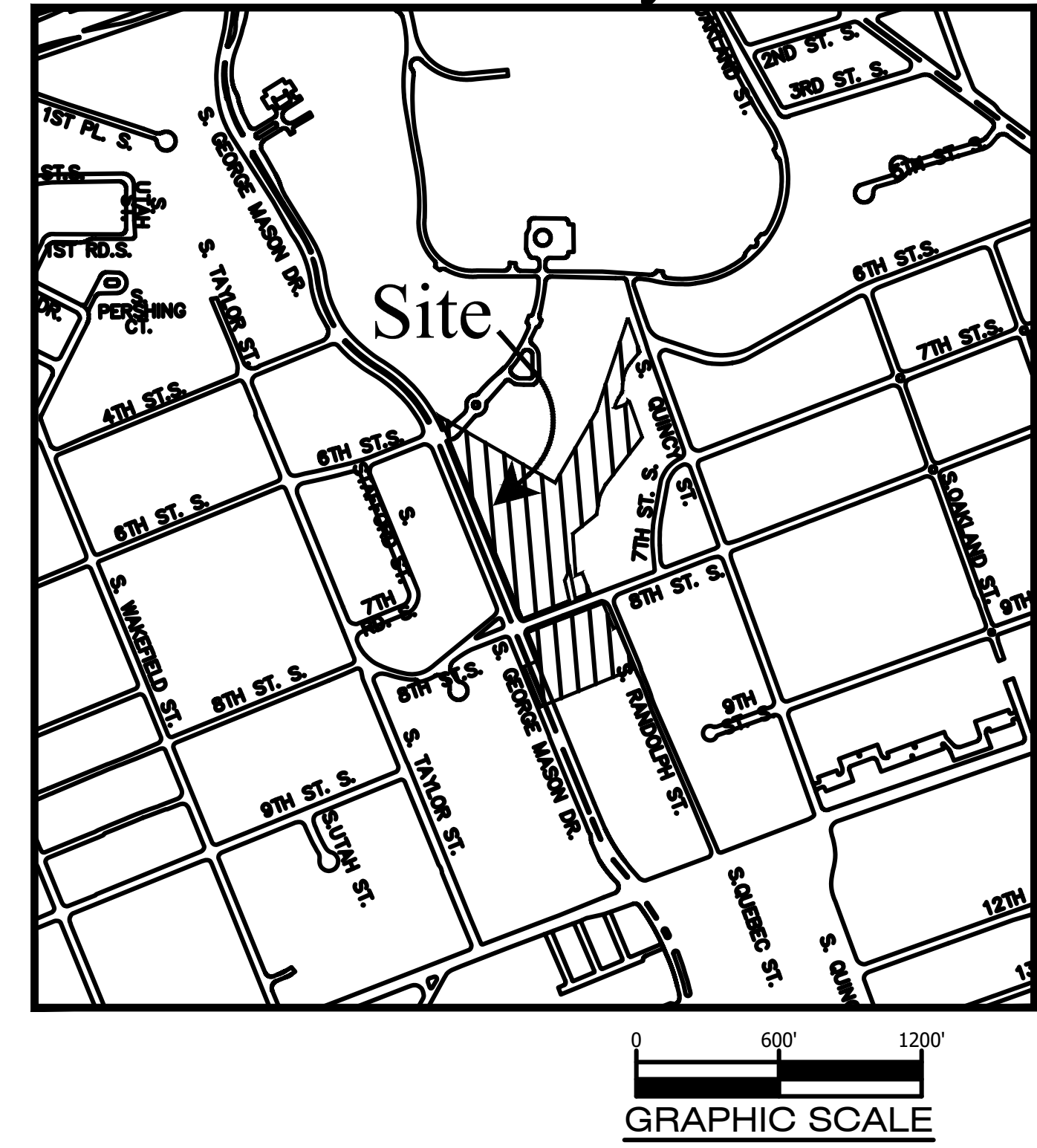
3300 Cliper Mill Road, Suite 200, Baltimore, MD 21211
Phone: 410.900.1630 Attn: Stephan Kelly
www.mahantrykiel.com

13461 Sunrise Valley Drive, Suite 500
Herndon, VA 20171 Phone: 703.464.1000
Attn: David Peterson
www.bowmanconsulting.com

Location Map

Scale: 1"=600'

Vicinity



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Bid Set For: Alcova Heights Park

901 S. George Mason Drive
Arlington, VA 22203
RPC Number: 23033004
SWM Number: 20-0037

General Notes:

GENERAL CONSTRUCTION NOTES

1. ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
2. HORIZONTAL DATA ARE BASED ON THE VIRGINIA COORDINATE SYSTEM OF 1983 (VCS 83).
3. ALL CONSTRUCTION WORK FOR THIS PROJECT SHALL CONFORM TO THE ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES, CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND WHERE APPLICABLE THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE SPECIFICATIONS, AND ROAD AND BRIDGE STANDARDS. THE LATEST EDITIONS OF EACH RELEVANT MANUAL SHALL BE USED.
4. ALL CONSTRUCTION AND WORK ACTIVITIES SHALL COMPLY WITH THE VIRGINIA WORK AREA PROTECTION MANUAL AND ALL OTHER RELEVANT WORK SAFETY REQUIREMENTS, LATEST EDITIONS.
5. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 811 FOR MARKING THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES (i.e. WATER, SEWER, GAS, TELEPHONE, ELECTRIC, AND CABLE TV) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO IDENTIFY AND PROTECT ALL OTHER UTILITY LINES FOUND IN THE WORK SITE AREA BELONGING TO OTHER OWNERS THAT ARE NOT MEMBERS OF "MISS UTILITY". PRIVATE WATER AND/OR SEWER LATERALS WILL NOT BE MARKED BY MISS UTILITY OR THE COUNTY. THE CONTRACTOR WILL BE EXPECTED TO LOCATE AND PROTECT THESE SERVICES DURING CONSTRUCTION.
6. THE CONTRACTOR SHALL FULLY ACQUAINT HIMSELF WITH THE CONDITIONS OF THE SITE. THE CONTRACTOR SHALL THOROUGHLY EXAMINE AND BE FAMILIAR WITH THE DRAWINGS AND SPECIFICATIONS. SHOULD THE CONTRACTOR FIND ANY DISCREPANCIES, OMISSIONS, AMBIGUITIES, OR CONFLICTS IN OR AMONG THE CONTRACT DOCUMENTS OR BE IN DOUBT AS TO THEIR MEANING, HE SHALL BRING THESE ITEMS TO THE ATTENTION OF THE PROJECT OFFICER FOR DIRECTION BEFORE PROCEEDING WITH WORK.
7. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND BE RESPONSIBLE FOR ADHERENCE TO ALL ORDINANCES, REGULATIONS, LAWS AND CODES HAVING JURISDICTION OVER THE PROPERTY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT THE WORK AND SHALL RETAIN A PROFESSIONAL LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF VIRGINIA TO PROVIDE ALL NECESSARY CONSTRUCTION LAYOUTS AND ESTABLISH ALL CONTROL LINES, GRADES, AND ELEVATION DURING CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A COPY OF ALL CUT SHEETS FOR REVIEW, PER THE SPECIFICATIONS. THE COST OF ALL NECESSARY SURVEYING SERVICES SHALL BE CONSIDERED INCIDENTAL TO THE WORK AND, UNLESS OTHERWISE SPECIFIED, THE COST SHALL BE INCORPORATED INTO THE COSTS FOR RELEVANT ITEMS.
9. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE FROM BEST AVAILABLE RECORDS AND SHALL BE CONSIDERED TO BE APPROXIMATE. WHEN CONSTRUCTION ACTIVITY REACHES IN PROXIMITY TO EXISTING UTILITIES, THE TRENCH(ES) SHALL BE OPENED A SUFFICIENT DISTANCE AHEAD OF THE WORK OR TEST PITS SHALL BE MADE TO VERIFY THE EXACT LOCATION AND INVERTS OF THE UTILITY TO ALLOW FOR POSSIBLE CHANGES IN THE LINE OR GRADE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING UTILITIES AND THE RELATED STRUCTURES. ALL EXISTING UTILITY SYSTEMS SHALL BE PROTECTED TO PREVENT DAMAGE DURING THE CONTRACTOR'S OPERATIONS. ANY SYSTEM DAMAGED SHALL BE PROMPTLY REPAIRED AT NO COST TO THE OWNER.

THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE APPROVED PLANS.
10. EXISTING MANHOLE FRAMES, COVERS, VALVE BOXES, AND OTHER APPURTENANCES SHALL BE ADJUSTED TO THE FINAL GRADE OR REPLACED, AS NECESSARY. UNLESS OTHERWISE SPECIFIED, THE COST FOR THIS SHALL BE CONSIDERED INCIDENTAL TO THE WORK, AND SHALL BE INCORPORATED INTO THE COSTS FOR RELEVANT ITEMS.
11. THE CONTRACTOR SHALL PROVIDE ADA COMPLIANT ACCESS THROUGH OR AROUND THE SITE AT ALL TIMES AND SHALL ENSURE THE SAFETY OF ALL THOSE PASSING THROUGH OR ADJACENT TO THE SITE.
12. THE SURVEY WAS PROVIDED BY ARLINGTON COUNTY. SEE SURVEYOR'S CERTIFICATION NOTE ON SHEET C2.00.

STORMWATER AND ENVIRONMENTAL PROTECTION

13. THE CONTRACTOR SHALL PROTECT EXISTING DRAINAGE FACILITIES (TO INCLUDE CURB AND REVISION 01/21/2016

- GUTTER) AND WATERWAYS FROM ADVERSE IMPACTS PER SECTION 01500 OF THE ARLINGTON COUNTY STANDARDS & SPECIFICATIONS.
14. ANY WORK WITHIN A RESOURCE PROTECTION AREA (RPA) SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTER 61 OF THE COUNTY CODE (THE CHESAPEAKE BAY PRESERVATION ORDINANCE).
- TREE PROTECTION**
15. THE CONTRACTOR SHALL CONFINE ALL ACTIVITIES AT THE SITE ASSOCIATED WITH CONSTRUCTION ACTIVITIES, TO INCLUDE STORAGE OF EQUIPMENT AND OR MATERIALS, ACCESS TO THE WORK, FORMWORK, ETC. TO WITHIN THE DESIGNATED LIMITS OF DISTURBANCE (LDD).
16. NO TREES SHALL BE REMOVED OR OTHERWISE AFFECTED UNLESS CLEARLY MARKED ON THE APPROVED PLAN.
17. TREES SHALL BE PROTECTED PER THE REQUIREMENTS OF SECTION 02100 - CLEARING AND GRUBBING
- TRAFFIC CONTROL**
18. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 3 WORKING DAYS PRIOR TO DISTURBING ANY EXISTING, OR INSTALLING ANY NEW, TRAFFIC SIGNS, SIGNALS, OR OTHER TRAFFIC CONTROL DEVICES.
19. THE CONTRACTOR SHALL PREMARK THE LAYOUT OF ANY PERMANENT TRAFFIC CONTROL STRIPING, INDICATING THE PROPOSED LOCATION AND TYPE OF MARKING TO BE INSTALLED. THE PRE-MARKINGS MAY CONSIST OF TYPE D TAPE, CHALK, OR LUMBER CRAYONS. THE CONTRACTOR SHALL ALLOW 3 WORKING DAYS FOR THE INSPECTION AND APPROVAL OF THE PRE-MARKINGS PRIOR TO PLACING THE PERMANENT MARKINGS.
20. THE CONTRACTOR SHALL SUBMIT ANY REQUESTS FOR TEMPORARY "NO PARKING" RESTRICTIONS TO THE ENGINEER AT LEAST 3 WORKING DAYS PRIOR TO THE DESIRED ONSET OF RESTRICTIONS.
21. THE CONTRACTOR SHALL PRESERVE ALL BUS STOPS, INCLUDING MAINTAINING ADEQUATE ACCESS THROUGH AND ADJACENT TO THE CONSTRUCTION FOR BUSES AND THEIR PASSENGERS. THE CONTRACTOR SHALL NOT CLOSE, RELOCATE, OR OTHERWISE MODIFY A BUS STOP WITHOUT PRIOR REQUEST OF THE ENGINEER. TYPICALLY ANY RELOCATION OR CLOSURE OF A BUS STOP WILL REQUIRE AT LEAST FOUR (4) WEEKS ADVANCE NOTICE FOR COORDINATION WITH THE COUNTY'S BUS STOP COORDINATOR (703-228-3049).
22. WHEN CONDITIONS WARRANT DUE TO TRAFFIC VOLUMES, PATTERNS, OR SPECIAL EVENTS, THE COUNTY MAY SUSPEND OR OTHERWISE DIRECT THE CONTRACTOR'S ACTIVITIES TO PROTECT THE PUBLIC AND OR THE COUNTY'S TRANSPORTATION NETWORK.
- WATER DISTRIBUTION, STORM, AND SANITARY SEWER SYSTEMS**
23. UNLESS OTHERWISE DIRECTED, CONTRACTORS ARE EXPRESSLY PROHIBITED FROM OPERATING ANY WATER VALVES OR APPURTENANCES. CONTRACTORS SHALL SUBMIT ALL REQUESTS FOR VALVE OPERATIONS TO THE ENGINEER AT LEAST 3 WORKING DAYS IN ADVANCE OF THE REQUIRED OPERATION.
24. IN THE EVENT OF A WATER OR SEWER EMERGENCY, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE COUNTY'S WATER CONTROL CENTER AT 703-228-6555 AND THE ENGINEER.
25. STORM OR SANITARY SEWERS AND APPURTENANCES TO BE ABANDONED SHALL BE EXCAVATED AND REMOVED, OR ABANDONED AS DETAILED IN THE COUNTY'S STANDARDS AND SPECIFICATIONS.
- WORK WITHIN A VDOT RIGHT OF WAY**
26. WHEN REQUIRED FOR THE WORK, AN APPROVED VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) PERMIT WILL BE PROVIDED BY THE COUNTY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO AND IMPLEMENTING ALL PERMIT REQUIREMENTS.
27. THE CONTRACTOR SHALL HAVE AT LEAST ONE EMPLOYEE ON-SITE CERTIFIED BY VDOT IN BASIC WORK ZONE TRAFFIC CONTROL AND WILL BE RESPONSIBLE FOR THE PLACEMENT, MAINTENANCE AND REMOVAL OF WORK ZONE TRAFFIC CONTROL DEVICES WITHIN THE PROJECT LIMITS IN COMPLIANCE WITH THE PERMIT REQUIREMENTS AND CONDITIONS, THE APPROVED PLANS, SPECIFICATIONS, THE VIRGINIA WORK AREA PROTECTION MANUAL AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
28. THE CONTRACTOR SHALL HAVE AT LEAST ONE EMPLOYEE ON-SITE WHO HAS COMPLETED VDOT EROSION AND SEDIMENT CONTROL CONTRACTOR CERTIFICATION TRAINING AND WILL BE RESPONSIBLE FOR INSURING COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS DURING ALL LAND DISTURBANCE ACTIVITIES.

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5	C4.10	EXISTING CONDITIONS (2 OF 2)
6	C5.00	DEMOLITION PLAN (1 OF 2)
7	C5.10	DEMOLITION PLAN (2 OF 2)
8	C6.00	MATERIALS PLAN (1 OF 2)
9	C6.10	MATERIALS PLAN (2 OF 2)
10	C7.00	SITE AND DIMENSION PLAN (1 OF 2)
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23	C14.00	STORM SEWER PROFILES
24	C15.00	TRUCK TURNING MOVEMENTS
25	C16.00	POLLUTION PREVENTION PLAN & WQIA
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31	L2.01	TREE PRESERVATION SCHEDULE
32	L2.02	TREE PRESERVATION SCHEDULE
33	L2.03	TREE PRESERVATION SCHEDULE
34	L2.04	TREE PRESERVATION SCHEDULE
35	L2.05	TREE REPLACEMENT CALCULATIONS
36	L3.01	TREE PRESERVATION NOTES & DETAILS
37	L3.02	TREE PRESERVATION NOTES & DETAILS
38	L1.00	HARDSCAPE DETAILS
39	L1.01	HARDSCAPE DETAILS
39A	L1.01A	HARDSCAPE DETAILS
40	L1.02	HARDSCAPE DETAILS
41	L1.03	MULTI-USE COURT DETAILS
42	L1.04	VOLLEYBALL COURT DETAILS
43	L1.05	FURNISHING DETAILS
44	L1.06	SIGNAGE DETAILS
45	L1.07	PICNIC SHELTER DETAILS
46	L1.08	PICNIC SHELTER LAYOUT
47	L2.00	TREE AND BULB PLANTING PLAN - NORTH ENLARGEMENT
48	L2.01	TREE AND BULB PLANTING PLAN - SOUTH ENLARGEMENT
49	L2.10	PLANTING PLAN - ENLARGEMENT
50	L2.11	PLANTING PLAN - ENLARGEMENT
51	L2.12	PLANTING PLAN - ENLARGEMENT
52	L2.13	PLANTING PLAN - ENLARGEMENT
53	L2.14	PLANTING PLAN - ENLARGEMENT
54	L3.00	PLANTING DETAILS
55	E1.00	ELECTRICAL PLAN
55A	E1.01	ELECTRICAL NOTES AND SPECIFICATIONS
55B	E1.02	LIGHTING PLAN
55C	E1.03	LIGHTING DETAILS
56-68	56-68	BASE PLAN PREPARED BY RICE ASSOCIATES (FOR INFORMATION ONLY)
		80 SHEETS

Horizontal Datum:

THE SITE SHOWN HERON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM OF 1983 AS COMPUTED FROM A FIELD RUN BOUNDARY AND HORIZONTAL CONTROL SURVEY.

Vertical Datum:

THE SITE SHOWN HERON IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AS COMPUTED FROM A FIELD RUN VERTICAL CONTROL SURVEY.

Street Classification

URBAN MINOR ARTERIAL - SOUTH GEORGE MASON DRIVE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-COV.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

COVER SHEET
C1.00

ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
COVER SHEET	
Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia	
Scale: AS SHOWN	Number: 1 of 68
BID SET: 21-DPR-ITB-291	

EXISTING	DESCRIPTION	PROPOSED
	INDEX CONTOUR	
	INTERMEDIATE CONTOUR	
	EDGE OF PAVEMENT	
	CURB AND GUTTER	
	TRANSITION FROM CG-6R TO CG-6	
	PROPOSED HEADER CURB	
	PROPERTY LINE	
	DEPARTING PROPERTY LINE	
	LOT LINE	
	RIGHT-OF-WAY	
	CENTERLINE	
	FLOOD PLAIN	
	LIMITS OF DISTURBANCE	
	LIMITS OF CLEARING	
	TREE LINE	
	FLOW LINE OF SWALE	
	STREAM	
	OVERLAND RELIEF PATHWAY	
	FENCE LINE	
	EASEMENT	
	WATER LINE	
	WATER VALVE	
	WATER REDUCER	
	SANITARY SEWER	
	STORM SEWER	
	CABLE TV	
	ELECTRIC SERVICE	
	TELEPHONE SERVICE	
	GAS LINE	
	OVERHEAD ELECTRIC	
	OVERHEAD TELEPHONE	
	SPOT ELEVATION	
	UTILITY POLE	
	SIGN	
	SANITARY SEWER IDENTIFIER	
	STORM DRAIN IDENTIFIER	
	WATER METER	
	FIRE HYDRANT	
	PARKING INDICATOR INDICATES THE NUMBER OF TYPICAL PARKING SPACES	
	STREET LIGHT	
	VEHICLES PER DAY (TRAFFIC COUNT)	
	TEST PIT LOCATION RECOMMENDED/REQUIRED	
	CRITICAL SLOPE SLOPES TO BE STABILIZED PURSUANT TO VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK	
	HANDICAP RAMP (CG-12) DENOTES LOCATION OF STD VDOT CG-12 AND/OR JURISDICTIONAL STANDARD RAMP CONSTRUCTION	
	DENOTES CLEAR SIGHT TRIANGLE	
	TREE	
	BENCHMARK	
	ASPHALT TRAIL	
	CONCRETE SIDEWALK	
	STOP SIGN	
	STREET SIGN	
	HANDICAP PARKING SPACE (VAN)	
	RIP RAP	
	DOOR ENTRANCE	

ABBREVIATIONS	
A AREA OF ARC	L LENGTH
AASHTO AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSP OFFICIALS	LAT LATERAL
AC ACRE	LCG LIMITS OF CLEARING & GRADING
ADJ ADJACENT	LF LINEAR FEET
AGGR AGGREGATE	LI LOWER LEVEL
AHD AHEAD	LOD LINE OF SIGHT
ANSI AMERICAN NATIONAL STANDARDS INSTITUTE	LOS LOW POINT
APPROX APPROXIMATE	LS LOADING SPACE
ARL ARLINGTON	LT LEFT
ARCH ARCHITECTURAL	M MONUMENT FOUND
ASPH ASPHALT	MAX MAXIMUM
ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS	MECH MECHANICAL
AWWA AMERICAN WATER WORKS ASSOCIATION	MH MANHOLE
B BREADTH	MI MILE
BACK OF CURB	MIN MINIMUM
BASEMENT FLOOR	MISC MISCELLANEOUS
BLDG BUILDING	MOD MODIFIED
BM BENCHMARK	MPH MILES PER HOUR
BMP BEST MANAGEMENT PRACTICES (WATER QUALITY)	MS MEDIAN STRIP
BOV BLOW OFF VALVE	MSL MEAN SEA LEVEL
BRG BEARING	NA OR N/A NOT APPLICABLE
BRL BUILDING RESTRICTION LINE	NBL NORTH BOUND LANE
BVCE BEGINNING VERTICAL CURVE ELEVATION	N/F NOW OR FORMERLY
BVCS BEGINNING VERTICAL CURVE STATION	NFA NET FLOOR AREA
BW BOTTOM OF WALL	NO. OR # NUMBER
c,e CENTER CORRECTION ON VERTICAL CURVE	OC ON CENTER
COEFFICIENT	OBJ OBJECT
C&G CABLE TELEVISION	OD OUTSIDE DIAMETER
CATV CURB AND GUTTER	OH OVERHANG
CB CATCH BASIN	O/H OVERHEAD
CBR CALIFORNIA BEARING RATIO	OHC OVERHEAD CABLE
CC CENTER TO CENTER	OHE OVERHEAD ELECTRIC
CF CUBIC FEET	OHT OVERHEAD TELEPHONE
CFS CUBIC FEET PER SECOND	P PERMETER
CG(R) CURB AND GUTTER (REVERSE SLOPE)	P&P PLAN AND PROFILE
CH CHORD	PC POINT OF CURVATURE
CHBRG CHORD BEARING	PCC POINT OF COMPOUND CURVE
CIP CAST IRON PIPE	PCCT POINT OF CURVATURE TOP OF CURB
CL CENTERLINE OR CLASS	PCEP POINT OF CURVE EDGE OF PAVEMENT
L CENTERLINE	PFM PUBLIC FACILITIES MANUAL
C/L CLEAR	PG PACE
CM CUBIC METERS	PGL POINT OF GRADE LINE
CMP CORRUGATED METAL PIPE	PI POINT OF INTERSECTION
CMS CUBIC METERS PER SECOND	PL PROPERTY LINE
CN RUNOFF CURVE NUMBER	L PROPERTY LINE
CONT CONTINUOUS	PRC POINT OF REVERSE CURVE
COUNTY COUNTY	PRELIM PRELIMINARY
C.O. CLEAN OUT	PROP PROPOSED
CONC CONCRETE	PT POINT OF TANGENCY
CS CURB STOP	PVC POINT OF VERTICAL CURVE
CT COURT	PVI POINT OF VERTICAL INTERSECTION
CTR CENTERLINE	PVM PAVEMENT
CY CUBIC YARD	PVRC POINT OF VERTICAL REVERSE CURVE
DA DEPTH	PVT POINT OF VERTICAL TANGENT
DA DRAINAGE AREA	Q (cfs) AMOUNT OF RUNOFF (FLOW RATE)
DB DEED BOOK	R RADIUS
DEQ VA. DEPARTMENT OF ENVIRONMENTAL QUALITY	RCP REINFORCED CONCRETE PIPE
DET DETAIL	RD ROAD OR ROOF DRAIN
DIA DIAMETER	REINF REINFORCED
DIP DUCTILE IRON PIPE	REQD REQUIRED
DI DROP INLET	RET RETAINING
DIST DISTANCE	REV REVISION
DL DOMESTIC LINE	RGP ROUGH GRADING PLAN
DM DROP MANHOLE	RMA RESOURCE MANAGEMENT AREA
DOM DOMESTIC	ROM REMOTE OUTSIDE MONITOR
DR DRIVE	RPA RESOURCE PROTECTION AREA
DRN DRAINAGE AREA	RR RAILROAD
DS DOWN SPOUT	RT RIGHT
DU DWELLING UNITS	RTE ROUTE
DWG DRAWING	R/W RIGHT OF WAY
D/W DRIVEWAY	S SPEED OR SLOPE
Δ DELTA	SAN SANITARY
E RATE OF SUPER ELEVATION	SBL SOUTH BOUND LANE
EA EACH	SCH SCHEDULE
EBL EAST BOUND LANE	SD SIGHT DISTANCE
EC EROSION CONTROL	SEC SECTION
EG EDGE OF GUTTER	SECT SECTION
EGL ENERGY GRADIENT LINE	SEW SEWER
EL ELEVATION	SF SQUARE FEET
ELEC ELECTRIC	SH SHOULDER
ELEV ELEVATION	SP SPACE OR SITE PLAN
ENGR ENGINEER	SPEC SPECIFICATIONS
ENT ENTRANCE	STA STATION
EP EDGE OF PAVEMENT	STD STANDARD
EQUIP EQUIPMENT	STK STACK
ES END SECTION	STM STORM
ESAT EASEMENT	STR STRUCTURE
ETD EXISTING TO BE DEMOLISHED	SVC SERVICE
ETR EXISTING TO REMAIN	S/W SIDEWALK
ETRL EXISTING TO BE RELOCATED	SWM STORM WATER MANAGEMENT
ETRP EXISTING TO BE REPLACED	Sx CROSS SLOPE
EVCE ENDING VERTICAL CURVE ELEVATION	SY SQUARE YARD
EVCS ENDING VERTICAL CURVE STATION	T TANGENT
EW EXISTING	TB TOP OF BANK OR TEST BORING
EQC ENVIRONMENTAL QUALITY CORRIDOR	TC TOP OF CURB
F FIRE LINE	Tc TIME OF CONCENTRATION
FAR FLOOR AREA RATIO	TEL TELEPHONE
FC FACE OF CURB	TEMP TEMPORARY
FD FLOOR DRAIN	TH TEST HOLE
FF FIRST FLOOR	TOS TOP OF SLAB
FG FINISH GRADE	TP TEST PIT OR TREE PROTECTION
FH FIRE HYDRANT	TRANSP TRANSPORTATION
FLOW LINE	TW TOP OF WALL OR TAILWATER
FOUNDATION	TYT TYPICAL
FDY FOYER	UG UNDERGROUND
FFS FEET PER SECOND	UGE UNDERGROUND ELECTRIC
FS FIRE SERVICE OR FACTOR OF SAFETY	UGT UNDERGROUND TELEPHONE
FT FOOT / FEET	UGC UNDERGROUND CABLE
GAR GARAGE	UL UPPER LEVEL
GFA GROSS FLOOR AREA	UP UTILITY POLE
GR GUARD RAIL OR GRATE INLET	USSG US GEOLOGICAL SURVEY
HC HANDICAP	V OR VOL VOLUME
HB HORIZONTAL BEND	V OR VEL VELOCITY
HDPE HIGH DENSITY POLYETHYLENE PIPE	VA VIRGINIA
HGL HYDRAULIC GRADE LINE	VAN HANDICAPPED VAN PARKING SPACE
HORZ HORIZONTAL	VB VERTICAL BEND
HP HIGH POINT	VC VERTICAL CURVE
HR HAND RAIL	VDOT VIRGINIA DEPT OF TRANSPORTATION
HT HEIGHT	VF VERTICAL FOOT
HW HEADWATER	W WEIGHT OR WIDTH
I RAINFALL INTENSITY	WBL WEST BOUND LANE
IO INSIDE DIAMETER OR IDENTIFICATION	WL WATER LINE
IE INVERT ELEVATION	WM WATER METER
IN INCH	W/M OR WM WATER MAIN
INV INVERT	WQA WATER QUALITY IMPACT ASSESSMENT
IP IRON PIPE	WV WATER VALVE
IPF IRON PIPE FOUND	XF TRANSFORMER
IPS IRON PIPE SET	YI YARD INLET
JB JUNCTION BOX	YR YEAR
JNT JOINT	Z SIDE SLOPES
K SIGHT DISTANCE COEFFICIENT	
Ke CULVERT ENTRANCE LOSS COEFFICIENT	

GENERAL NOTES:	
1.	THE PROPERTY LINES DEPICTED HEREON WERE COMPILED FROM EXISTING RECORD INFORMATION AND A LIMITED FIELD SURVEY. THE PROPERTY INFORMATION SHOWN HEREON DOES NOT REPRESENT THE RESULTS OF A BOUNDARY SURVEY.
2.	NO TITLE REPORT FURNISHED WHICH MAY REVEAL OR DISCOVER EASEMENTS NOT SHOWN HEREON.
3.	THE LOCATION OF FENCES (IF SHOWN) ARE APPROXIMATE AND DO NOT CERTIFY OWNERSHIP.
4.	UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON DESIGNATIONS AND MAPPING PERFORMED BY RICE ASSOCIATES.
5.	NO CEMETERY SITES WERE OBSERVED ON THE SUBJECT PROPERTY, HOWEVER THIS DOES NOT PRECLUDE THEIR EXISTENCE.
6.	THIS SURVEY WAS FORWARDED ELECTRONICALLY IN READ ONLY FORMAT. ANY ATTEMPT AT ALTERATION INVALIDATES THE SEAL AND SIGNATURE. AN ORIGINAL HARD COPY REMAINS ON FILE AT RICE ASSOCIATES.
7.	THE PHYSICAL FEATURES SHOWN HEREON ARE DERIVED BY CONVENTIONAL SURVEY METHODS.
8.	BEARINGS SHOWN HEREON ARE REFERENCED TO NAD '83 DATUM. THE FOOT DEFINITION USED IS THE U.S. SURVEY FOOT. ELEVATIONS SHOWN HEREON ARE BASED UPON VERTICAL DATUM NAVD '88. THE CONTOUR INTERVAL IS ONE FOOT.
9.	THE SUBJECT PROPERTY IS IDENTIFIED AS RPC #23033004.
10.	THIS SURVEY HAS BEEN CONDUCTED FOR ARLINGTON COUNTY, VIRGINIA.
11.	RESOURCE PROTECTION BUFFER INFORMATION OBTAINED FROM AVAILABLE ARLINGTON COUNTY GIS DATA.
12.	SEE SHEETS L J1.01-J5.01 FOR TREE INFORMATION, CRITICAL ROOT ZONE AND RESOURCE PROTECTION BUFFER.
13.	SEE SHEET C4.10 FOR LINE AND CURVE TABLES.
14.	AREA IS 571,942 SQUARE FEET PER ARLINGTON COUNTY TAX RECORDS.
15.	THE SITE IS LOCATED AT 901 S GEORGE MASON DR, ARLINGTON, VA 22204.
16.	THE SUBJECT PROPERTY LIES WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN, AS DEPICTED ON THE FLOOD INSURANCE RATE MAP #51013C0076C, EFFECTIVE DATE OF AUGUST 19, 2013.
17.	LEGAL DESCRIPTION ALCOVA HEIGHTS PARK: A PARCEL OF LAND DESCRIBED IN DEED BOOK 1288, PAGE 191, CORRECTED IN DEED BOOK 1377, PAGE 505. PART OF PARCEL A, PART LOT 2B, PART LOT 3, PART LOT 4, LOT 5A, LOT 6A, PART LOT 7, PART LOT 8C, PART LOT 9C, BLOCK 21, ALCOVA HEIGHTS OBTAINED AT DEED BOOK 1321, PAGE 353. LOT 10-E BLOCK 21, ALCOVA HEIGHTS OBTAINED AT DEED 1728, PAGE 486. LOT 2-A, 3-A, 3-B AND 4-A, BLOCK 0, BRUMBACK'S RESUBDIVISION OF PART BLOCK 0, EAST BARCROFT OBTAINED AT DEED BOOK 1209, PAGE 252. LOT 1 AND LOT 12, BLOCK 0, EAST BARCROFT AND AREA DESIGNATED AS PARCEL A OBTAINED AT DEED BOOK 1139, PAGE 58 PARK AREAS ALSO LIE WITHIN PORTIONS OF 6TH STREET SOUTH (UNIMPROVED) DEPICTED IN DEED BOOK 1240, PAGE 569, PORTION OF 9TH STREET SOUTH (UNIMPROVED) DEPICTED IN DEED BOOK 123, PAGE 213 AND AN AREA DEDICATED TO PUBLIC STREET, DEPICTED IN DEED BOOK 477, PAGE 428.
UTILITY NOTES: PURPOSE: TO SURVEY SPECIFIC EXISTING UNDERGROUND UTILITIES AS MARKED (DESIGNATED) BY RICE ASSOCIATES, SUBSURFACE UTILITIES MAPPING PROFESSIONALS WITHIN CLIENT SPECIFIC CORRIDORS. THE SUBSURFACE UTILITIES SHOWN ON THE MAP OF SURVEY WERE IDENTIFIED USING THE INDUSTRY STANDARD DETECTION METHODOLOGIES IN STRICT ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA. QUALITY LEVELS AND DEFINITIONS PER C/ASCE STANDARD NO. 38-02: QUALITY LEVEL "D" (DATUM) - DEPICTED ACCORDING TO UTILITY RECORD INFORMATION AND IN-FIELD VISUAL INSPECTION. NO ELECTRONIC DESIGNATING INFORMATION WAS OBTAINED. QUALITY LEVEL "C" - EXISTING UTILITY STRUCTURES HAVE BEEN FIELD LOCATED AND SURVEYED TO ASSIST IN THE DEPICTING OF THE UTILITIES SHOWN ON THE RECORDS. NO ELECTRONIC DESIGNATING INFORMATION WAS OBTAINED. QUALITY LEVEL "B" - INFORMATION WAS OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE SUBSURFACE UTILITIES. QL-B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. QUALITY LEVEL "A" - OBTAIN PRECISE HORIZONTAL AND VERTICAL POSITION OF THE UTILITY LINE BY EXCAVATING A TEST HOLE. THE TEST HOLE SHALL BE DONE USING VACUUM EXCAVATION OR COMPARABLE NON-DESTRUCTIVE EQUIPMENT IN A MANNER AS TO CAUSE NO DAMAGE TO UTILITY LINE. 1. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED 'QUALITY LEVELS' AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEERS DOCUMENT ASCE 38-02, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA. 2. UTILITIES WITH A 'DATUR' LABEL (QUALITY LEVEL 'D') ARE DEPICTED ON THE PLANS USING JUDGMENT IN INTERPRETING AVAILABLE THIRD-PARTY RECORDS OR OTHER INFORMATION. 3. UTILITIES WITH NO LABEL ARE QUALITY LEVEL 'B' AND ARE DEPICTED ON THE PLANS USING JUDGMENT IN SELECTING AND INTERPRETING APPROPRIATE GEOPHYSICAL DATA, SURVEYING TO APPROPRIATE PROJECT ACCURACIES THE PROJECTION OF THAT DATA ON THE GROUND SURFACE, AND THEN USING JUDGMENT TO CORRELATE THIRD-PARTY AVAILABLE RECORDS OR OTHER INFORMATION, IF ANY, AS PERTAINING TO THESE QLB DEPICTIONS. 4. UTILITY SIZE AND TYPE FOR QUALITY LEVEL 'B' DEPICTIONS ARE DETERMINED THROUGH AVAILABLE UTILITY OWNER INFORMATION. UTILITIES LABELED AS UNKNOWN HAVE NO CORRELATED RECORDS OR VISIBLE APPURTENANCES TO DETERMINE FUNCTION OR TYPE. 5. AN ATTEMPT TO ACHIEVE QUALITY LEVEL 'B' DATA WAS MADE FOR ALL UTILITIES WITHIN THE PROJECT LIMITS EXCEPT FOR GRAWTY SEWERS, STORM DRAINS AND SERVICE LINES LESS THAN 1.25" IN DIAMETER AS SHOWN BY UTILITY SERVICE RECORDS. 6. UTILITY MAPPING WAS COMPLETED ON 9/28/2017. UTILITIES MAY HAVE BEEN CHANGED OR ADDED AFTER THIS DATE. 7. RELIANCE UPON THIS DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICIES, AND/OR PROCEDURES DURING EXCAVATION. 8. IT IS IMPORTANT THAT THE CONTRACTOR INVESTIGATES AND UNDERSTANDS THE SCOPE OF WORK BETWEEN THE PROJECT OWNER AND THEIR ENGINEER REGARDING THE SCOPE AND LIMITS OF THE UTILITY INVESTIGATIONS LEADING TO THESE UTILITY DEPICTIONS. 9. A 1/2" PVC WATER LINE IS FEEDING THIS WATER FOUNTAIN. WE WERE UNABLE TO LOCATE THIS LINE DUE TO NO TRACER WIRE BEING PRESENT AND THE LINE BEING TOO SMALL TO LOCATE VIA GROUND PENETRATING RADAR. 10. THERE IS AN ELECTRIC LINE ENTERING THE GROUND FROM THIS UTILITY POLE. WE WERE UNABLE TO LOCATE THIS LINE AND BELIEVE THAT THIS LINE IS POSSIBLY ABANDONED. 11. AT THE TIME OF THIS SUBMITTAL, VERIZON HAS YET TO PROVIDE RECORD DRAWINGS OF THERE FACILITIES WITHIN THE PROJECT LIMITS. MULTIPLE REQUESTS HAVE BEEN MADE.	
SURVEYOR'S CERTIFICATION THIS TOPOGRAPHIC SURVEY OF ALCOVA HEIGHTS PARK, IDENTIFIED AS RPC NUMBER 23033004, WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF WILLIAM G. LIPPY, JR. FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED BETWEEN THE DATES OF SEPTEMBER 27, 2017 AND OCTOBER 31, 2017; AND THAT THIS PLAT, MAP OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.	

ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES (DES)		
1.	ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT ARLINGTON COUNTY DES STANDARDS AND SPECIFICATIONS.	
2.	THE DEVELOPER OR CONTRACTOR SHALL REMOVE AND REPLACE, TO THE CURRENT ARLINGTON COUNTY DES STANDARDS AND SPECIFICATIONS, ANY EXISTING ENTRANCES, CURB AND GUTTER OR SIDEWALK ALONG THE FRONTAGE OF THIS SITE IN POOR CONDITION, OR DAMAGED DURING CONSTRUCTION.	
3.	THE DEVELOPER OR CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND CLOSING, TO ARLINGTON COUNTY STANDARDS, ANY EXISTING ENTRANCES NOT BEING USED IN CONJUNCTION WITH THIS DEVELOPMENT.	
4.	THE DEVELOPER OR CONTRACTOR SHALL OBTAIN ARLINGTON COUNTY PERMITS FOR ALL WORK WITHIN THE RIGHT-OF-WAY ALONG THE FRONTAGE OF THIS SITE.	
5.	THERE MAY BE UNDERGROUND CONDUIT, CABLES AND TRAFFIC DETECTION DEVICES IN THIS AREA, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY TRAFFIC CONTROLS THAT ARE DISTURBED DURING CONSTRUCTION. NOTIFY THE TRANSPORTATION ENGINEERING & OPERATIONS BUREAU AT (703) 228-3575, 24 HOURS PRIOR TO STARTING WORK.	
6.	THE DEVELOPER OR CONTRACTOR SHALL NOT DISTURB OR REMOVE ANY TRAFFIC CONTROL SIGNS, PARKING METERS OR ANY OTHER TRAFFIC CONTROL DEVICE WITHOUT PRIOR PERMISSION FROM THE TRANSPORTATION ENGINEERING & OPERATIONS BUREAU. CONTACT TRANSPORTATION ENGINEERING AT (703) 228-3575.	
7.	THE DEVELOPER OR CONTRACTOR SHALL OBTAIN A PERMIT FROM THE TRANSPORTATION ENGINEERING & OPERATIONS BUREAU, PRIOR TO PLACING ANY OBSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY, OR ON SIDEWALKS ALONG THE FRONTAGE OF THIS DEVELOPMENT	
8.	ALL SANITARY SEWER CLEAN-OUTS LOCATED WITHIN THE TRAVEL WAY OF THIS DEVELOPMENT SHALL BE CAST IRON.	
9.	THE CONTRACTOR SHALL CONSTRUCT ALL HANDICAP RAMPS TO THE CURRENT VDOT STANDARD. USE 4' X 2' TRUNCATED DOME PANELS CUT TO FIT IF REQUIRED.	
10.	THE DEVELOPER OR CONTRACTOR SHALL OBTAIN PERMITS FROM THE INSPECTION SERVICES DIVISION PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION OF ON-SITE FACILITIES. FOR INFORMATION AND PERMIT REQUIREMENTS TELEPHONE (703) 228-3800.	
11.	THE PLANTING OF STREET TREES FOR THIS DEVELOPMENT, SHALL BE COORDINATED WITH AND APPROVED BY THE DEPARTMENT OF PARKS, RECREATION AND CULTURAL RESOURCES (PPRCR). THIS COORDINATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, DEVELOPER OR THEIR ENGINEER. THE DEVELOPER OR CONTRACTOR SHALL CONTACT PRCR AT (703) 228-1863, 72 HOURS IN ADVANCE TO SCHEDULE INSPECTION OF EXCAVATION, PLANT MATERIAL AND INSTALLATION. ALSO PRIOR TO REMOVING OR DISTURBING ANY EXISTING COUNTY TREES CONTACT PRCR FOR INFORMATION AND APPROVAL.	
12.	COORDINATE WITH DES-TRANSIT BUREAU AT (703) 228-3049 AT LEAST 4 WEEKS PRIOR TO COMMENCEMENT OF WORK IF TRANSIT IS AFFECTED OR IF THERE ARE ANY IMPACTS TO TRANSIT STOPS OR ROUTES. ALL BUS TRAVEL LANES MUST BE MINIMUM 11' WIDE.	
STREET LIGHTING INFORMATION:		
13.	DESIGN PROPOSED ARLINGTON COUNTY STANDARD STREET LIGHT LOCATION. THE DEVELOPER OR CONTRACTOR SHALL CONTACT THE TRANSPORTATION ENGINEERING & OPERATIONS BUREAU AT (703) 228-3575 FOR LIGHTING REQUIREMENTS, SPECIFICATIONS AND COORDINATION INFORMATION. THE CAPITAL COST OF THE LIGHTING INSTALLATION SHALL BE PAID BY THE DEVELOPER OR CONTRACTOR.	
14.	--- DENOTES 2-INCH RIGID STEEL CONDUIT, INSTALLED 24-INCHES DEEP AND NOT MORE THAN 6-INCHES FROM THE BACK OF CURB. THIS CONDUIT SHALL BE FURNISHED BY THE DEVELOPER OR CONTRACTOR AND CONTAIN A NYLON CORD OR PULL WIRE WITH 500 LBS. MINIMUM STRESS PULL. CONTACT THE TRANSPORTATION ENGINEERING & OPERATIONS BUREAU AT (703) 228-3575 FOR CONDUIT SPECIFICATIONS, AND INSTALLATION REQUIREMENTS.	
UTILITY MARKING REQUIREMENT:		
15.	THE DEVELOPER OR CONTRACTOR SHALL NOTIFY "MISS UTILITY OF VIRGINIA" DIAL 811 OR 1-800-552-7001, 48 HOURS PRIOR TO THE START OF ANY EXCAVATION OR CONSTRUCTION, FOR THE MARKING OF UNDERGROUND UTILITIES.	
HANDICAP ACCESSIBILITY NOTES		
1.	THE DESIGN PROFESSIONAL SIGNING THIS DOCUMENT REPRESENTS THAT TO THE BEST OF HIS/HER PROFESSIONAL JUDGMENT, KNOWLEDGE, AND BELIEF THE DESIGN SPECIFICATIONS HEREIN COMPLY WITH THE FAIR HOUSING ACT (FHA) AND, WHERE APPLICABLE, THE AMERICANS WITH DISABILITIES ACT (ADA).	
2.	ALL GRADES/SLOPES SHOWN ON THIS PLAN WERE DESIGNED AT OR BELOW MAXIMUMS ALLOWED BY THE FAIR HOUSING ACT AND THE AMERICANS WITH DISABILITIES ACT (ADA). IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE FAIR HOUSING ACCESSIBILITY GUIDELINES, AND THE FAIR HOUSING ACT DESIGN MANUAL AND, WHERE APPLICABLE, THE AMERICANS WITH DISABILITIES ACT (ADA).	
3.	IN THE EVENT THAT A DESIGN QUESTION SHOULD ARISE, OR A FIELD CONDITION PRESENT ITSELF THAT IS DIFFERENT FROM THOSE SHOWN ON THESE PLANS, WORK SHOULD CEASE AND THE ENGINEER SHOULD BE NOTIFIED SO THAT AN ACCEPTABLE SOLUTION CAN BE DETERMINED.	
4.	THE CONTRACTOR IS ADVISED TO CAREFULLY CHECK ALL THE PHASES OR WORK RELATING TO FAIR HOUSING ACCESSIBILITY AND THE AMERICANS WITH DISABILITIES ACT (ADA) FOR THIS PROJECT. SINCE THE CODE DOES NOT ALLOW FOR CONSTRUCTION TOLERANCE, AND CONSTRUCTION THAT EXCEEDS MAXIMUM OR MINIMUM DIMENSIONS AND SLOPES AS REQUIRED BY THE FAIR HOUSING ACT AND THE AMERICANS WITH DISABILITIES ACT (ADA) ARE SUBJECT TO REJECTION AND MAY BE REQUIRED TO BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.	
5.	SINCE THE CIVIL ENGINEER OR SURVEYOR CANNOT CONTROL THE EXACT METHODS OR MEANS USED BY THE GENERAL CONTRACTOR OF THEIR SUBCONTRACTORS DURING GRADING AND CONSTRUCTION OF THE PROJECT, THE CIVIL ENGINEER OR SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE FINAL ACCEPTANCE OF FAIR HOUSING ACT AND THE AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY RELATED ITEMS BY THE COUNTY, ANY OTHER AUTHORITY, OR OTHER AFFECTED PARTIES.	
UTILITY OWNERS		
ARLINGTON COUNTY DARRYL SMITH 4200 28TH ST. ARLINGTON, VA 22206 (703) 228-8767	DOMINION POWER JULIA MATHERS 3072 CENTREVILLE RD. HERNDON, VA 20171 (571) 203-5324	WASHINGTON GAS DEBBIE BUNYEA 6801 INDUSTRIAL BLVD. SPRINGFIELD, VA 22151 (703) 750-4403
COMCAST AMY GOAD 11101 UNIVERSITY BLVD. MANASSAS, VA 20110 (301) 625-3407	VERIZON LENWOOD TURNER 4242 DUKE ST. ALEXANDRIA, VA 22304 (703) 212-5263	
ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES		
GENERAL NOTES ABBREVIATIONS LEGEND Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia		
Scale: N/A	Number: 2	of 68
GENERAL NOTES ABBREVIATIONS LEGEND C2.00		
BID SET: 21-DPR-ITB-291		

ARLINGTON VIRGINIA

DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL

APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location

Alcova Heights Park

SEAL



APPROVALS _____ DATE _____

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS _____ DATE _____

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP

MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-KEY.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

OVERALL SITE PLAN C3.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

OVERALL SITE PLAN
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

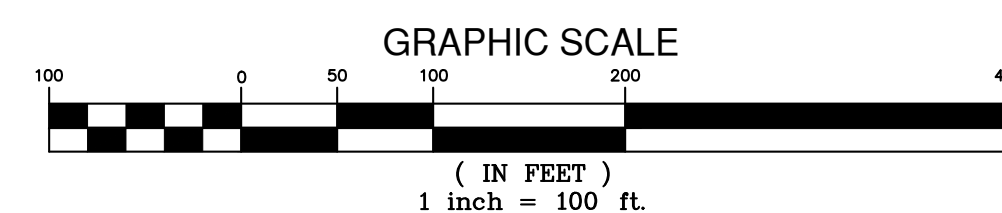
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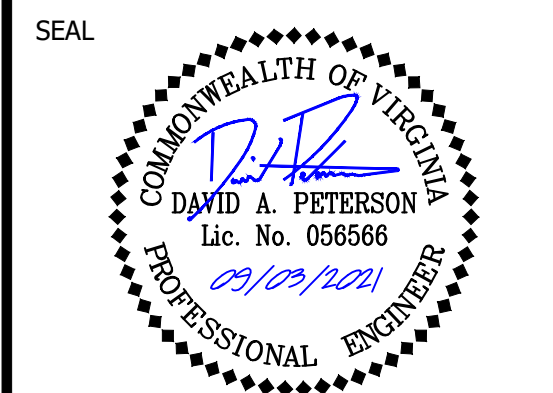
Number: 3 of 68

LINE TABLE			
LABEL	BEARING	DIST. (REC.)	DIST. (COMP.)
L1	S39°38'19"W	57.36'	58.06'
L2	S02°41'59"W	27.29'	
L3	N70°34'29"E	51.78'	
L4	S26°44'42"W	51.67'	
L5	S09°56'49"W	80.01'	
L6	S51°11'59"W	127.83'	
L7	N68°56'06"E	30.10'	
L8	S68°56'06"W	66.35'	
L9	S24°42'06"W	50.29'	
L10	N66°57'54"E	16.21'	

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	152.87'	98.56'	S21°10'18"W	96.86'	36°56'20"	51.06'
C2	28.67'	16.61'	N19°18'00"E	16.38'	33°12'03"	8.55'
C3	180.76'	67.67'	S25°10'33"W	67.28'	21°27'10"	34.24'
C4	140.76'	23.63'	S31°05'59"W	23.60'	9°36'58"	11.84'

CONTROL TABLE				
#	NORTHING	EASTING	ELEV.	DESCRIPTION
1	6999252.438	11881369.4423	147.59	ROD & CAP
2	6999125.8180	11880959.6450	155.51	ROD & CAP
3	6999374.5794	11880941.7971	153.24	ROD & CAP
4	6999636.5260	11880837.1969	151.89	ROD & CAP
5	6999861.1911	11880737.3999	156.28	ROD & CAP
6	7000146.7270	11880628.6835	170.36	ROD & CAP
7	7000368.2557	11880529.6770	176.39	ROD & CAP
8	7000655.0720	11880421.7698	181.64	ROD & CAP
9	7000542.9821	11880655.8469	160.30	ROD & CAP
10	7000591.9972	11880848.1169	168.95	ROD & CAP
11	7000004.9216	11881004.5535	173.96	ROD & CAP
12	7001092.0096	11881076.5464	185.56	ROD & CAP
13	7000909.0518	11881159.6545	162.37	ROD & CAP
14	7000634.0139	11881098.4066	158.92	ROD & CAP
15	7000284.2478	11880869.2996	149.40	ROD & CAP
16	7000025.2127	11880987.4216	148.61	ROD & CAP
17	6999782.6869	11881143.6560	151.81	ROD & CAP
18	6999509.8672	11881258.1713	154.96	MAG NAIL





APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-XFT.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VOLTZMAN

SHEET

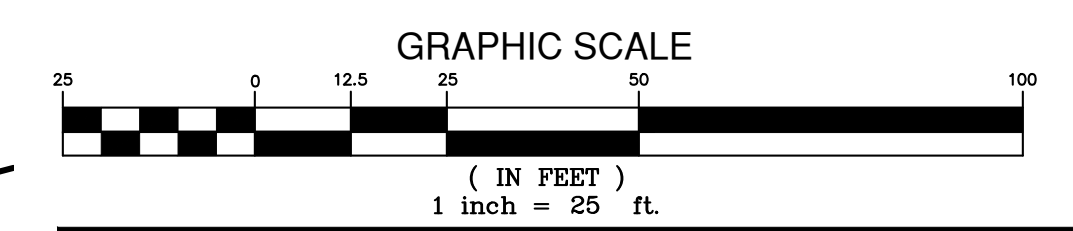
EXISTING CONDITIONS (1 OF 2) C4.00

SANITARY SEWER TABLE

334	SANITARY SEWER MANHOLE TOP=143.41' 8" DIP INV. IN=131.75' (FROM #417) 8" DIP INV. IN=132.67' (FROM #8573) 15" DIP INV. IN=131.17' (FROM #335) 15" DIP INV. OUT=131.11' (TO #333)
335	SANITARY SEWER MANHOLE TOP=148.32' 8" DIP INV. IN=138.42' (FROM #363) 15" DIP INV. IN=138.08' (FROM #336) 15" DIP INV. OUT=138.05' (TO #334)
336	SANITARY SEWER MANHOLE TOP=149.24' 15" DIP INV. IN=140.54' (FROM #14783) 15" DIP INV. OUT=140.46' (TO #335)
337	SANITARY SEWER MANHOLE TOP=153.22' 8" DIP INV. IN=143.70' (FROM #10972) 10" DIP INV. IN=144.67' (FROM UNKNOWN) 12" DIP INV. IN=143.27' (FROM #7709) 15" DIP INV. OUT=143.22' (TO #14783)
11093	SANITARY SEWER MANHOLE TOP=159.76' STRUCTURE IS LOCKED NOT ACCESS
11094	SANITARY SEWER MANHOLE TOP=159.45' 21" DIP INV. IN=149.25' (FROM #11093) 21" DIP INV. OUT=149.05' (TO #11095)
11095	SANITARY SEWER MANHOLE TOP=159.33' 21" DIP INV. IN=146.67' (FROM #11094) 21" DIP INV. OUT=146.47' (TO #11096)
11096	SANITARY SEWER MANHOLE TOP=158.04' 8" PVC INV. IN=INACCESSIBLE (FROM #41570) 21" DIP INV. IN=145.68' (FROM #11095) 21" DIP INV. OUT=145.51' (TO #12099) BARREL IS FULL OF VINES / ROOTS.
12094	SANITARY SEWER MANHOLE TOP=153.12' 21" DIP INV. IN=139.05' (FROM #12095) 21" DIP INV. OUT=139.03' (TO SOUTH)
12095	SANITARY SEWER MANHOLE TOP=151.75' 21" DIP INV. IN=139.15' (FROM #12096) 21" DIP INV. OUT=139.07' (TO #12094)
12096	SANITARY SEWER MANHOLE TOP=148.47' 21" DIP INV. IN=139.56' (FROM #12097) (BACK FLOW NOTED FROM #12097) 21" DIP INV. OUT=139.45' (TO #12095)
12097	SANITARY SEWER MANHOLE TOP=148.45' 21" DIP INV. IN=139.47' (FROM #12098) 21" DIP INV. OUT=139.43' (TO #12096) (BACK FLOW NOTED TO #12096)
12098	SANITARY SEWER MANHOLE TOP=149.29' 21" DIP INV. IN=140.39' (FROM #12099) 21" DIP INV. OUT=140.36' (TO #12097)
12099	SANITARY SEWER MANHOLE TOP=150.79' 15" DIP OVERFLOW INV.=141.59 (TO #14783) 21" DIP INV. IN=141.19' (FROM #11096) 21" DIP INV. OUT=140.99' (TO #12097)
14783	SANITARY SEWER MANHOLE TOP=150.31' 15" DIP OVERFLOW INV.=141.44 (FROM #12099) 15" DIP INV. IN=141.37' (FROM #337) 15" DIP INV. OUT=141.31' (TO #336)
41570	SANITARY SEWER MANHOLE TOP=172.82' 4" PVC INV. IN=168.17' (FROM EAST) 4" PVC INV. IN=168.17' (FROM SOUTH) 8" PVC INV. OUT=168.07' (TO #11096)
RA-1	SANITARY SEWER MANHOLE TOP=159.76' MANHOLE IS ABANDONED 12" DIP INV. IN=151.24' (FROM NORTH EAST) 12" DIP INV. OUT=151.14' (TO SOUTH WEST) PIPE TERMINUS UNKNOWN

STORM SEWER TABLE

15813	GRATE INLET TOP=153.12' 24" RCP INV. IN=147.23' (FROM EAST) 24" RCP INV. OUT=147.20' (TO #15857)
15857	CURB DROP INLET TOP=147.71' 24" RCP INV. IN=142.56' (FROM #15813) 24" RCP INV. OUT=142.39' (TO #15891)
15861	HEADWALL 84" RCP (A) INV.=138.31' (TO #15921) 84" RCP (B) INV.=138.28' (TO #15921)
15889	CURB DROP INLET TOP=148.37' 18" RCP INV. OUT=143.12' (TO #15922)
15891	CURB DROP INLET TOP=147.90' 24" RCP INV. IN=141.53' (FROM #15857) 24" RCP INV. OUT=141.32' (TO #15923)
15917	CURB DROP INLET TOP=158.17' 18" RCP INV. IN=152.84' (FROM 15930) 18" RCP INV. OUT=152.79' (TO #15965)
15921	HEADWALL 84" RCP (A) INV.=137.82' (FROM #15861) 84" RCP (B) INV.=137.84' (FROM #15861)
15922	CURB DROP INLET TOP=148.30' 18" RCP INV. IN=142.73' (FROM #15889) 36" RCP INV. IN=141.49' (FROM #15965) 36" RCP INV. OUT=140.96' (TO #15928)
15923	24" RCP INV.=140.36' (FROM #15891)
15928	36" RCP INV.=138.55' (FROM #15922)
15930	CURB DROP INLET TOP=158.46' 18" RCP INV. IN=153.84' (FROM WEST) 18" RCP INV. OUT=153.76' (TO #15917)
15965	STORM MANHOLE TOP=156.49' 18" RCP INV. IN=150.81' (FROM #15917) 24" RCP INV. IN=150.38' (FROM 16027) 36" RCP INV. OUT=149.49' (TO #15922)
16027	CURB DROP INLET TOP=163.65' 18" RCP INV. IN=160.05' (FROM NORTH WEST) 24" RCP INV. IN=159.45' (FROM SOUTH WEST) 24" RCP INV. OUT=159.38' (TO #15965)

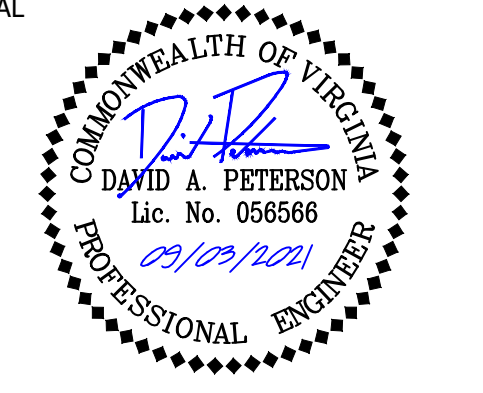


ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

EXISTING CONDITIONS (1 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25' Number: 4 of 68

SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-XFT.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

EXISTING CONDITIONS
(2 OF 2)
C4.10

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

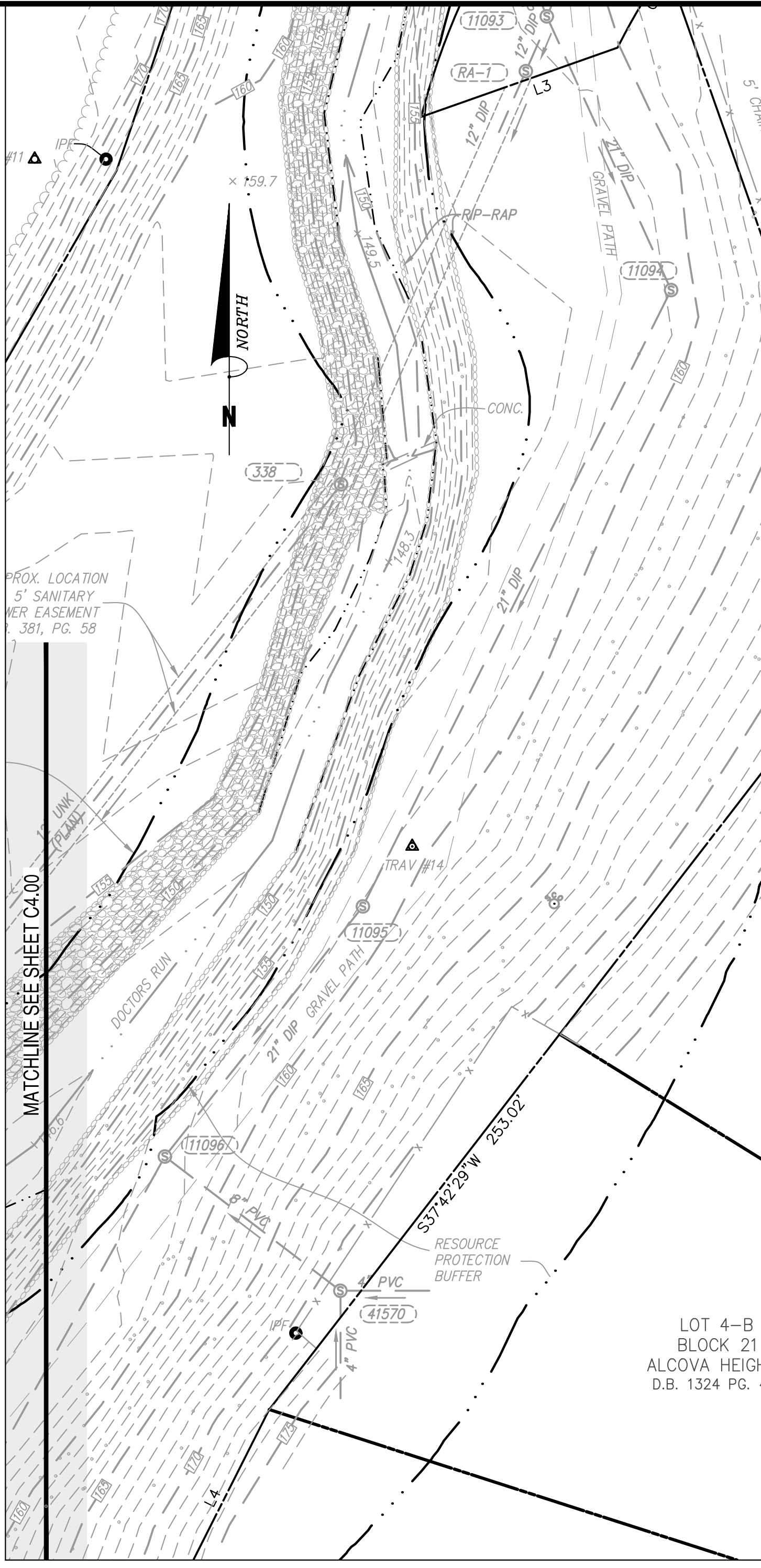
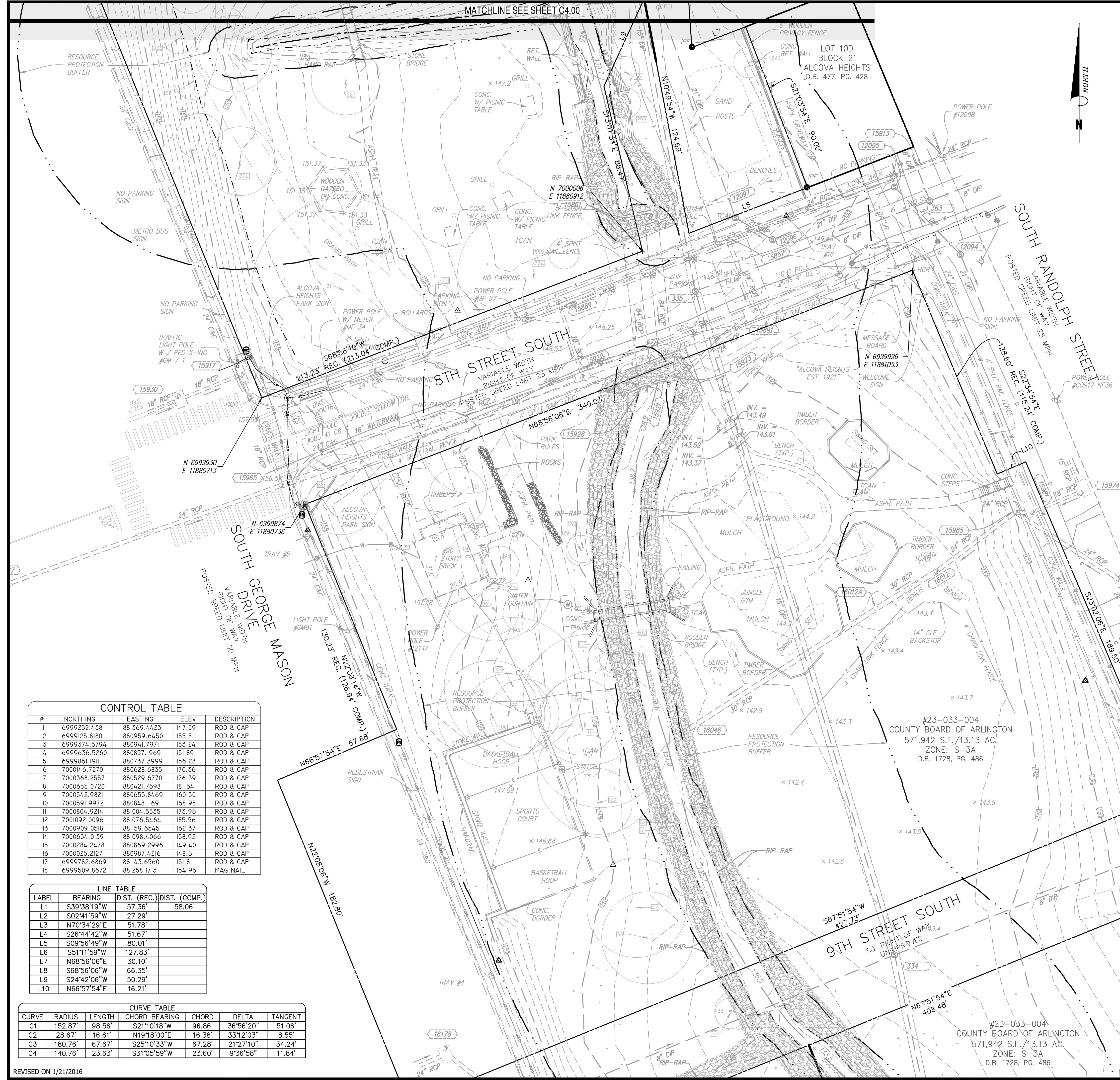
EXISTING CONDITIONS (2 OF 2)

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25'

Number: 5 of 68

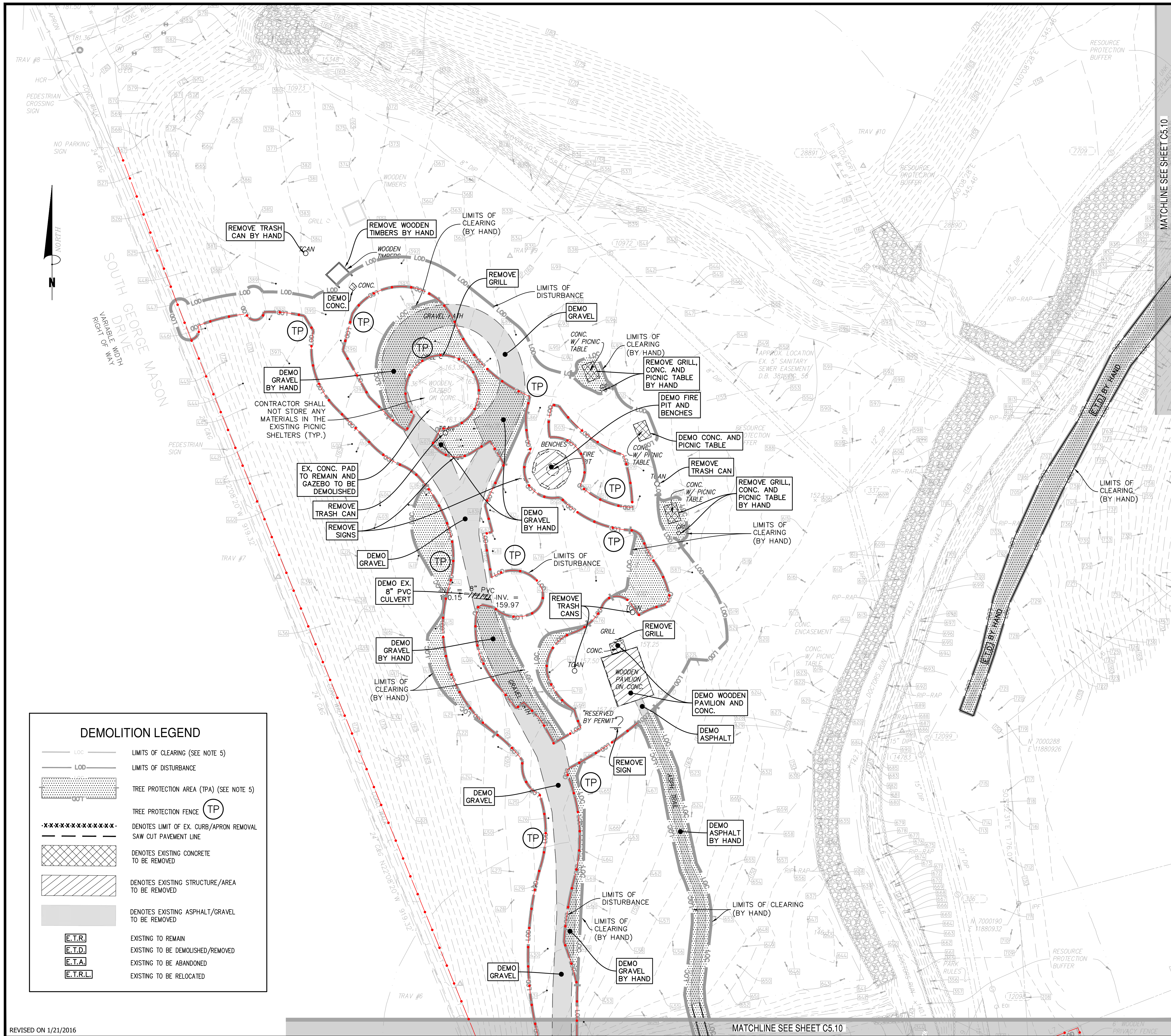
BID SET: 21-DPR-ITB-291



#	NORTHING	EASTING	ELEV.	DESCRIPTION
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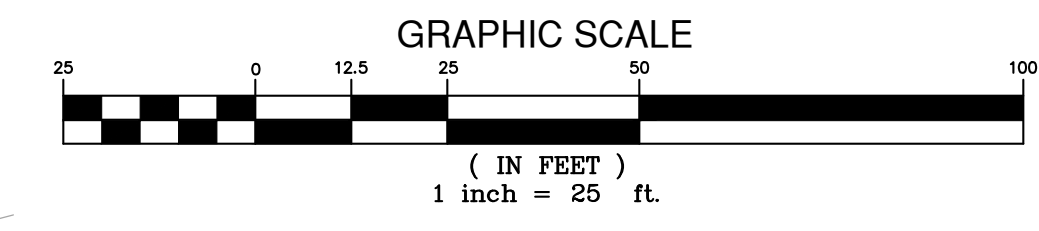
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	152.87'	98.56'	S21°10'18"W	96.86'	36°56'20"	51.06'
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C4	140.76'	23.63'	S31°05'59"W	23.60'	9°36'58"	11.84'



- NOTES:**
- EXISTING WATER METER(S) MAY BE USED DURING CONSTRUCTION WITH PROPER NOTIFICATION. PRIOR TO FINAL ACCEPTANCE, ALL INACTIVE WATER METERS SHALL BE PERMANENTLY DISCONNECTED BY THE CONTRACTOR AT THE WATER MAIN. ARLINGTON COUNTY WILL REMOVE THE EXISTING WATER METER FROM THE METER BOX AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING THE REMAINING WATER METER BOX. ALL ABANDONED LATERALS SHALL BE PERMANENTLY CAPPED AT THE MAIN BY THE CONTRACTOR PRIOR TO PROJECT COMPLETION, AS COORDINATED WITH THE DESIRED SITE INSPECTOR.
 - CAREFULLY REMOVE STONES FROM EXISTING RETAINING WALL WHERE SHOWN TO BE SALVAGED TO BUILD PROPOSED STEPS. CONTRACTOR IS RESPONSIBLE FOR REMOVAL, SALVAGE AND STORAGE OF STONES. SEE DETAIL 2 ON SHEET L1.01.
 - FOR EXISTING TREES TO BE REMOVED/PRESERVED, REFER TO TREE PRESERVATION PLAN ON LJ SHEETS.
 - THE HATCHED AREA LOCATED BETWEEN THE LIMITS OF CLEARING AND THE LIMITS OF DISTURBANCE IS CONSIDERED A TREE PROTECTION AREA (TPA). THIS AREA SHALL INCLUDE HAND REMOVAL OF THE EXISTING TRAIL AND SITE FEATURES WITH NON DESTRUCTIVE EROSION CONTROL MEASURES UNDER ARBORIST SUPERVISION. FINAL DELINEATION OF HATCHED AREA MUST BE APPROVED BY THE COUNTY LANDSCAPE ARCHITECT.

- SPECIAL DEMOLITION PROCEDURES:**
- DEMOLITION OF WALKS AND CURBS WITHIN TREE PROTECTION AREAS (TPAs) SHALL BE PERFORMED BY THE CONTRACT ARBORIST OR DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
 - MECHANIZED EQUIPMENT SHALL NOT ENTER THE TPAs.
 - BACKFILL OF VOIDS FROM DEMOLITION WITHIN THE TPAs SHALL BE LOOSELY PLACED TOPSOIL. ONLY THE AMOUNT OF SOIL NECESSARY TO FILL THE VOID WITHOUT SPREADING OVER EXISTING ADJACENT GRADES SHALL BE ALLOWED.
 - ROOTS ENCOUNTERED DURING DEMOLITION SHALL BE REVIEWED ON A CASE-BY-CASE BASIS BY THE CONTRACT ARBORIST. THE ARBORIST SHALL PROVIDE APPROPRIATE TREATMENT OR PRUNING METHODS AS NEEDED AND IN GENERAL CONFORMANCE WITH ACCEPTED INDUSTRY STANDARDS AND THIS SECTION.
 - LOCATION OF ALL UTILITIES SHOWN ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY AND DETERMINE THE EXACT LOCATION AND DEPTH OF ALL UTILITIES WITHIN THE LIMIT OF DISTURBANCE PRIOR TO COMMENCING WORK. REPORT ANY DISCREPANCY TO THE PROJECT OFFICER. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
 - THE DEMOLITION PLAN IS A GENERAL GUIDE OF WHAT ITEMS NEED TO BE DEMOLISHED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ALL ITEMS THAT REQUIRED DEMOLITION TO COMPLETE THE PROPOSED CONSTRUCTION.
 - CONTRACTOR SHALL PROTECT AND PRESERVE ALL EXISTING SITE STRUCTURES AND FEATURES NOT SCHEDULED FOR DEMOLITION AND/OR CONSTRUCTION FROM DAMAGE DUE TO DEMOLITION PROCEDURES. ANY RESULTING DAMAGE SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE PROJECT OFFICER. WHERE ITEMS TO BE REMOVED OCCUR WITHIN TREE PROTECTION ZONES, THE CONTRACTOR SHALL REMOVE THE ITEMS WORKING WITH A COUNTY ARBORIST (PROVIDED BY COUNTY) ON-SITE TO OBSERVE AND MINIMIZE TREE DAMAGE. CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT FIVE (5) BUSINESS DAYS PRIOR TO THESE REMOVALS.
 - CARE SHALL BE TAKEN TO PRESERVE EXISTING TREES AND THEIR ROOT SYSTEMS. TREES INCURRING ROOT DAMAGE DUE TO CONSTRUCTION SHALL BE PRUNED AND FERTILIZED PER THE SPECIFICATIONS.
 - NO MATERIALS OR EQUIPMENT SHALL BE PERMITTED WITHIN THE TREE PROTECTION AREA. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN A FINE OF \$500 PER DAY OF VIOLATION.
 - UNAUTHORIZED TREE REMOVALS, TREE DEATH OR SEVERE DAMAGE DUE TO THE CONTRACTOR'S FAILURE TO EXERCISE PROPER CARE WHEN WORKING NEAR TREES, SHALL RESULT IN A FINE EQUAL TO THE LANDSCAPE VALUE OF THE TREE AS PUBLISHED IN THE LATEST EDITION OF THE COUNCIL OF TREE AND LANDSCAPE APPRAISERS' GUIDE FOR PLANT APPRAISALS PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
 - COUNTY ARBORIST INSPECTION IS REQUIRED PRIOR TO ANY SITE LAND DISTURBANCE ACTIVITY.
 - CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES FOR SHUTOFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES AS REQUIRED.
 - THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE THAT OCCURS TO ANY EXISTING SITE ELEMENT THAT IS NOT MARKED FOR DEMOLITION DURING CONSTRUCTION AND MUST REPLACE AT NO COST TO ARLINGTON COUNTY IF DAMAGED.
 - CONTRACTOR SHALL INFORM LANDSCAPE ARCHITECT AND PROJECT OFFICER IF ANY ITEMS/INFORMATION IS NOT LISTED OR CALLED OUT, SO AN APPROPRIATE SOLUTION CAN BE DISCUSSED. CONTRACTOR SHALL HAVE WRITTEN APPROVAL FROM LANDSCAPE ARCHITECT AND PROJECT OFFICER PRIOR TO ANY FURTHER SITE WORK.
 - ALL STUMPS WITHIN LOD SHALL BE GROUND AND REMOVED.

MISS UTILITY
 CALL "MISS UTILITY" AT 1-800-552-7001, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF LOCAL CODES AND REGULATIONS.



DEMOLITION LEGEND

	LIMITS OF CLEARING (SEE NOTE 5)
	LIMITS OF DISTURBANCE
	TREE PROTECTION AREA (TPA) (SEE NOTE 5)
	TREE PROTECTION FENCE (TP)
	DENOTES LIMIT OF EX. CURB/APRON REMOVAL SAW CUT PAVEMENT LINE
	DENOTES EXISTING CONCRETE TO BE REMOVED
	DENOTES EXISTING STRUCTURE/AREA TO BE REMOVED
	DENOTES EXISTING ASPHALT/GRAVEL TO BE REMOVED
	EXISTING TO REMAIN
	EXISTING TO BE DEMOLISHED/REMOVED
	EXISTING TO BE ABANDONED
	EXISTING TO BE RELOCATED



DEPARTMENT OF PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 414
 ARLINGTON, VA 22201
 PHONE: 703.228.4747
 FAX: 703.228.3328



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
 DRAWN: CLL
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 MISS UTILITY TRANSMITTAL #: N/A

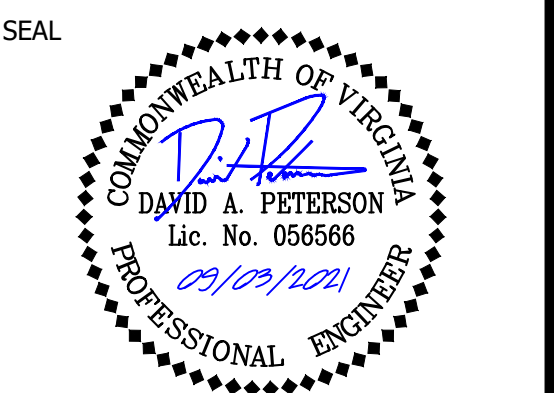
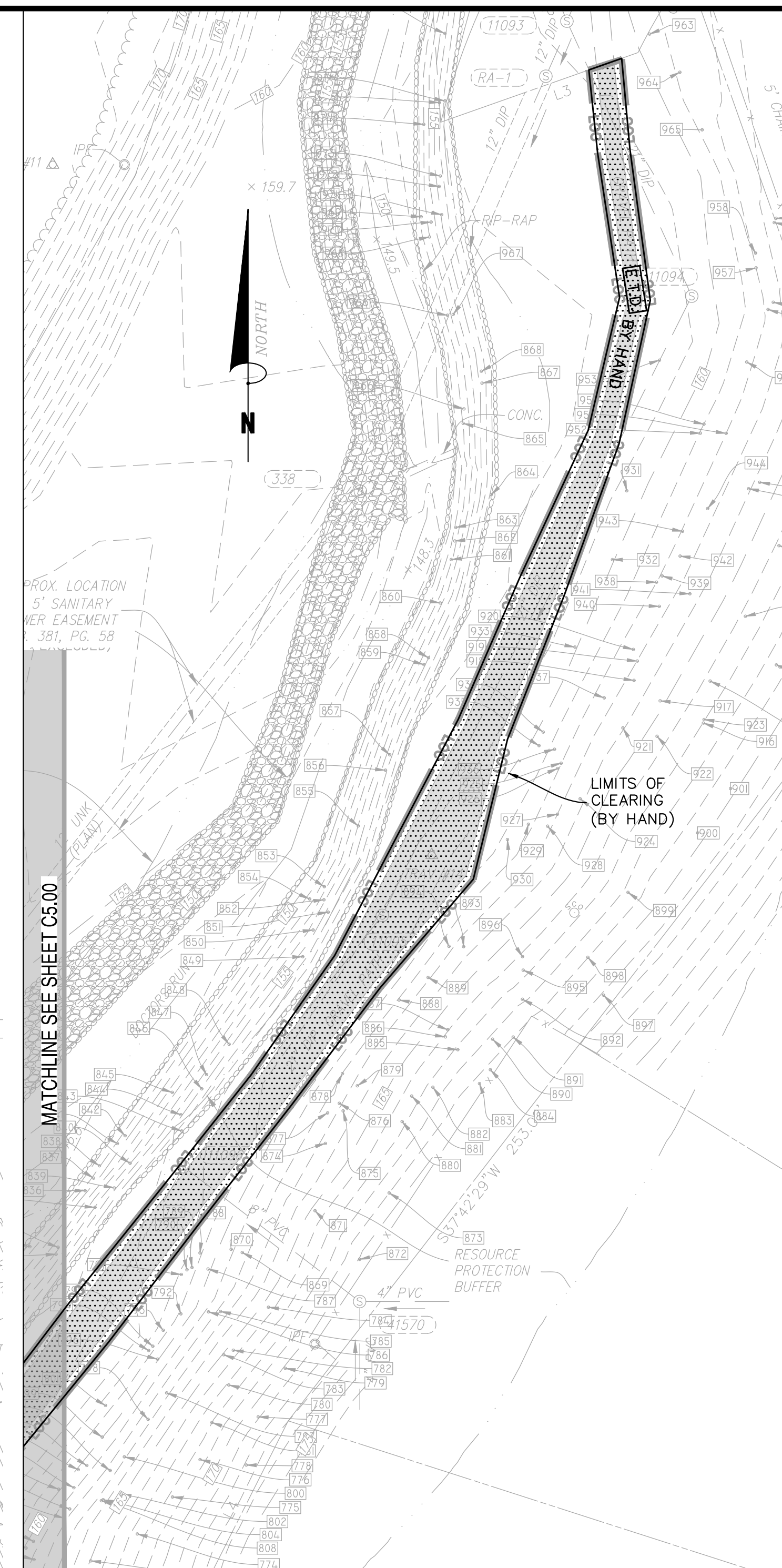
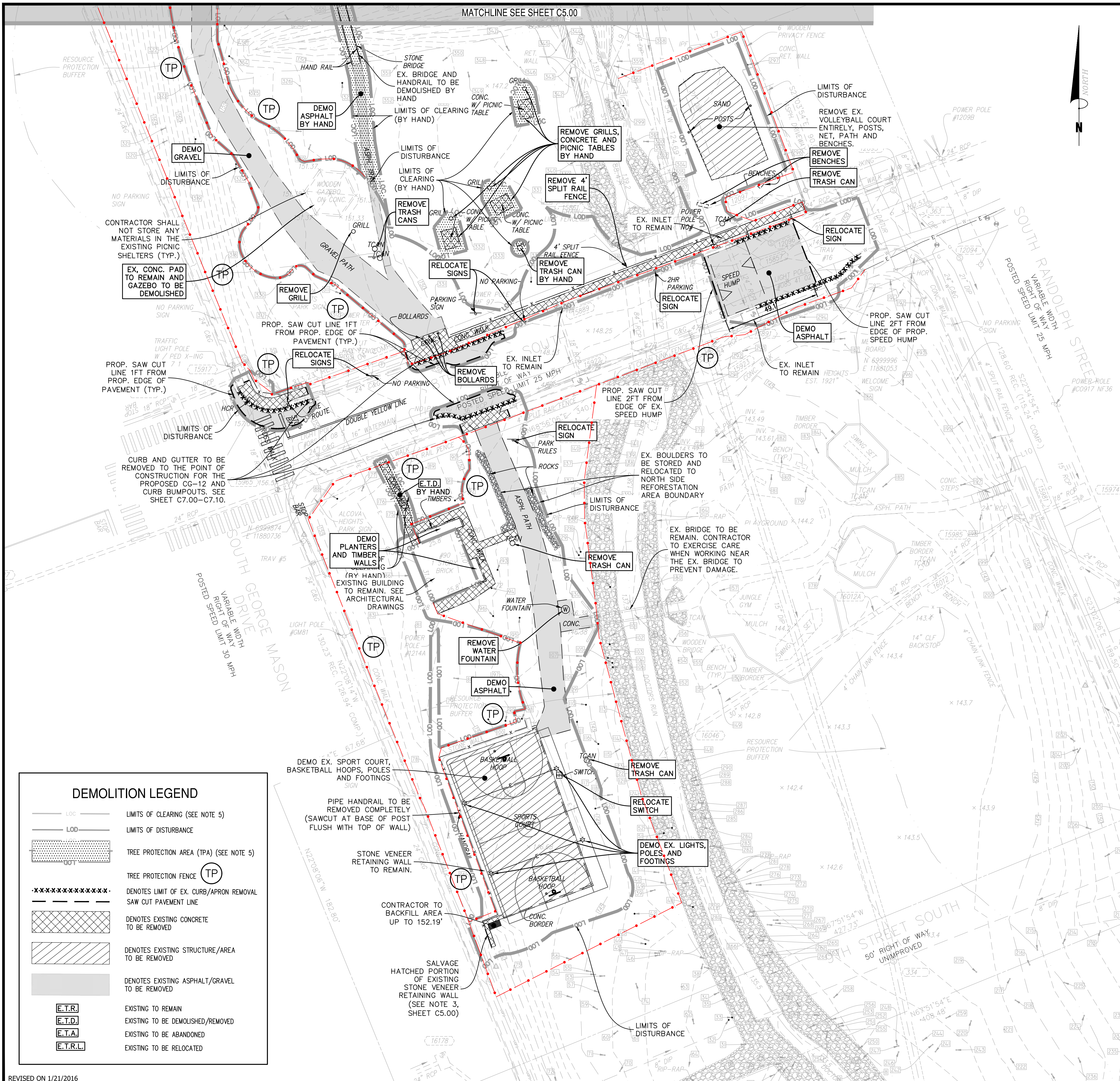
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 PLOTTED: September 20, 2021
 PLOTTED BY: VHOLTZMAN

SHEET
DEMOLITION PLAN (1 OF 2)
 C5.00

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

DEMOLITION PLAN (1 OF 2)
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: 1" = 25' Number: 6 of 68

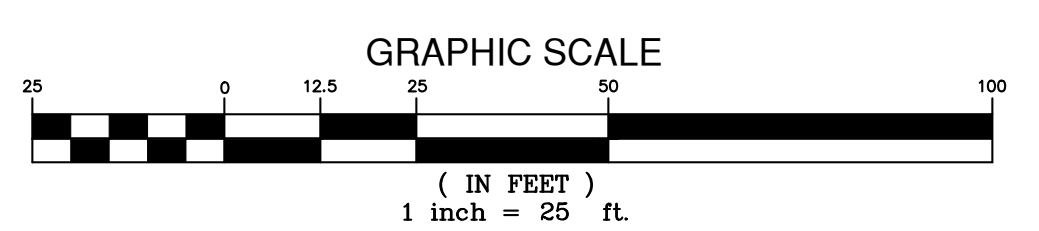


APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: 140049-D-CP-001-DMO.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
DEMOLITION PLAN (2 OF 2)
C5.10



ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
DEMOLITION PLAN (2 OF 2) Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia	
Scale: 1" = 25'	Number: 7 of 68



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-MAT.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
MATERIALS PLAN (1 OF 2)
C6.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

MATERIALS PLAN (1 OF 2)

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25'

Number: 8 of 68

HARDSCAPE KEY
PAVING

- P1 (1) CONCRETE PAVING (PEDESTRIAN)
- P2 (4) VEHICULAR ASPHALT PAVING
- P4 (5) PEDESTRIAN ASPHALT PAVING
- P5 (7) GRANITE COBBLE TREE RING
- P6 (1) MULTI-USE COURT
- P7 (2) VOLLEYBALL COURT
- P8 (3) DETECTABLE WARNING PAVERS

STAIRS AND WALLS

- S1 (1) CURVED CONCRETE STAIRS @ STONE RETAINING WALL
- S2 (1) CURVED CONCRETE STAIRS
- FP (1) FIRE PIT AMPHITHEATER
- PS (1) PICNIC SHELTER
- W1 (2) SALVAGED STONE VENEER RETAINING WALL

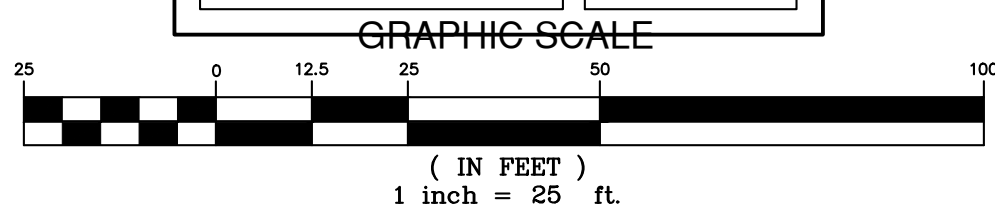
SITE AMENITIES

- B (2) BENCH
- BD (4) BOULDERS
- BG (2) BASKETBALL GOAL
- BO (7) FLEXIBLE DELINEATOR POST
- BR (3) BIKE RACK
- CB (1) CATCH BASIN
- F1 (3) FENCE @ BASKETBALL COURT
- F2 (6) REFORESTATION/PROTECTED AREA BARRIER
- G1 (6) GRILL (SMALL)
- G2 (6) GRILL (MEDIUM)
- PT1 (4) PICNIC TABLE @ CONCRETE PAD
- PT2 (5) PICNIC TABLE @ LAWN
- PT3 (4) PICNIC TABLE @ SHELTER
- R (1) TRASH & RECYCLING RECEPTACLE
- RA (7) REFUSE AREA
- S (1) PARK RULES SIGNAGE
- SC1 (2) MULTI-USE COURT RULES SIGNAGE
- SC2 (2) SAND VOLLEYBALL COURT RULES SIGNAGE
- SC3 (3) PARK ENTRY SIGN
- SC4 (4) SHELTER #2 ADDRESS SIGN
- SC5 (5) RESERVATION SIGN
- SC6 (2) SHELTER #1 ADDRESS SIGN
- SC7 (3) SHELTER #3 ADDRESS SIGN
- SC8 (7) REFORESTATION AREA BARRIER SIGN
- SC9 (7) PROTECTED OPEN SPACE BARRIER SIGN

MATCHLINE SEE SHEET C6.10

NOTES:
1. COUNTY LANDSCAPE ARCHITECT SHALL MEET ON SITE WITH CONTRACTOR TO APPROVE LAYOUT OF ALL PATHWAYS, PADS, FIREPIT, PICNIC SHELTERS, REFUSE SCREEN AND SITE FURNISHINGS.

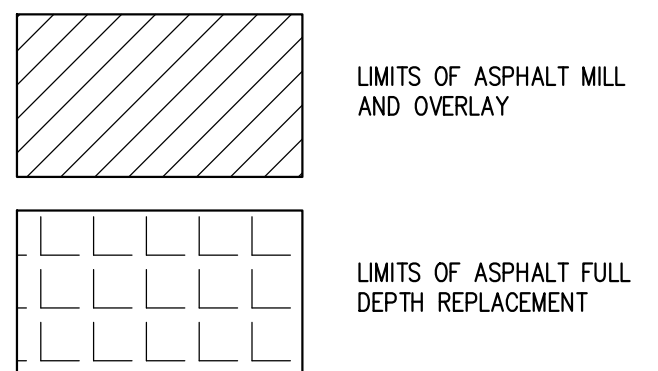
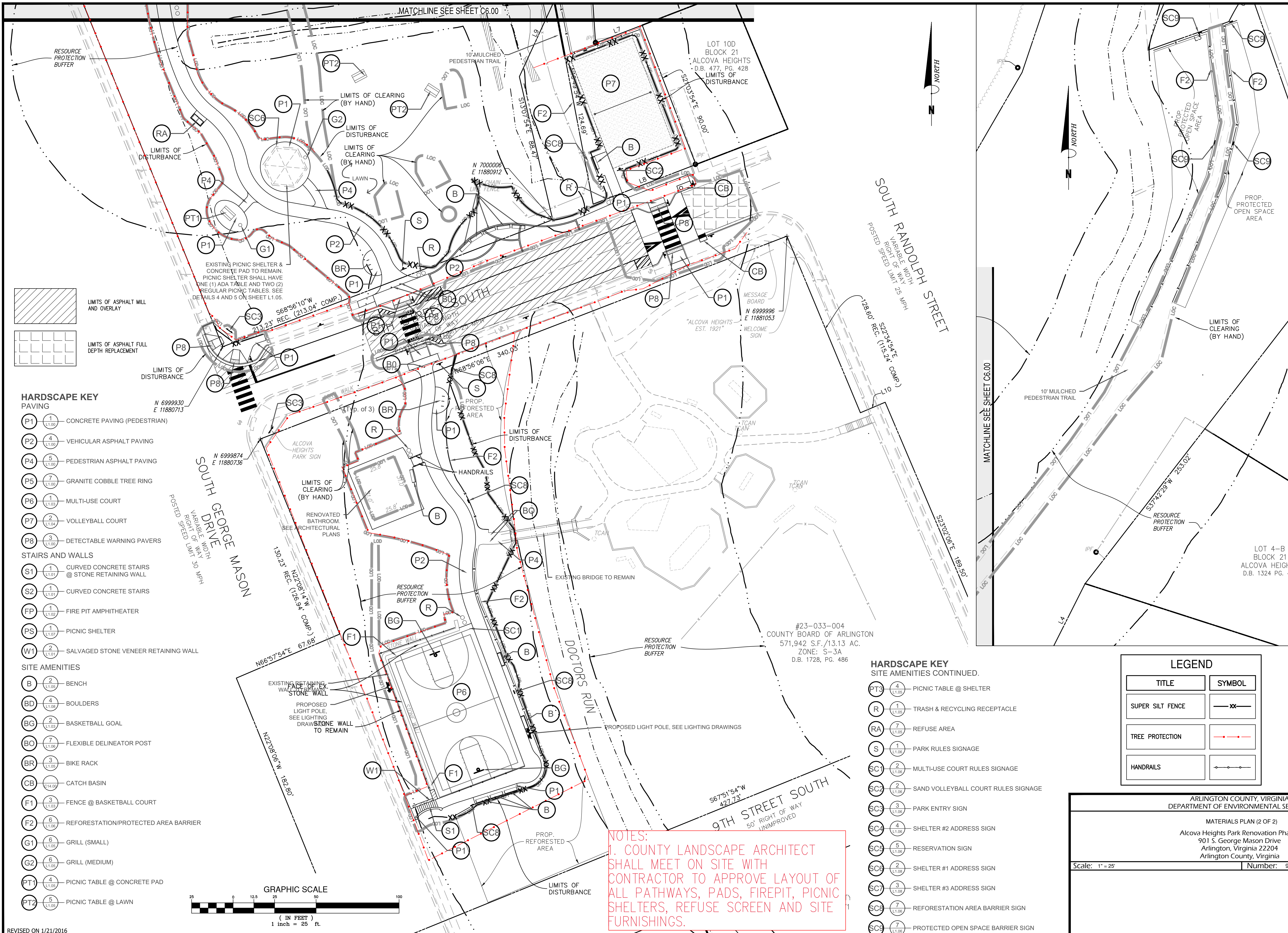
LEGEND	
TITLE	SYMBOL
SUPER SILT FENCE	—xx—
TREE PROTECTION	—+—+—
HANDRAILS	



REVISED ON 1/21/2016

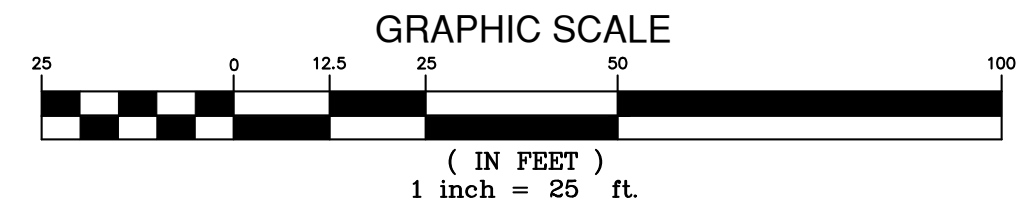
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BID SET: 21-DPR-ITB-291



HARDSCAPE KEY

- PAVING**
- P1 (1/1.00) CONCRETE PAVING (PEDESTRIAN)
 - P2 (4/1.00) VEHICULAR ASPHALT PAVING
 - P4 (5/1.00) PEDESTRIAN ASPHALT PAVING
 - P5 (7/1.00) GRANITE COBBLE TREE RING
 - P6 (1/1.00) MULTI-USE COURT
 - P7 (2/1.00) VOLLEYBALL COURT
 - P8 (3/1.00) DETECTABLE WARNING PAVERS
- STAIRS AND WALLS**
- S1 (1/1.00) CURVED CONCRETE STAIRS @ STONE RETAINING WALL
 - S2 (1/1.00) CURVED CONCRETE STAIRS
 - FP (1/1.00) FIRE PIT AMPHITHEATER
 - PS (1/1.00) PICNIC SHELTER
 - W1 (2/1.00) SALVAGED STONE VENEER RETAINING WALL
- SITE AMENITIES**
- B (2/1.00) BENCH
 - BD (4/1.00) BOULDERS
 - BG (2/1.00) BASKETBALL GOAL
 - BO (7/1.00) FLEXIBLE DELINEATOR POST
 - BR (3/1.00) BIKE RACK
 - CB (14.00) CATCH BASIN
 - F1 (3/1.00) FENCE @ BASKETBALL COURT
 - F2 (6/1.00) REFORESTATION/PROTECTED AREA BARRIER
 - G1 (6/1.00) GRILL (SMALL)
 - G2 (6/1.00) GRILL (MEDIUM)
 - PT1 (4/1.00) PICNIC TABLE @ CONCRETE PAD
 - PT2 (5/1.00) PICNIC TABLE @ LAWN



HARDSCAPE KEY

- SITE AMENITIES CONTINUED.**
- PT3 (4/1.00) PICNIC TABLE @ SHELTER
 - R (1/1.00) TRASH & RECYCLING RECEPTACLE
 - RA (7/1.00) REFUSE AREA
 - S (1/1.00) PARK RULES SIGNAGE
 - SC1 (2/1.00) MULTI-USE COURT RULES SIGNAGE
 - SC2 (2/1.00) SAND VOLLEYBALL COURT RULES SIGNAGE
 - SC3 (3/1.00) PARK ENTRY SIGN
 - SC4 (4/1.00) SHELTER #2 ADDRESS SIGN
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 - SC6 (2/1.00) SHELTER #1 ADDRESS SIGN
 - SC7 (3/1.00) SHELTER #3 ADDRESS SIGN
 - SC8 (7/1.00) REFORESTATION AREA BARRIER SIGN
 - SC9 (7/1.00) PROTECTED OPEN SPACE BARRIER SIGN

LEGEND

TITLE	SYMBOL
SUPER SILT FENCE	—xx—
TREE PROTECTION	—+—+—
HANDRAILS	—o—o—

NOTES:
 1. COUNTY LANDSCAPE ARCHITECT SHALL MEET ON SITE WITH CONTRACTOR TO APPROVE LAYOUT OF ALL PATHWAYS, PADS, FIREPIT, PICNIC SHELTERS, REFUSE SCREEN AND SITE FURNISHINGS.



DEPARTMENT OF PARKS & RECREATION
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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
 DRAWN: CLL
 CHECKED: DAP
 MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
 140049-D-CP-001-MAT.DWG
 PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
 PLOTTED: September 20, 2021
 PLOTTED BY: VHOLTZMAN

SHEET

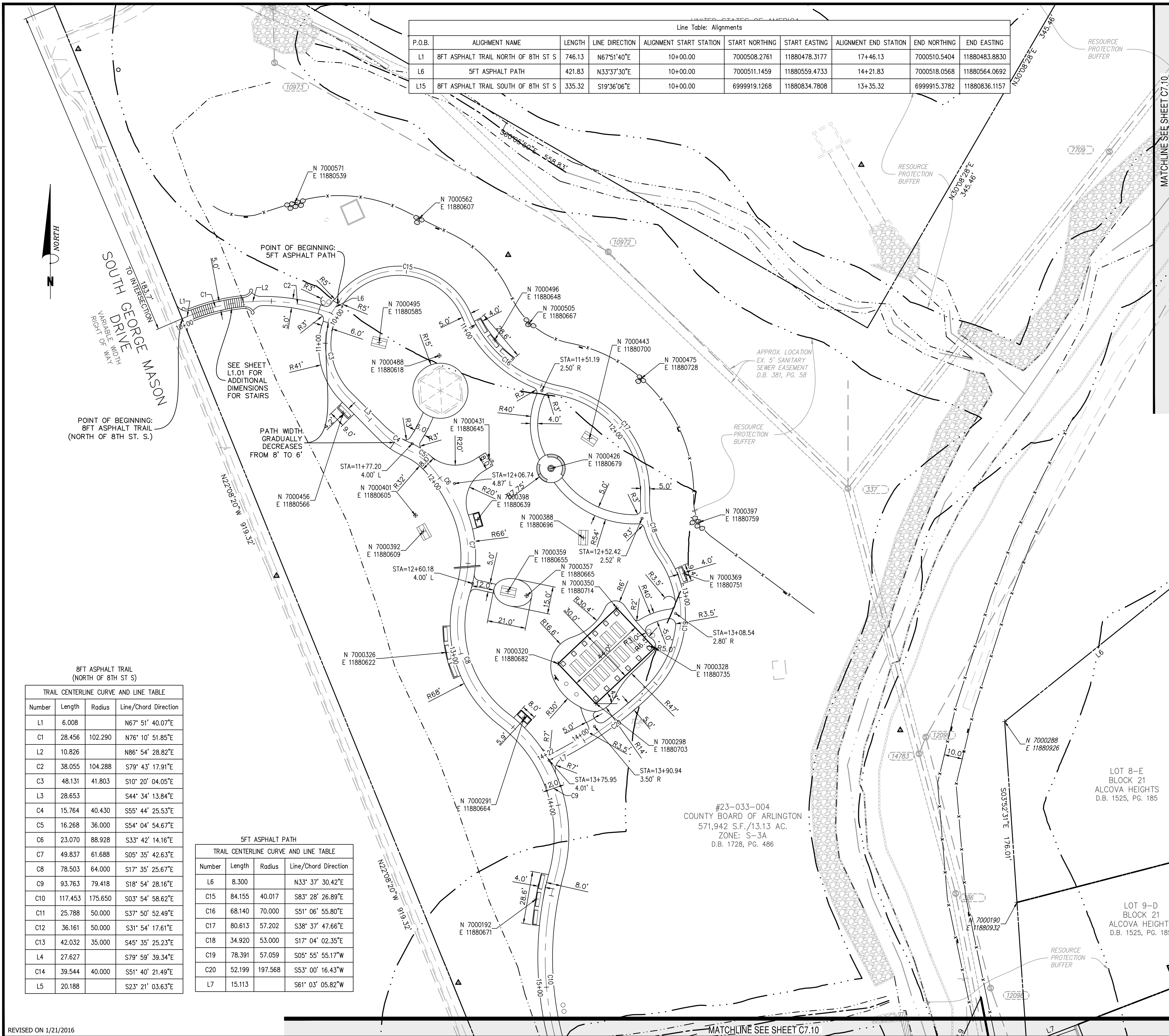
MATERIALS PLAN (2 OF 2)
 C6.10

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

MATERIALS PLAN (2 OF 2)
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: 1" = 25' Number: 9 of 68

BID SET: 21-DPR-ITB-291



Line Table: Alignments

P.O.B.	ALIGNMENT NAME	LENGTH	LINE DIRECTION	ALIGNMENT START STATION	START NORTHING	START EASTING	ALIGNMENT END STATION	END NORTHING	END EASTING
L1	8FT ASPHALT TRAIL NORTH OF 8TH ST S	746.13	N67°51'40"E	10+00.00	7000508.2761	11880478.3177	17+46.13	7000510.5404	11880483.8830
L6	5FT ASPHALT PATH	421.83	N33°37'30"E	10+00.00	7000511.1459	11880559.4733	14+21.83	7000518.0568	11880564.0692
L15	8FT ASPHALT TRAIL SOUTH OF 8TH ST S	335.32	S19°36'06"E	10+00.00	6999919.1268	11880834.7808	13+35.32	6999915.3782	11880836.1157

8FT ASPHALT TRAIL (NORTH OF 8TH ST S)

Number	Length	Radius	Line/Chord Direction
L1	6.008		N67° 51' 40.07"E
C1	28.456	102.290	N76° 10' 51.85"E
L2	10.826		N86° 54' 28.82"E
C2	38.055	104.288	S79° 43' 17.91"E
C3	48.131	41.803	S10° 20' 04.05"E
L3	28.653		S44° 34' 13.84"E
C4	15.764	40.430	S55° 44' 25.53"E
C5	16.268	36.000	S54° 04' 54.67"E
C6	23.070	88.928	S33° 42' 14.16"E
C7	49.837	61.688	S05° 35' 42.63"E
C8	78.503	64.000	S17° 35' 25.67"E
C9	93.763	79.418	S18° 54' 28.16"E
C10	117.453	175.650	S03° 54' 58.62"E
C11	25.788	50.000	S37° 50' 52.49"E
C12	36.161	50.000	S31° 54' 17.61"E
C13	42.032	35.000	S45° 35' 25.23"E
L4	27.627		S79° 59' 39.34"E
C14	39.544	40.000	S51° 40' 21.49"E
L5	20.188		S23° 21' 03.63"E

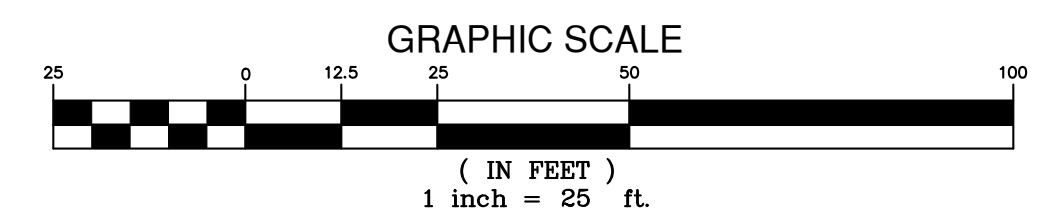
5FT ASPHALT PATH

Number	Length	Radius	Line/Chord Direction
L6	8.300		N33° 37' 30.42"E
C15	84.155	40.017	S83° 28' 26.89"E
C16	68.140	70.000	S51° 06' 55.80"E
C17	80.613	57.202	S38° 37' 47.66"E
C18	34.920	53.000	S17° 04' 02.35"E
C19	78.391	57.059	S05° 55' 55.17"W
C20	52.199	197.568	S53° 00' 16.43"W
L7	15.113		S61° 03' 05.82"W

- LAYOUT NOTES:
- ON-SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALE, LARGER SCALE OVER SMALLER SCALE, ADDENDA AND CLARIFICATIONS OVER PVIOUS DOCUMENTS.
 - CONTRACTOR TO LAY OUT HARDSCAPE ELEMENTS AND VERIFY LAYOUT WITH PROJECT OFFICER PRIOR TO CONSTRUCTION.
 - ANY DISCREPANCIES OR CONFLICTS WITH EXISTING CONDITIONS OR OTHER DRAWINGS SHALL BE REPORTED TO THE PROJECT OFFICER IMMEDIATELY FOR PROPER CLARIFICATION OR ADJUSTMENT.
 - WHERE DIMENSIONS ARE CALLED AS "EQUAL," SPACE REFERENCED ITEMS EQUALLY, MEASURED TO THEIR CENTER LINES.
 - MEASUREMENTS ARE TO FACE OF BUILDING, WALL OR FIXED SITE IMPROVEMENT. DIMENSIONS TO CENTER LINES IS AS INDICATED.
 - INSTALL INTERSECTING ELEMENTS AT 90° ANGLES TO EACH OTHER UNLESS OTHERWISE NOTED.
 - PROVIDE EXPANSION JOINTS WHERE CONCRETE FLATWORK MEETS VERTICAL STRUCTURES SUCH AS WALLS, CURBS, STEPS AND BUILDING ELEMENTS.
 - NEW WORK SHALL MEET AND MATCH ALIGNMENT OF EXISTING FEATURES AND FINISHED PAVEMENT OR OTHER FACILITIES TO REMAIN.
 - CONTRACTOR SHALL VERIFY THE CORRECT LOCATION OF ALL UTILITIES AND EXISTING TREES TO REMAIN IN THE FIELD PRIOR TO CONSTRUCTION.
 - CONTRACTOR SHALL STAKE ALIGNMENT FOR ALL WALLS, CURBS, BOULDERS, SIGNS, FURNISHINGS, COURTS, PATHS, HARDSCAPE, BENCHES, TABLES, TRASH RECEPTACLES, RECYCLING RECEPTACLES, LIGHT POLES, STORMWATER MANAGEMENT FACILITIES, MANHOLES AND UTILITY STATIONS FOR PROJECT OFFICER'S APPROVAL PRIOR TO INSTALLATION.
 - FOR LAYOUT, ALL ANGLES ARE 90° UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS SHALL PREVAIL. DO NOT SCALE FROM THE PLAN.
 - MINOR ADJUSTMENTS IN HORIZONTAL LAYOUT AND TOP OF WALL ELEVATIONS SHALL NOT RESULT IN AN INCREASE IN PRICE BY THE CONTRACTOR.
 - CONTRACTOR SHALL STAKE-OUT THE LOCATIONS OF BENCHES, BENCH PADS, LIGHT POLES, CHESS TABLES, AND STEP STONES FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO CONTRACTOR INSTALLATION.

- GENERAL NOTES:
- EXISTING VOLLEYBALL COURT DIMENSIONS: 30' X 50' PROPOSED VOLLEYBALL COURT DIMENSIONS: 38' X 60'
 - EXISTING BASKETBALL COURT DIMENSIONS: 50' X 84' PROPOSED BASKETBALL COURT DIMENSIONS: 56' X 90' (3' OVERRUN)
 - EXISTING NUMBER OF PICNIC TABLES IN OPEN AREAS: 7 (0 FULLY ACCESSIBLE) IN SHELTERS: 18
PROPOSED NUMBER OF PICNIC TABLES IN OPEN AREAS: 10 (4 FULLY ACCESSIBLE) IN SHELTERS: 18
 - PROPOSED RELOCATED/RENOVATED PICNIC SHELTER: 8 TABLES, 20' X 27'-6"
 - EXISTING CURB INLETS (2) ON 8TH STREET SHALL BE MODIFIED IN FIELD TO STANDARD MANHOLES. REMOVE INLET TOPS AND REPLACE WITH MANHOLE TOP SECTIONS, FRAME AND COVERS.
 - PROPOSED INLETS 15857A AND 1587B SHALL HAVE REVERSED THROATS TO AVOID CONFLICT WITH THE MANHOLE DIRECTLY ON TOP OF THE EXISTING SANITARY SEWER LINE. SEE PLAN VIEW.

NOTES:
1. COUNTY LANDSCAPE ARCHITECT SHALL MEET ON SITE WITH CONTRACTOR TO APPROVE LAYOUT OF ALL PATHWAYS, PADS, FIREPIT, PICNIC SHELTERS, REFUSE SCREEN AND SITE FURNISHINGS.



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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-STE.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
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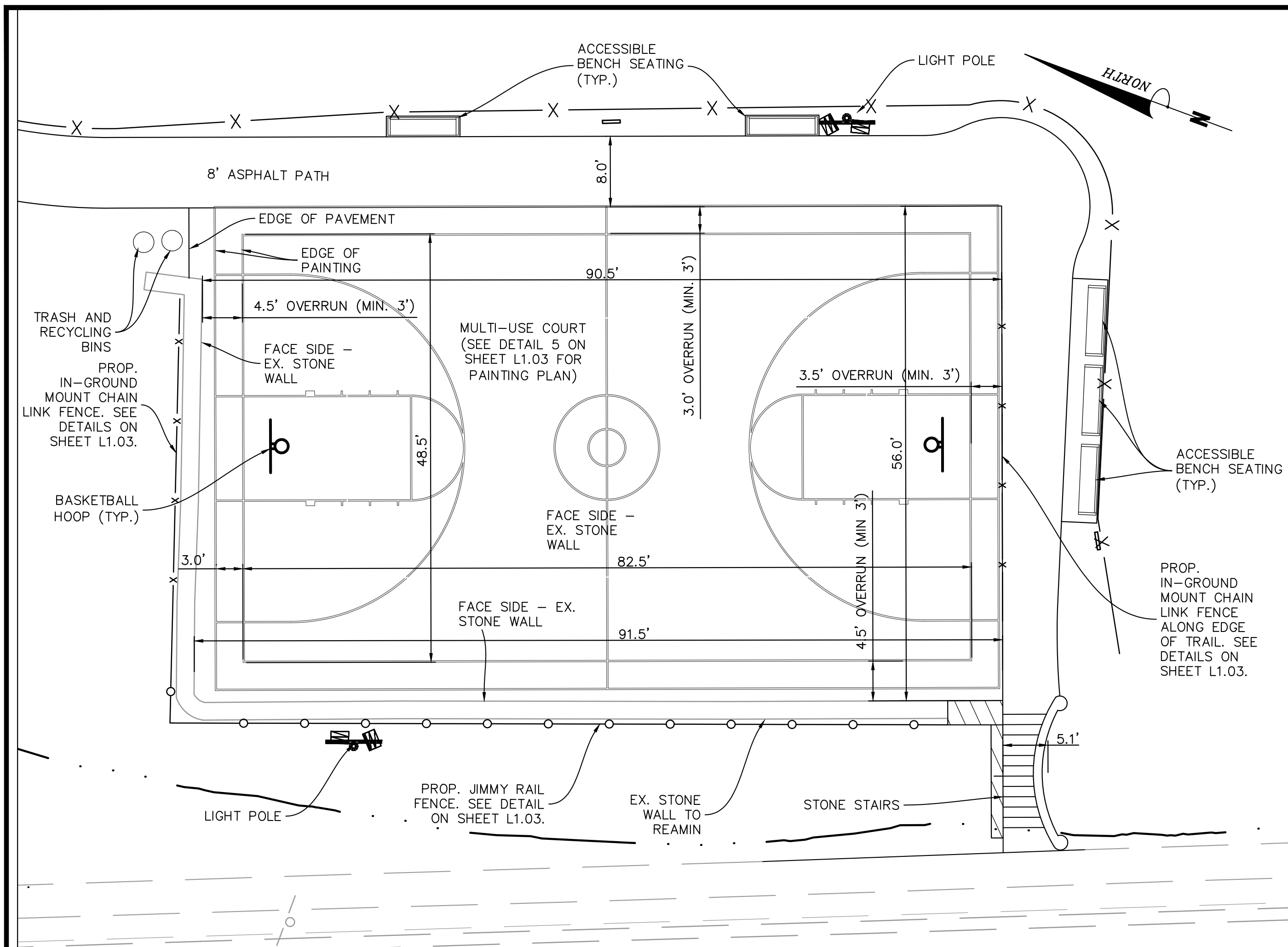
SITE AND DIMENSION PLAN (1 OF 2) C7.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

SITE AND DIMENSION PLAN (1 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

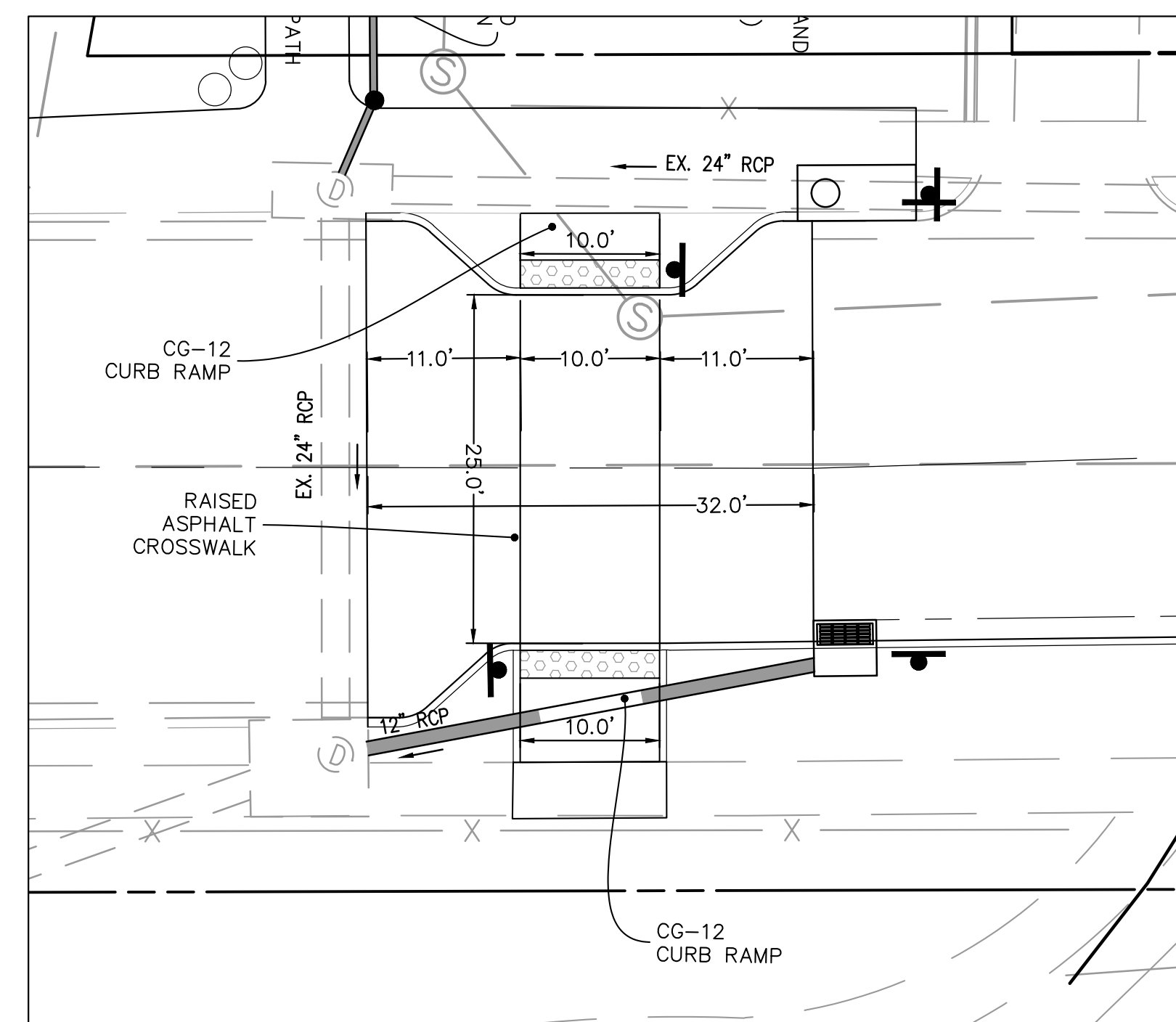
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BID SET: 21-DPR-ITB-291



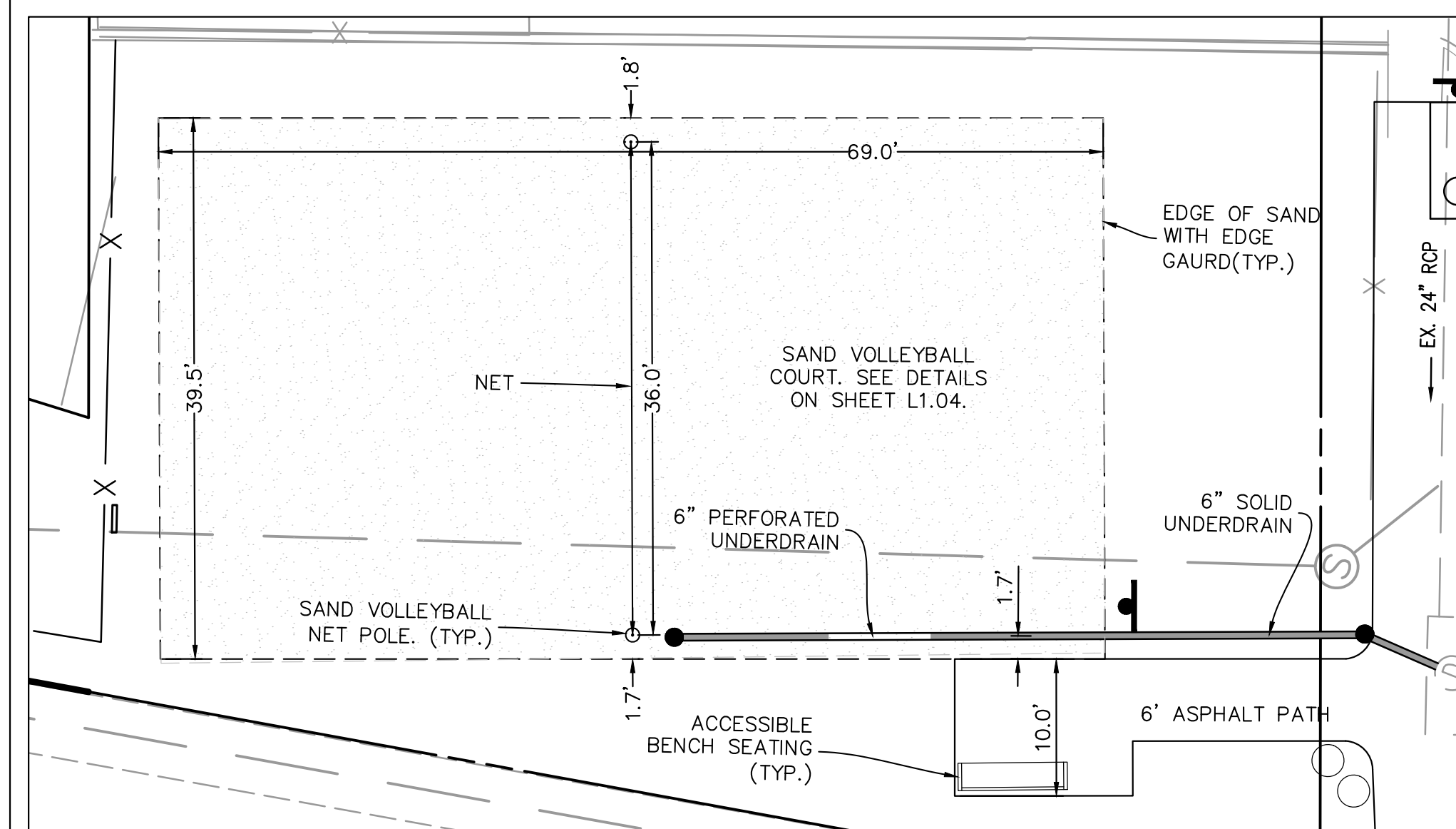
RENOVATED BASKETBALL COURT
SCALE: 1"=10'

NOTE: DIMENSIONS SHOWN ARE FROM ASPHALT TRAIL TO STONE WALL. SEE SHEET L1.03 FOR COURT PAINTING DIMENSIONS.
EXISTING BASKETBALL COURT DIMENSIONS: 50' X 84'
PROPOSED BASKETBALL COURT DIMENSIONS: 48.5' X 82.5' (MIN. 3' OVERRUN)



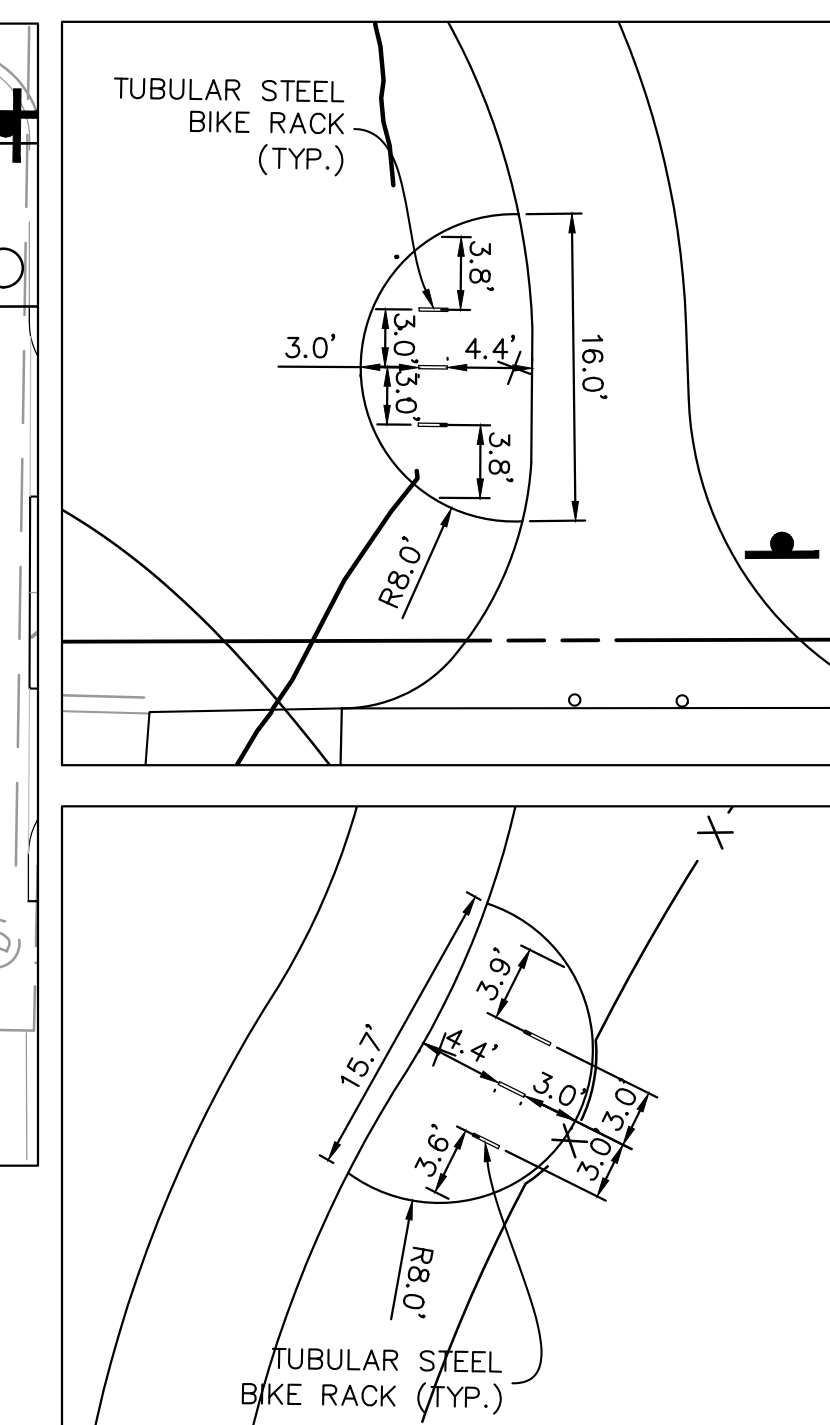
RAISED CROSSWALK
SCALE: 1"=10'

NOTE:
NEW WORK SHALL BE COORDINATED WITH DEMOLITION WORK. SEE SHEET C5.10.



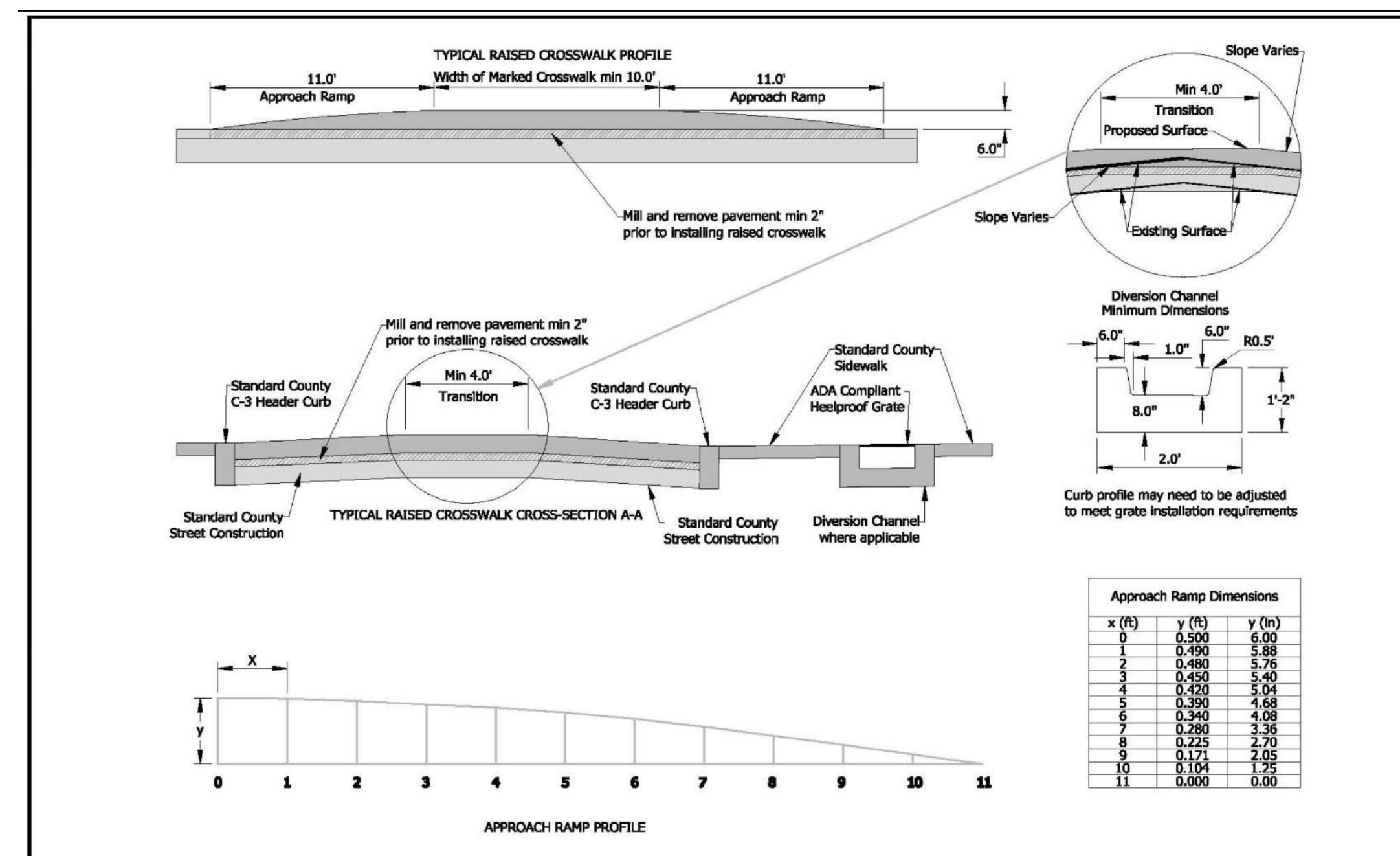
RENOVATED SAND VOLLEYBALL COURT
SCALE: 1"=10'

NOTE:
EXISTING VOLLEYBALL COURT DIMENSIONS: 30' X 50'
PROPOSED VOLLEYBALL COURT DIMENSIONS: 39.5' X 69'



BIKE RACK DETAILS
SCALE: 1"=10'

SEE ADDITIONAL DETAILS ON SHEET L1.05



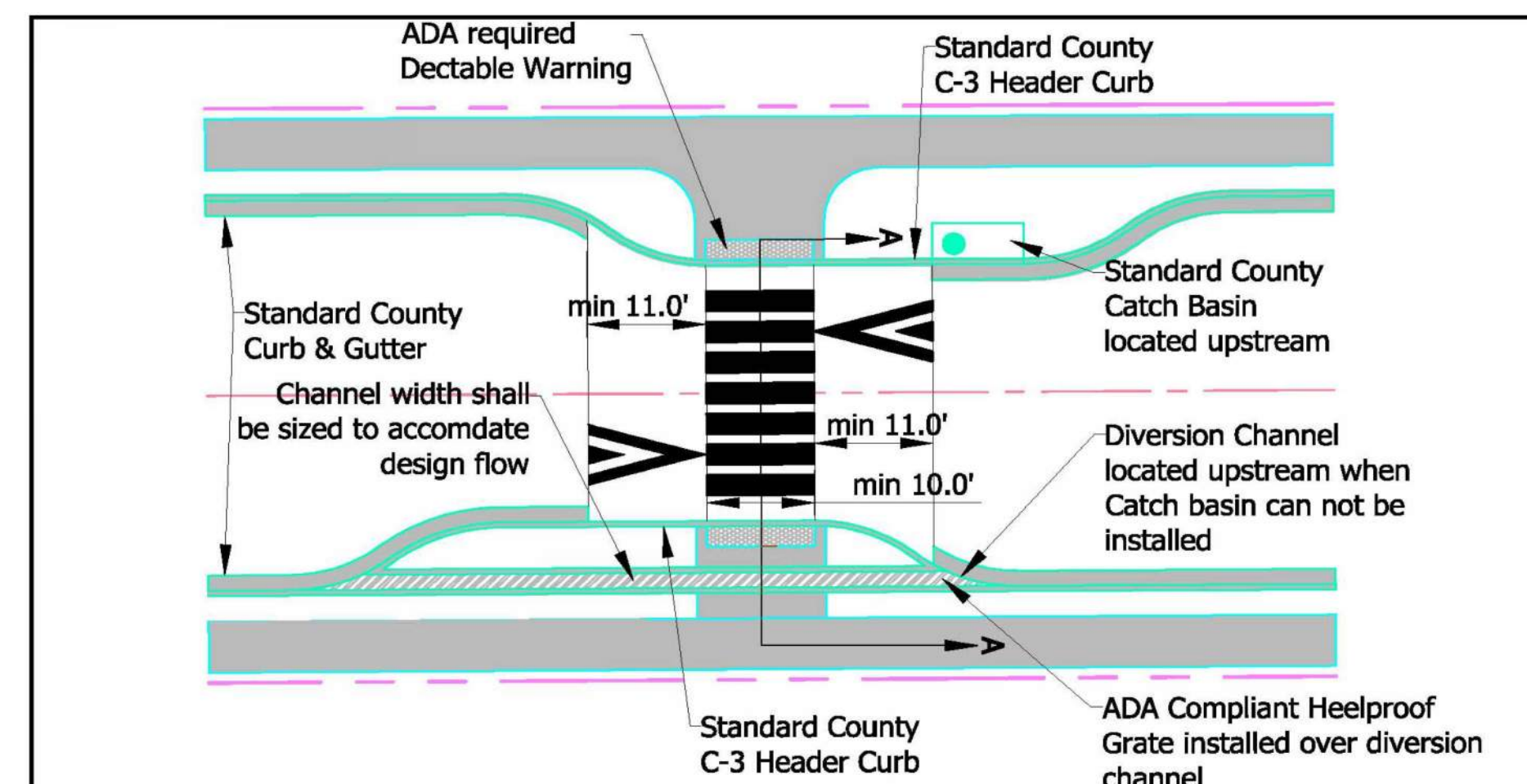
TYPICAL 6" RAISED MIDBLOCK CROSSWALK



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

REVISION & DATE	

DRAWING NO.
VSC-3.0
Sheet 2 of 3



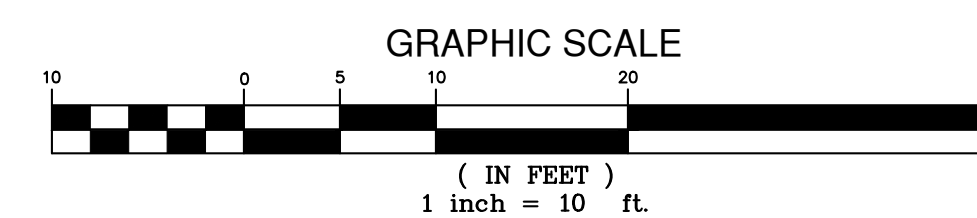
Note: Refer to Arlington County Horizontal Standards H-3.3 Curb Extensions and H-3.7 Crosswalks for further requirements

TYPICAL 6" RAISED MIDBLOCK CROSSWALK with CURB EXTENSIONS



ARLINGTON COUNTY, VIRGINIA
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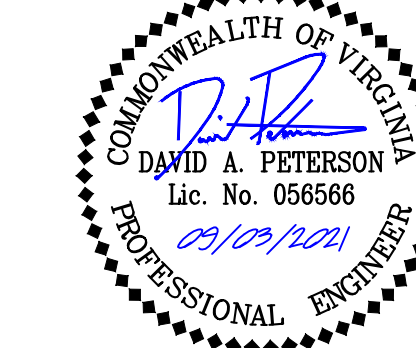
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VSC-3.0
Sheet 1 of 3



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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

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PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

SITE PLAN DETAILS
C7.20

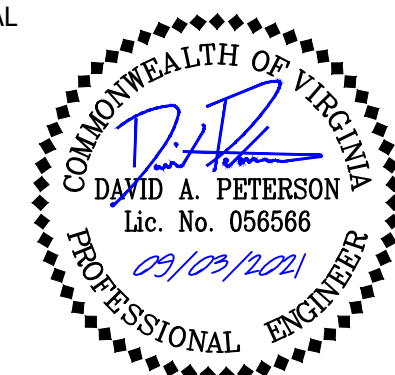
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

SITE PLAN DETAILS
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1"=10'

Number: 12 of 68

SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

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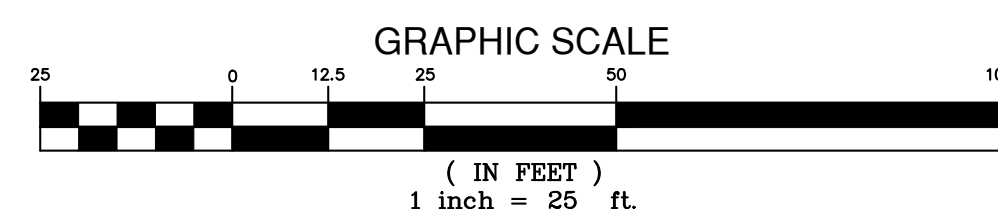
Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

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PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VOLTZMAN

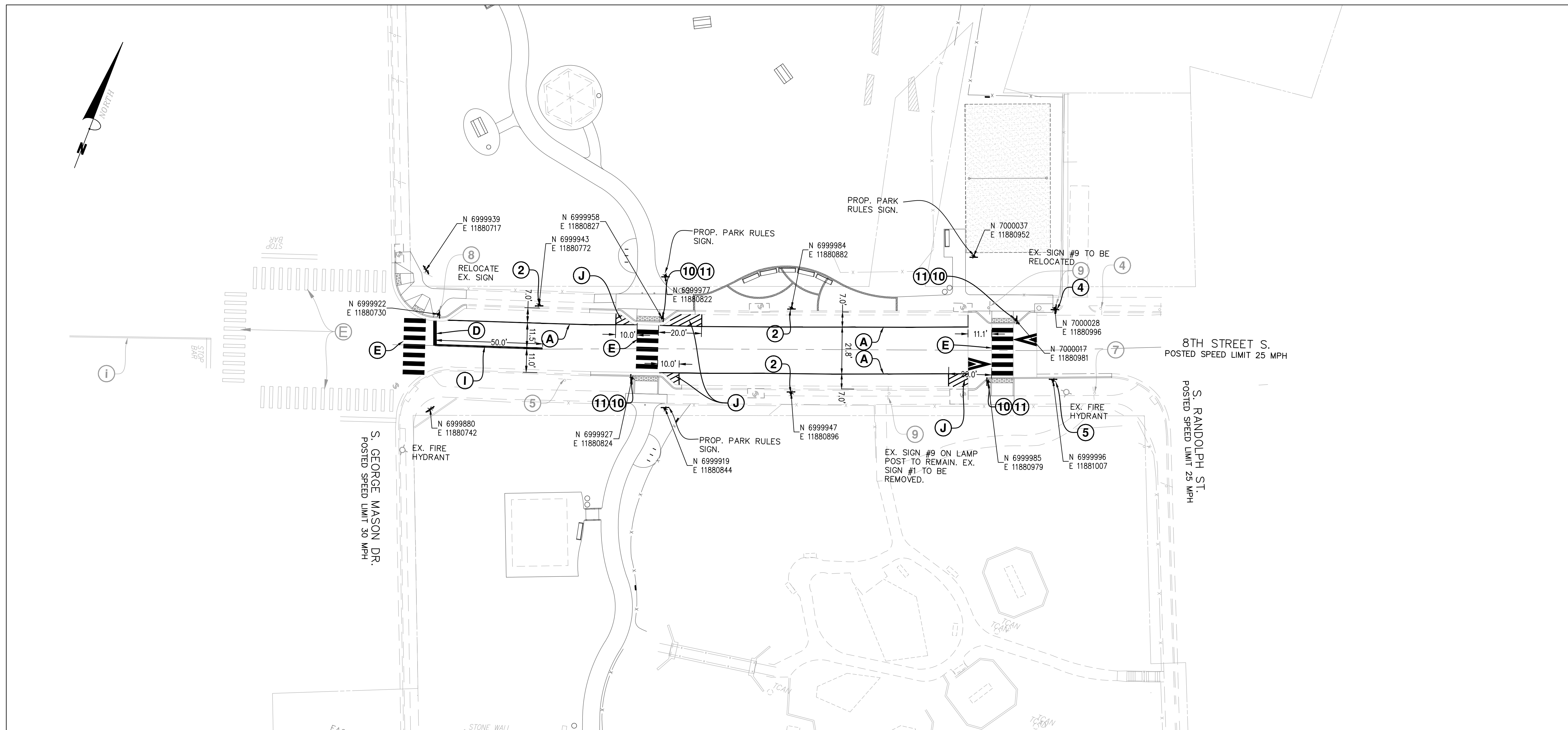
SHEET
SIGN AND STRIPING PLAN
C7.30



ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

SIGN AND STRIPING PLAN
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25' Number: 12A of 68

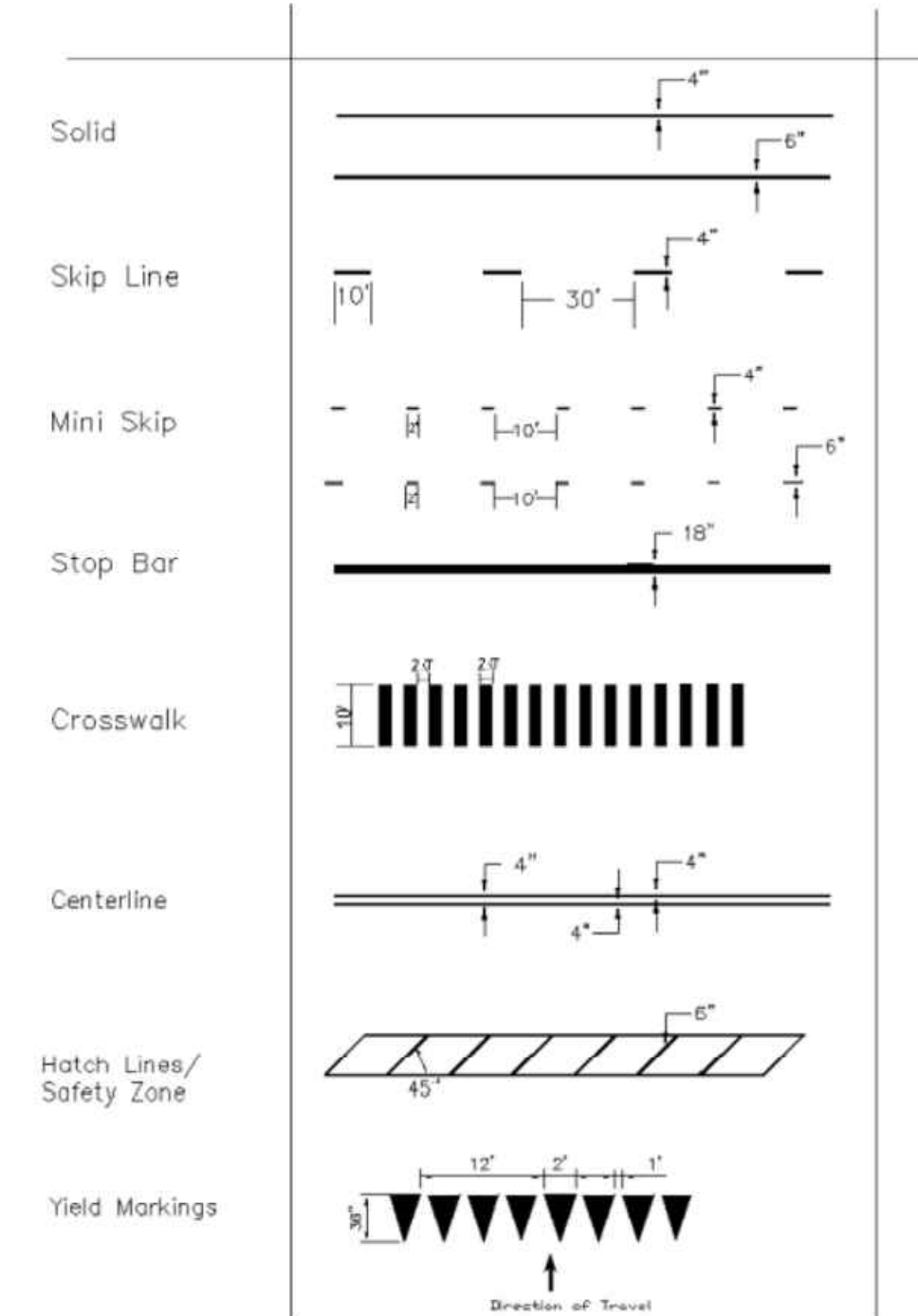


① 2 HR PARKING 8AM - 6PM MON - FRI ←	② 2 HR PARKING 8AM - 6PM MON - FRI ↔	③ 2 HR PARKING 8AM - 6PM MON - FRI →
R7-108(L) (18"x24")	R7-108(LR) (18"x24")	R7-108(R) (18"x24")
④ NO PARKING ←	⑤ NO PARKING ↔	⑥ NO PARKING →
R8-3A(L) (18"x24")	R8-3A (18"x24")	R8-3A(R) (18"x24")
⑧ STOP	⑨ SPEED HUMP	⑩ PEDESTRIAN
R1-1 (30"x30")	W17-1 (24"x24")	W11-2 (24"x24")
		⑪ LEFT TURN
		W16-7p (24"x12")

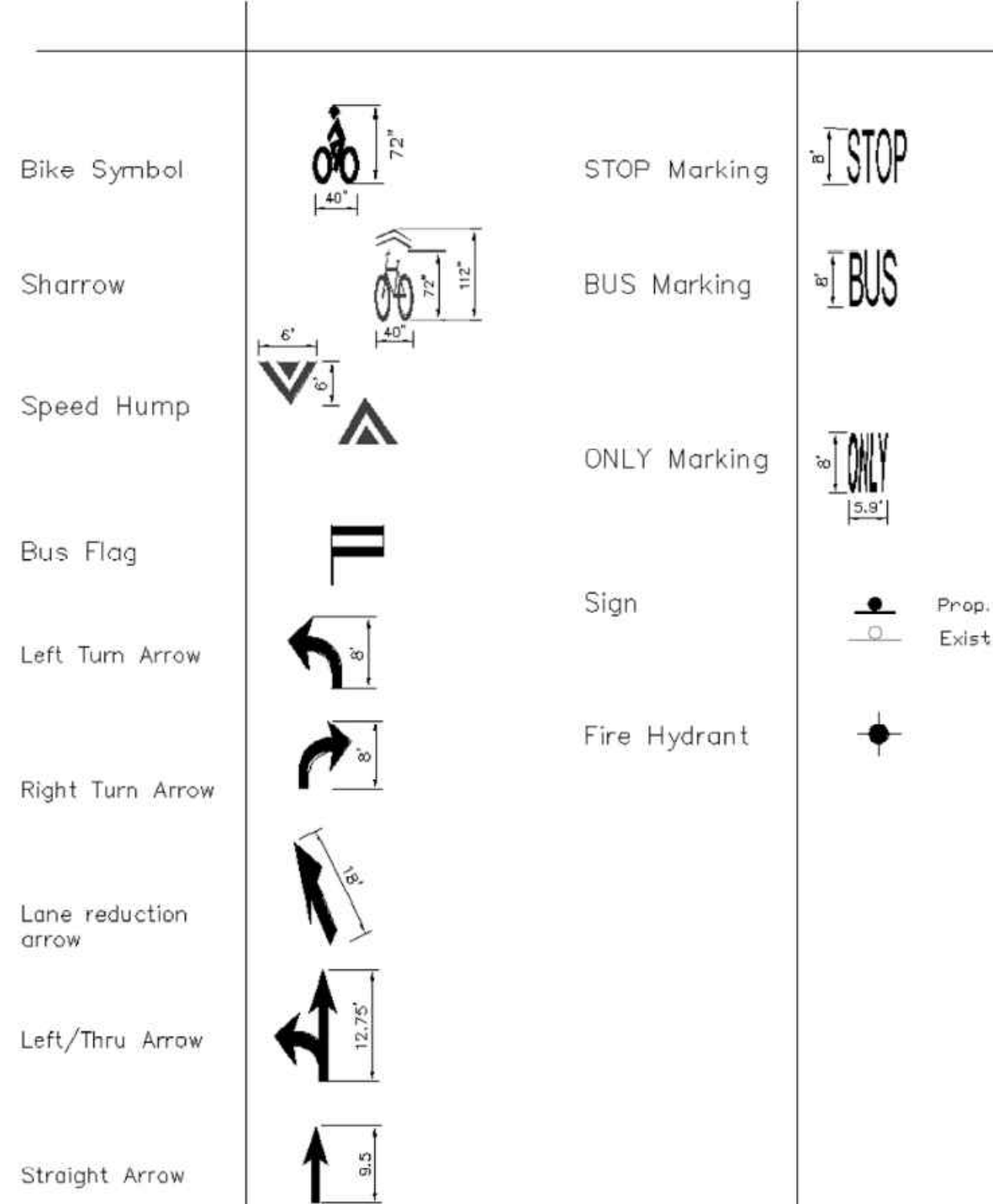
STANDARD PAVEMENT MARKING LEGEND:		STRIPING LEGEND	
① TYPE B CLASS 1...WHITE 4" WIDTH	PARKING LINES, EDGE LINES, LANE LINES	EXISTING	PROPOSED
② TYPE B CLASS 1...WHITE 4" WIDTH, 10' LONG, 30' SPACING	STOP BARS	BUS STOP	
③ TYPE B CLASS 1...WHITE 4" WIDTH, 2' LONG, 10' SPACING	LANE TRANSITION, TURN LANE ARROWS	FIRE HYDRANT	
④ TYPE B CLASS 1...WHITE 18" WIDTH	STOP SIGNS	PARKING METER	
⑤ TYPE B CLASS 1...WHITE 24" WIDTH	CONTINENTAL CROSS WALKS	SIGN	
⑥ TYPE B CLASS 1...WHITE 24" WIDTH	TURN LANE, TRANSVERSE, CROSSWALK, SIDE LINES	STRIPING	
⑦ TYPE B CLASS 1...YELLOW 4" WIDTH, 10' LONG, 30' SPACING	SHARED TURNING, TWO WAY TURN LINES		
⑧ TYPE B CLASS 1...YELLOW 4" WIDTH	SIDE LINES		
⑨ TYPE B CLASS 1...YELLOW 4" WIDTH, DOUBLE LINE, 4" SPACING	CENTERLINES		
⑩ TYPE B CLASS 1...WHITE 4" WIDTH, 10' SPACING @ 45 DEGREE	MATCH LINES, SAFETY ZONES		
⑪ TYPE B CLASS 1...WHITE SINGLE ARROW	TURN LINES		
⑫ TYPE B CLASS 1...WHITE COMBINATION ARROW	TURN LINES		
⑬ TYPE B CLASS 1...WHITE 4" WIDTH, 2' LONG, 10' SPACING	TRANSVERSE LETTERS (STOP, YIELD, ONE-WAY ONLY, etc.)		
⑭ TYPE B CLASS 1...WHITE 4" WIDTH, 2' LONG, 10' SPACING @ 45 DEGREE	EDGE MARKINGS		
⑮ TYPE B CLASS 1...WHITE 4" WIDTH, 2' LONG, 10' SPACING	SOME MARKINGS		
⑯ TYPE B CLASS 1...WHITE 4" WIDTH, 2' LONG, 10' SPACING	LANE TRANSITION		

- SIGN AND PAVEMENT MARKING NOTES:**
- STREET WIDTH MEASUREMENTS ARE FROM FACE OF CURB TO FACE OF CURB. LANES ARE MEASURED FROM CENTER OF MARKING TO CENTER OF MARKING.
 - CONTACT DENNIS HOWELL OR HIS DESIGNEE AT 703-228-6598 OR (571) 437-1077 TO APPROVE MARKING LAYOUT 48 HRS. PRIOR TO INSTALLATION OF MARKINGS.
 - PAVEMENT MARKINGS TO BE IN ACCORDANCE WITH THE FOLLOWING AND ANY REVISIONS HERE TO:
A) THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
B) ARLINGTON COUNTY MARKING STANDARDS.
 - ALL MARKINGS SHALL BE THERMOPLASTIC PER ARLINGTON COUNTY MARKING STANDARDS.
 - STOP BARS SHALL BE A MINIMUM OF 4" IN ADVANCE OF A MARKED CROSSWALK. IF THERE IS NO MARKED CROSSWALK, STOP BAR SHALL BE NO MORE THAN 30' FROM THE NEAREST EDGE OF THE INTERSECTED TRAVELED WAY.
 - CROSSWALKS SHALL BE 10' WIDE UNLESS OTHERWISE NOTED.
 - LEFT TURN ARROWS SHALL BE LOCATED 25' BACK FROM STOP BAR. FOR ADDITIONAL ARROWS FOLLOW COUNTY MARKING STANDARDS.
 - ON-STREET PARKING LANE IS 7' WIDE (UNLESS OTHERWISE NOTED) AND MARKED WITH 4" WIDE WHITE LINES. BEGINNING AND END OF PARKING SHALL BE MARKED WITH AN END LINE PERPENDICULAR TO CURB EXCEPT AT NUBS OR WHERE OTHERWISE INDICATED.
 - SHARROWS SHALL BE PLACED IN CENTER OF LANE, 250' APART UNLESS OTHERWISE SPECIFIED.
 - BIKE LANE SYMBOLS TO BE PLACED 330' APART UNLESS OTHERWISE SPECIFIED.

MARKING LINETYPES AND PROPERTIES



MARKING SYMBOLS





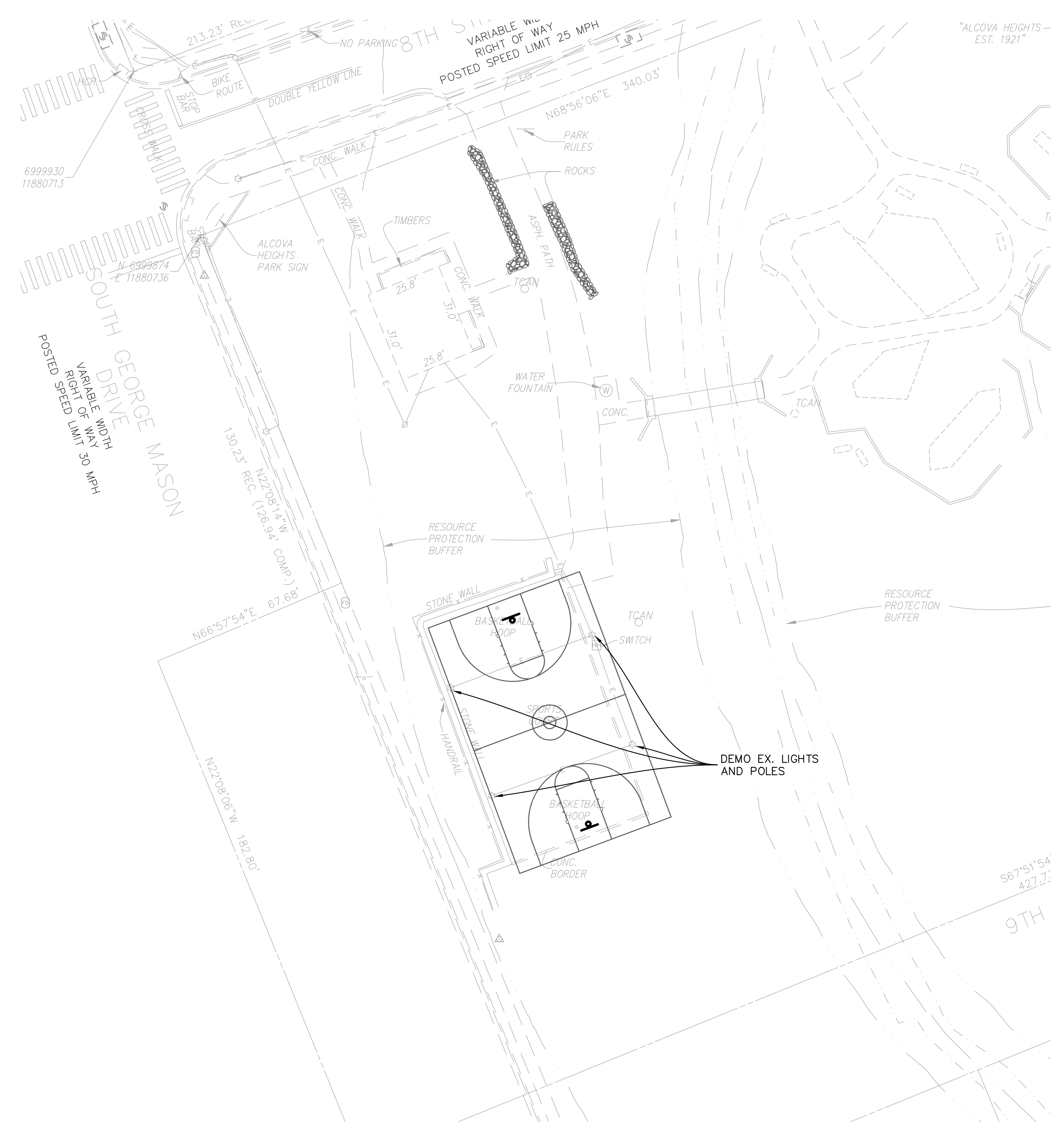
APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

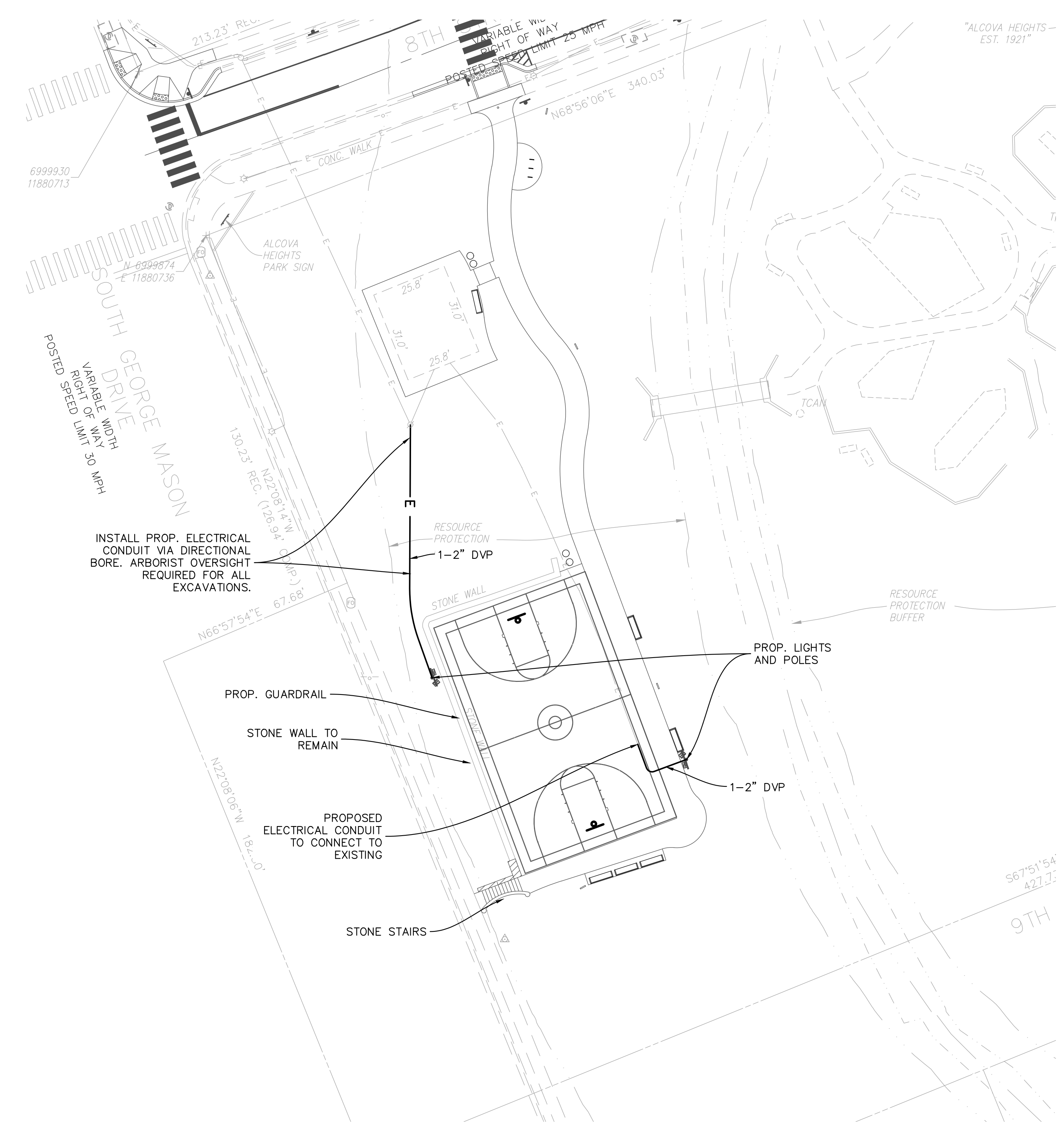
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DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
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PARTICIPATIONS.DWG (ALCOVA HEIGHTS PARK) 140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK/ENGINEERING/ENGINEERING PLANS/CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

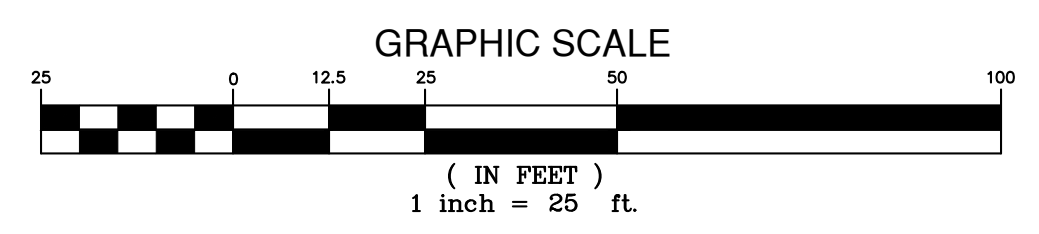
SHEET
**DRY UTILITY PLAN
C7.40**



PART SITE PLAN - DEMOLITION PLAN



PART SITE PLAN - NEW WORK



ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
DRY UTILITY PLAN Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia	
Scale: 1" = 25'	Number: 12B of 68

SEAL

APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-GRP.DWG
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(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

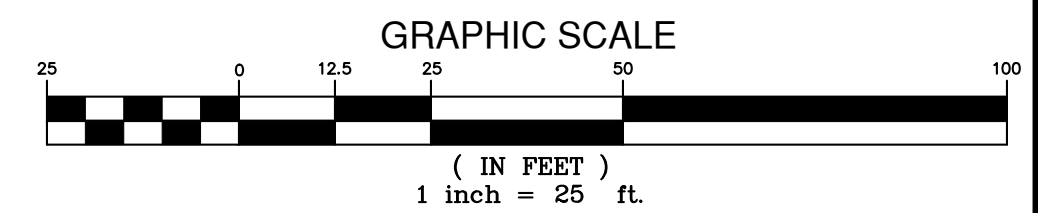
GRADING PLAN (1 OF 2)
C8.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

GRADING PLAN (1 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

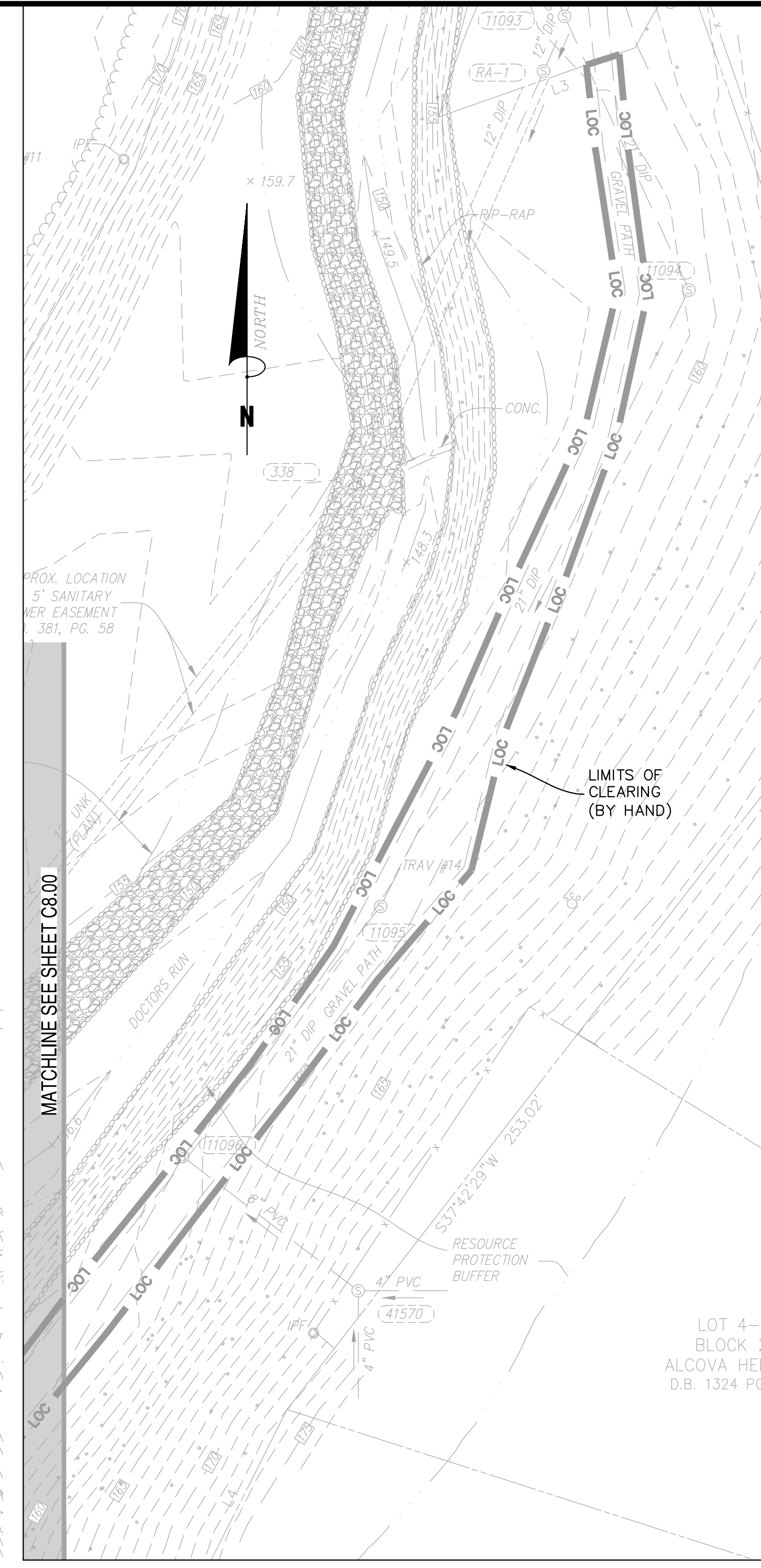
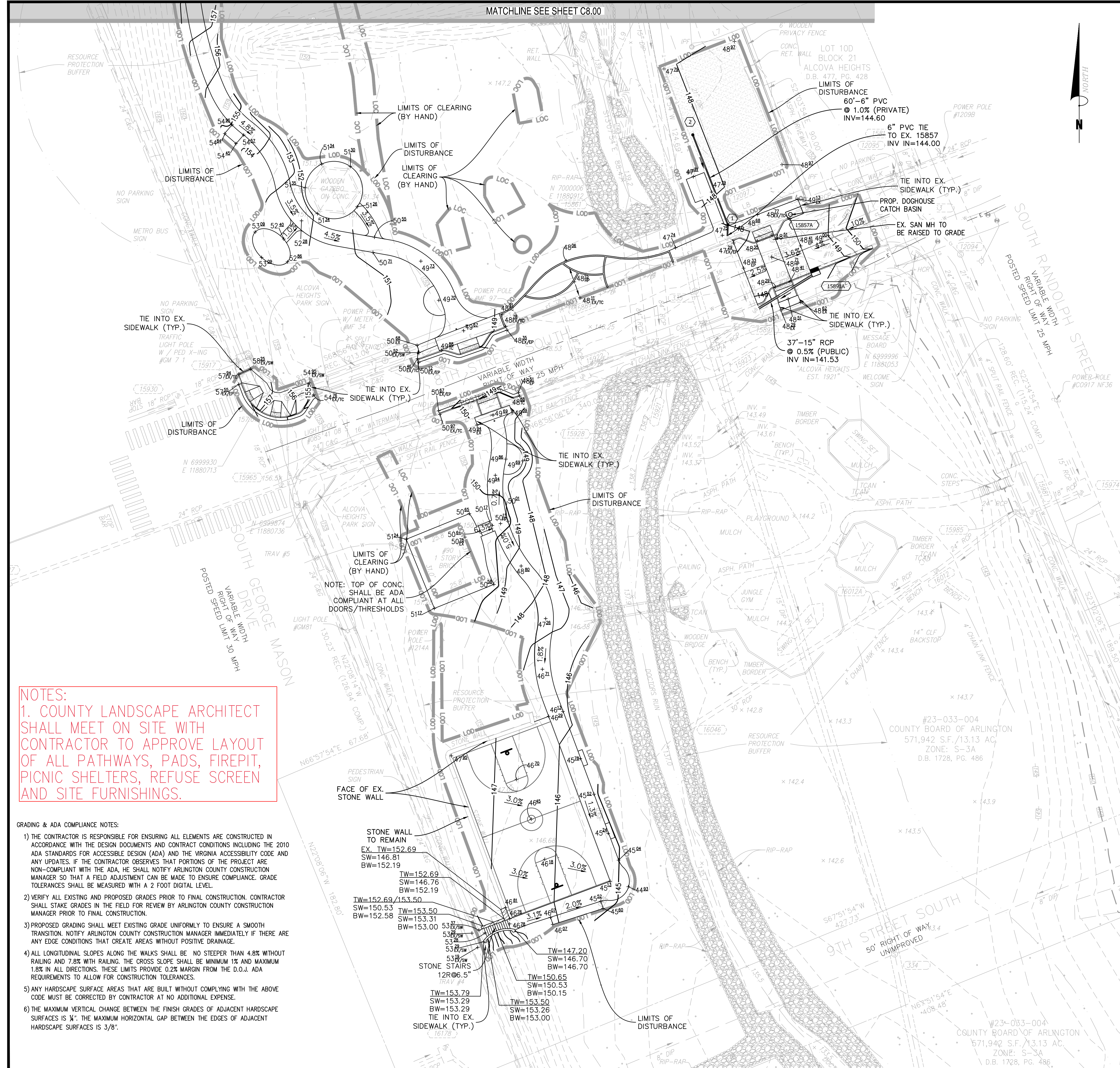
Scale: 1" = 25'

Number: 13 of 68



NOTES:
1. COUNTY LANDSCAPE ARCHITECT SHALL MEET ON SITE WITH CONTRACTOR TO APPROVE LAYOUT OF ALL PATHWAYS, PADS, FIREPIT, PICNIC SHELTERS, REFUSE SCREEN AND SITE FURNISHINGS.

- GRADING & ADA COMPLIANCE NOTES:
- 1) THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL ELEMENTS ARE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN DOCUMENTS AND CONTRACT CONDITIONS INCLUDING THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN (ADA) AND THE VIRGINIA ACCESSIBILITY CODE AND ANY UPDATES. IF THE CONTRACTOR OBSERVES THAT PORTIONS OF THE PROJECT ARE NON-COMPLIANT WITH THE ADA, HE SHALL NOTIFY ARLINGTON COUNTY CONSTRUCTION MANAGER SO THAT A FIELD ADJUSTMENT CAN BE MADE TO ENSURE COMPLIANCE. GRADE TOLERANCES SHALL BE MEASURED WITH A 2 FOOT DIGITAL LEVEL.
 - 2) VERIFY ALL EXISTING AND PROPOSED GRADES PRIOR TO FINAL CONSTRUCTION. CONTRACTOR SHALL STAKE GRADES IN THE FIELD FOR REVIEW BY ARLINGTON COUNTY CONSTRUCTION MANAGER PRIOR TO FINAL CONSTRUCTION.
 - 3) PROPOSED GRADING SHALL MEET EXISTING GRADE UNIFORMLY TO ENSURE A SMOOTH TRANSITION. NOTIFY ARLINGTON COUNTY CONSTRUCTION MANAGER IMMEDIATELY IF THERE ARE ANY EDGE CONDITIONS THAT CREATE AREAS WITHOUT POSITIVE DRAINAGE.
 - 4) ALL LONGITUDINAL SLOPES ALONG THE WALKS SHALL BE NO STEEPER THAN 4.8% WITHOUT RAILING AND 7.8% WITH RAILING. THE CROSS SLOPE SHALL BE MINIMUM 1% AND MAXIMUM 1.8% IN ALL DIRECTIONS. THESE LIMITS PROVIDE 0.2% MARGIN FROM THE D.O.J. ADA REQUIREMENTS TO ALLOW FOR CONSTRUCTION TOLERANCES.
 - 5) ANY HARDSCAPE SURFACE AREAS THAT ARE BUILT WITHOUT COMPLYING WITH THE ABOVE CODE MUST BE CORRECTED BY CONTRACTOR AT NO ADDITIONAL EXPENSE.
 - 6) THE MAXIMUM VERTICAL CHANGE BETWEEN THE FINISH GRADES OF ADJACENT HARDSCAPE SURFACES IS 1/4". THE MAXIMUM HORIZONTAL GAP BETWEEN THE EDGES OF ADJACENT HARDSCAPE SURFACES IS 3/8".



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

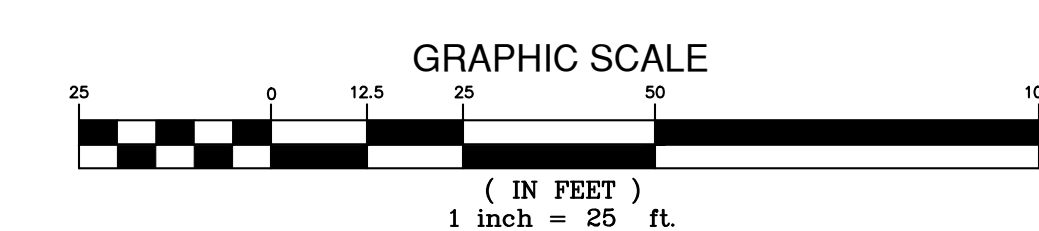
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PLOTTED: September 20, 2021
PLOTTED BY: VHOVTZMAN

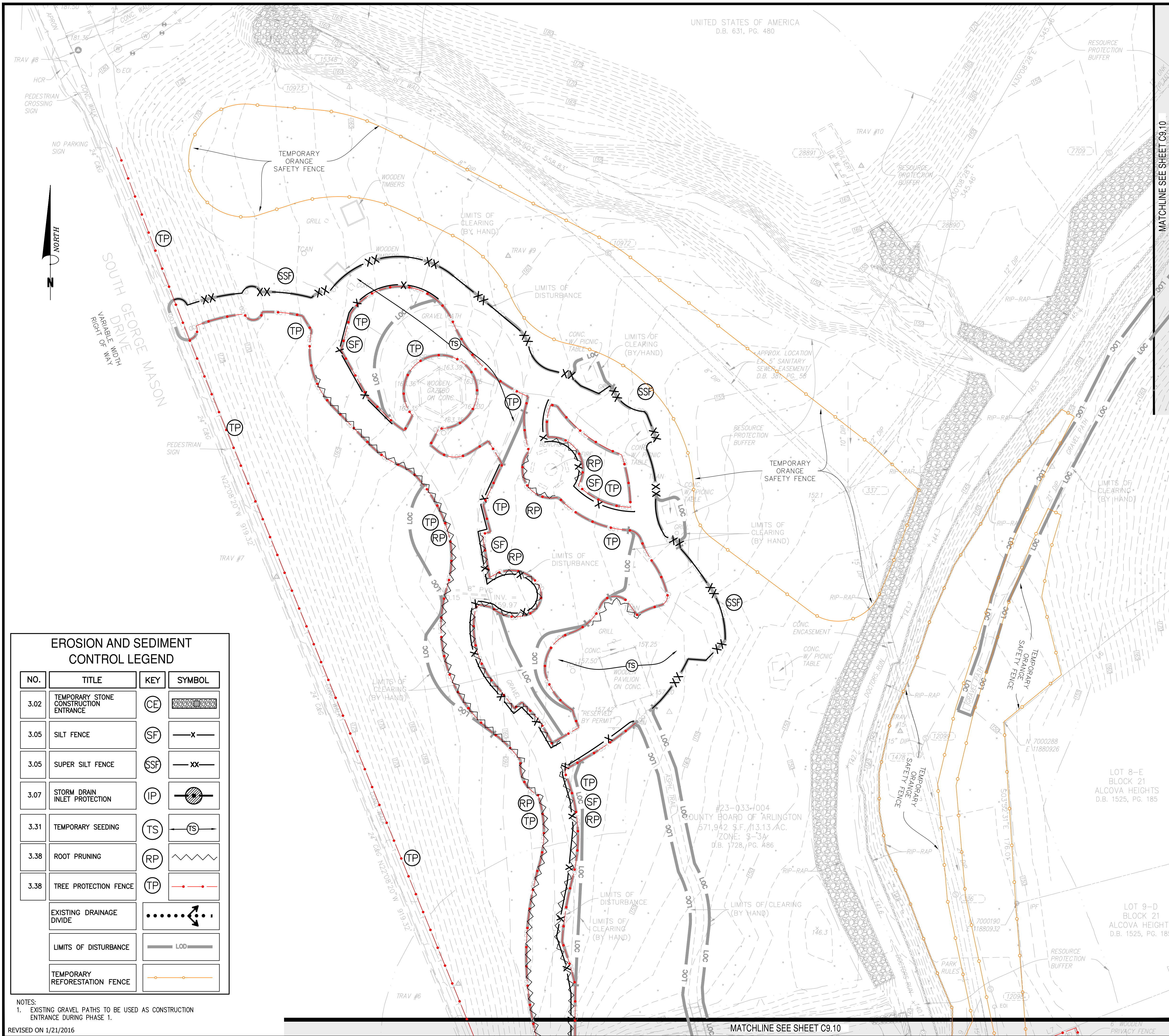
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
GRADING PLAN (2 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25'
Number: 14 of 68
BID SET: 21-DPR-ITB-291

NOTES:
1. COUNTY LANDSCAPE ARCHITECT SHALL MEET ON SITE WITH CONTRACTOR TO APPROVE LAYOUT OF ALL PATHWAYS, PADS, FIREPIT, PICNIC SHELTERS, REFUSE SCREEN AND SITE FURNISHINGS.

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 - 4) ALL LONGITUDINAL SLOPES ALONG THE WALKS SHALL BE NO STEEPER THAN 4.8% WITHOUT RAILING AND 7.8% WITH RAILING. THE GROSS SLOPE SHALL BE MINIMUM 1% AND MAXIMUM 1.8% IN ALL DIRECTIONS. THESE LIMITS PROVIDE 0.2% MARGIN FROM THE D.O.J. ADA REQUIREMENTS TO ALLOW FOR CONSTRUCTION TOLERANCES.
 - 5) ANY HARDSCAPE SURFACE AREAS THAT ARE BUILT WITHOUT COMPLYING WITH THE ABOVE CODE MUST BE CORRECTED BY CONTRACTOR AT NO ADDITIONAL EXPENSE.
 - 6) THE MAXIMUM VERTICAL CHANGE BETWEEN THE FINISH GRADES OF ADJACENT HARDSCAPE SURFACES IS 1/4". THE MAXIMUM HORIZONTAL GAP BETWEEN THE EDGES OF ADJACENT HARDSCAPE SURFACES IS 3/8".





UNITED STATES OF AMERICA
D.B. 631, PG. 480

MATCHLINE SEE SHEET C9.10

MATCHLINE SEE SHEET C9.10

EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.05	SUPER SILT FENCE	SSF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.31	TEMPORARY SEEDING	TS	
3.38	ROOT PRUNING	RP	
3.38	TREE PROTECTION FENCE	TP	
	EXISTING DRAINAGE DIVIDE		
	LIMITS OF DISTURBANCE		
	TEMPORARY REFORESTATION FENCE		

NOTES:
1. EXISTING GRAVEL PATHS TO BE USED AS CONSTRUCTION ENTRANCE DURING PHASE 1.

REVISED ON 1/21/2016

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PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
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ARLINGTON, VA 22201
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FAX: 703.228.3328

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APPROVALS _____ DATE _____

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS _____ DATE _____

Project Name and Location

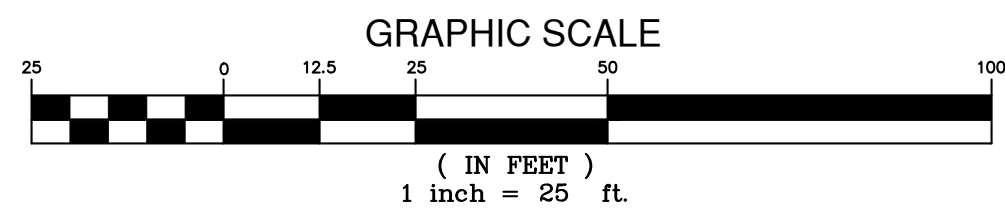
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
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PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

EROSION & SEDIMENT CONTROL PHASE I (1 OF 2) C9.00



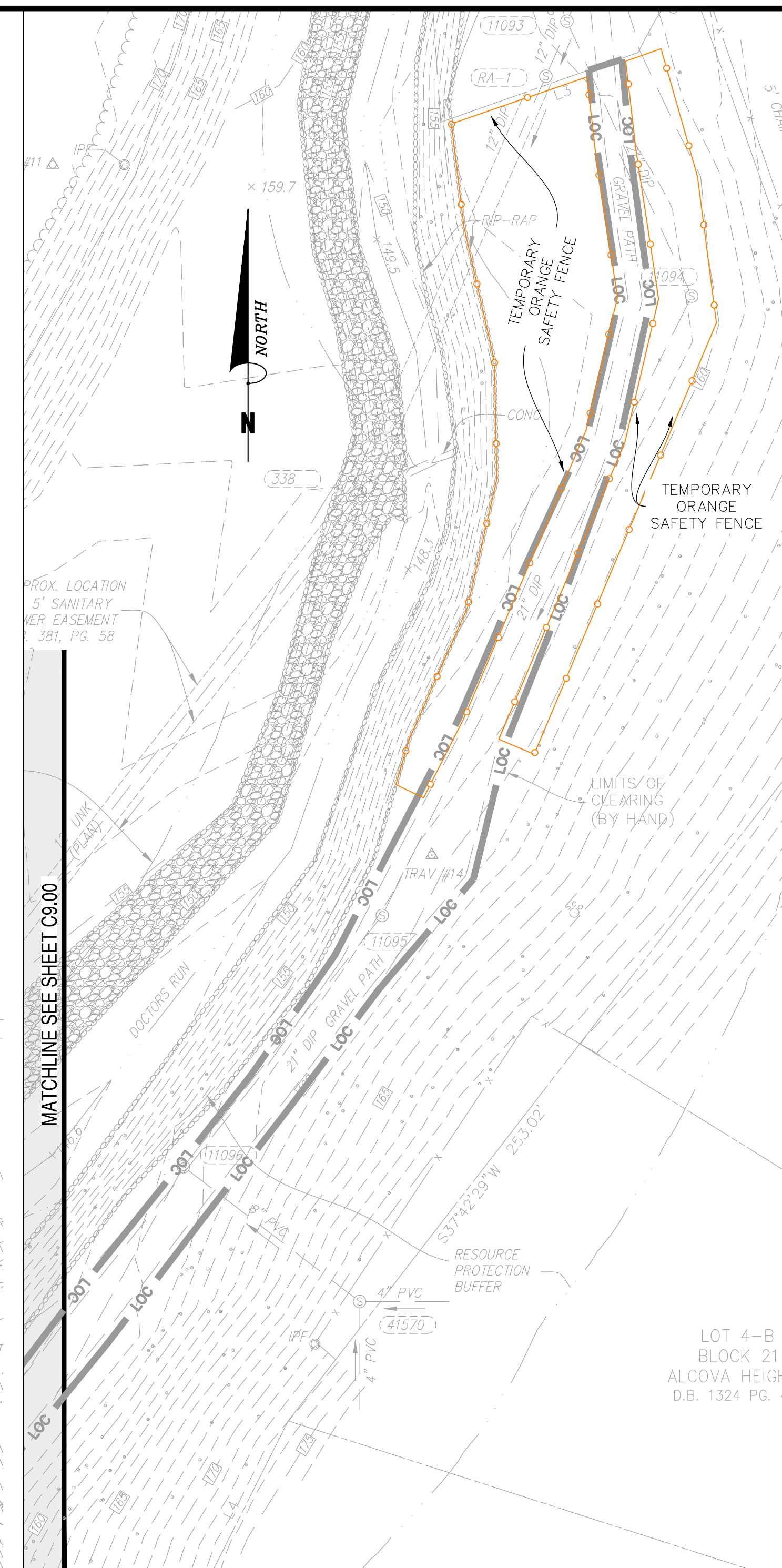
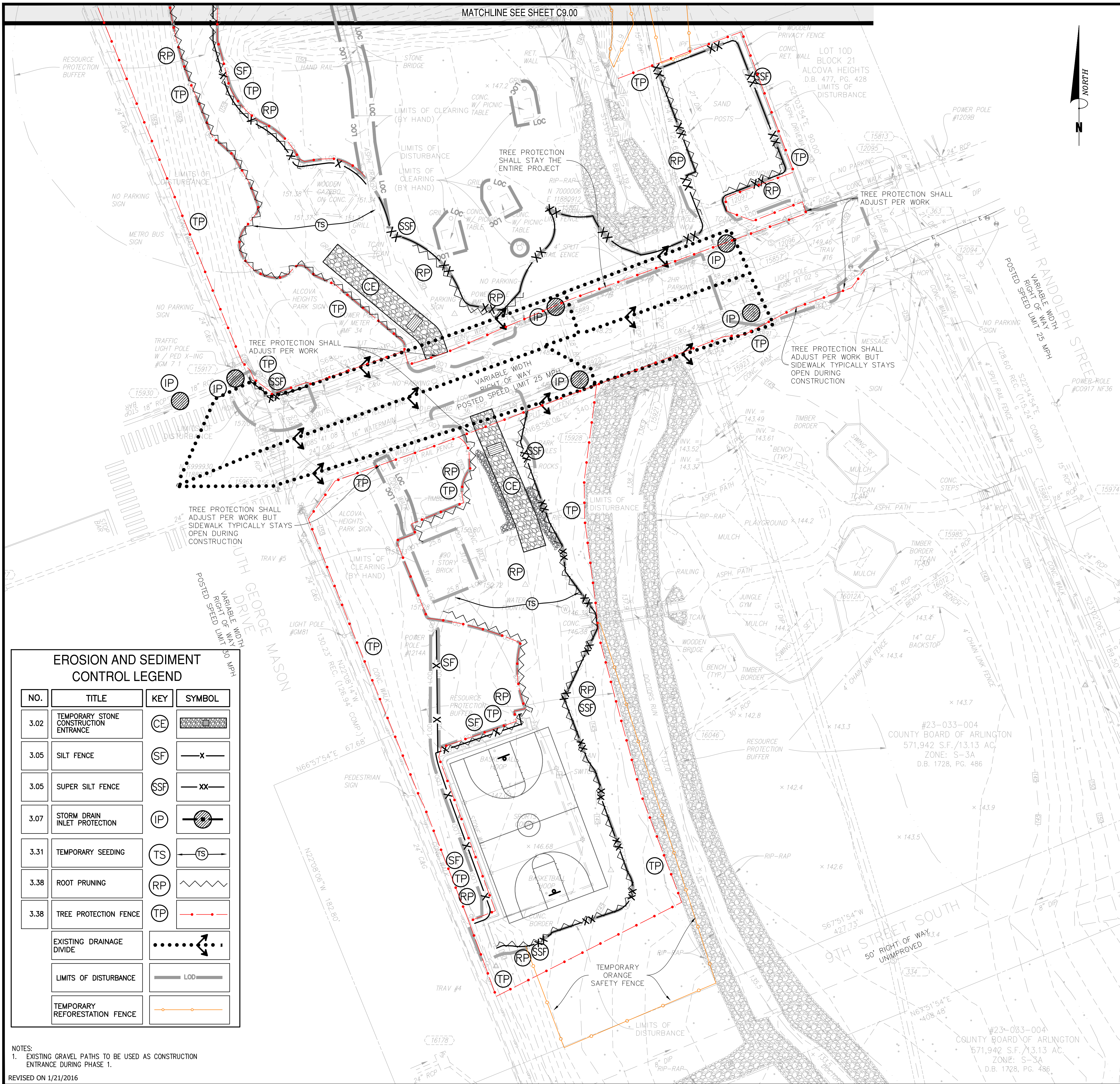
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

EROSION & SEDIMENT CONTROL PHASE I (1 OF 2)

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 25' | Number: 15 of 68

BID SET: 21-DPR-ITB-291



EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	[Symbol]
3.05	SILT FENCE	SF	[Symbol]
3.05	SUPER SILT FENCE	SSF	[Symbol]
3.07	STORM DRAIN INLET PROTECTION	IP	[Symbol]
3.31	TEMPORARY SEEDING	TS	[Symbol]
3.38	ROOT PRUNING	RP	[Symbol]
3.38	TREE PROTECTION FENCE	TP	[Symbol]
	EXISTING DRAINAGE DIVIDE		[Symbol]
	LIMITS OF DISTURBANCE	LOD	[Symbol]
	TEMPORARY REFORESTATION FENCE		[Symbol]

NOTES:
 1. EXISTING GRAVEL PATHS TO BE USED AS CONSTRUCTION ENTRANCE DURING PHASE 1.
 REVISED ON 1/21/2016



DEPARTMENT OF
 PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 414
 ARLINGTON, VA 22201
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 FAX: 703.228.3328

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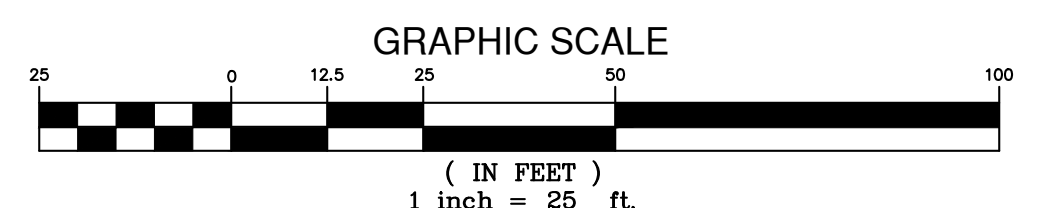


APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

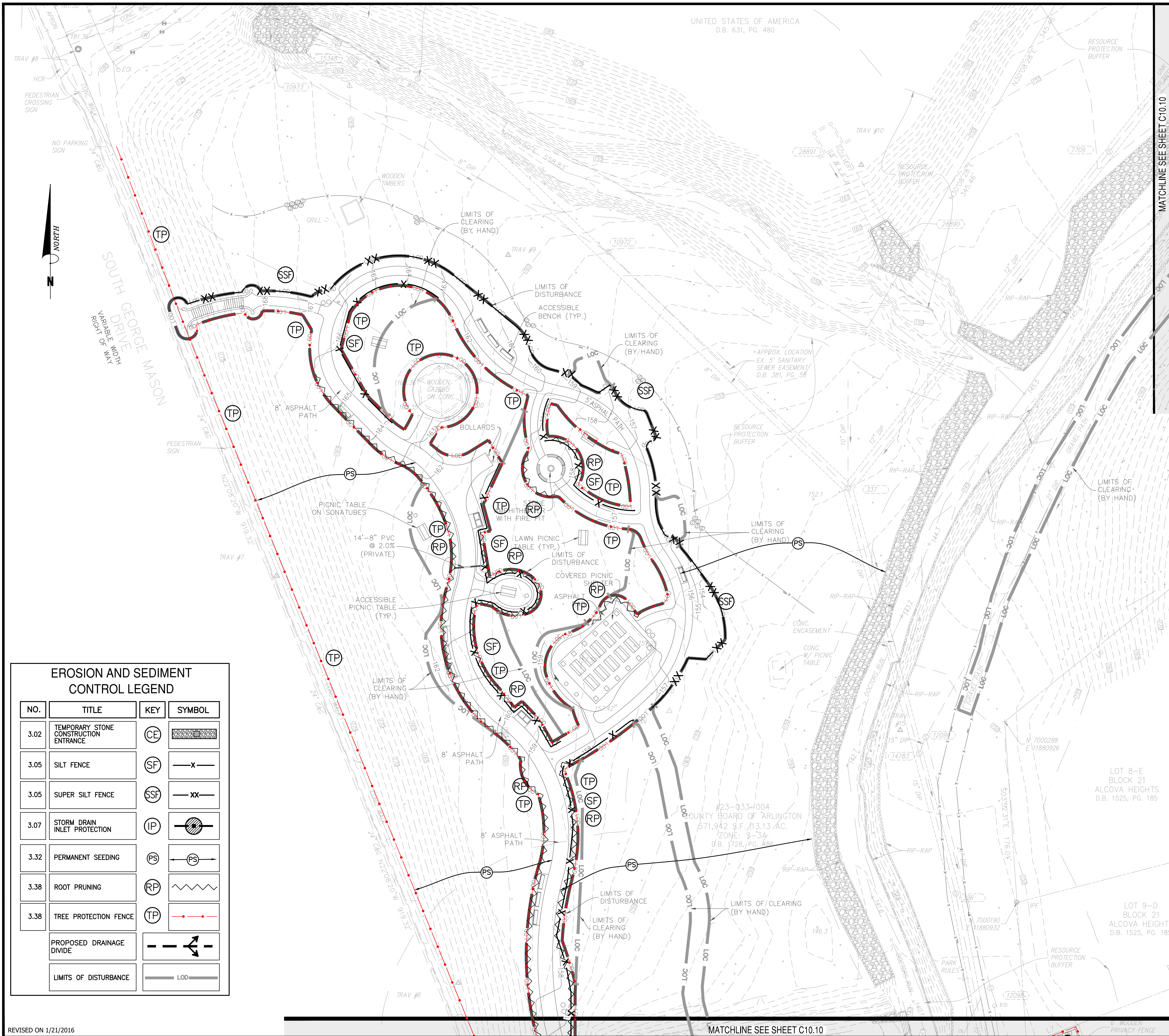
Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
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 CHECKED: DAP
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 PLOTTED: September 20, 2021
 PLOTTED BY: VHOLTZMAN

SHEET
EROSION & SEDIMENT CONTROL PHASE I (2 OF 2)
 C9.10



ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES
 EROSION & SEDIMENT CONTROL PHASE I (2 OF 2)
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia
 Scale: 1"=25' Number: 16 of 68



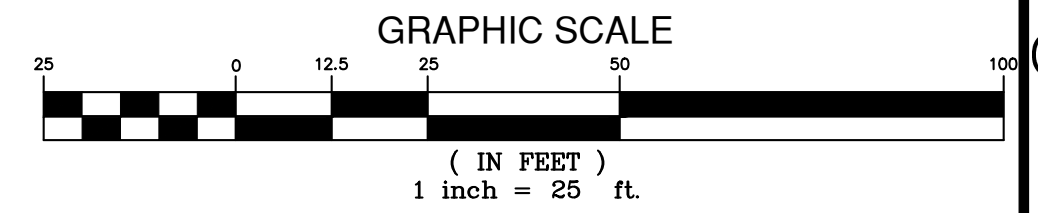
UNITED STATES OF AMERICA
D.B. 631, PG. 480

MATCHLINE SEE SHEET C10.10

MATCHLINE SEE SHEET C10.10

EROSION AND SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.05	SUPER SILT FENCE	SSF	
3.07	STORM DRAIN INLET PROTECTION	IP	
3.32	PERMANENT SEEDING	PS	
3.38	ROOT PRUNING	RP	
3.38	TREE PROTECTION FENCE	TP	
	PROPOSED DRAINAGE DIVIDE		
	LIMITS OF DISTURBANCE	LOD	



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FACILITIES & ENGINEERING DIVISION
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FAX: 703.228.3328

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

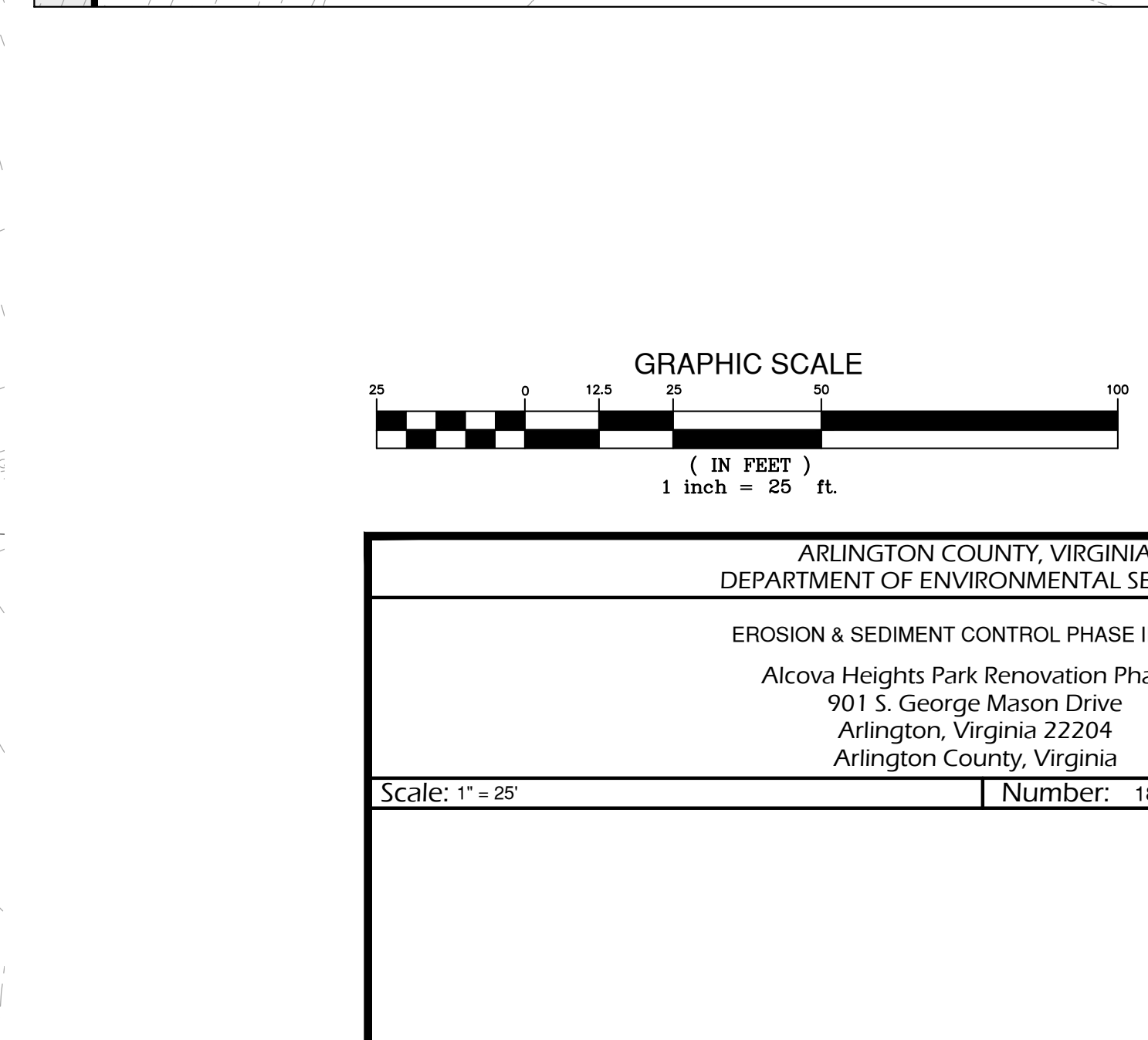
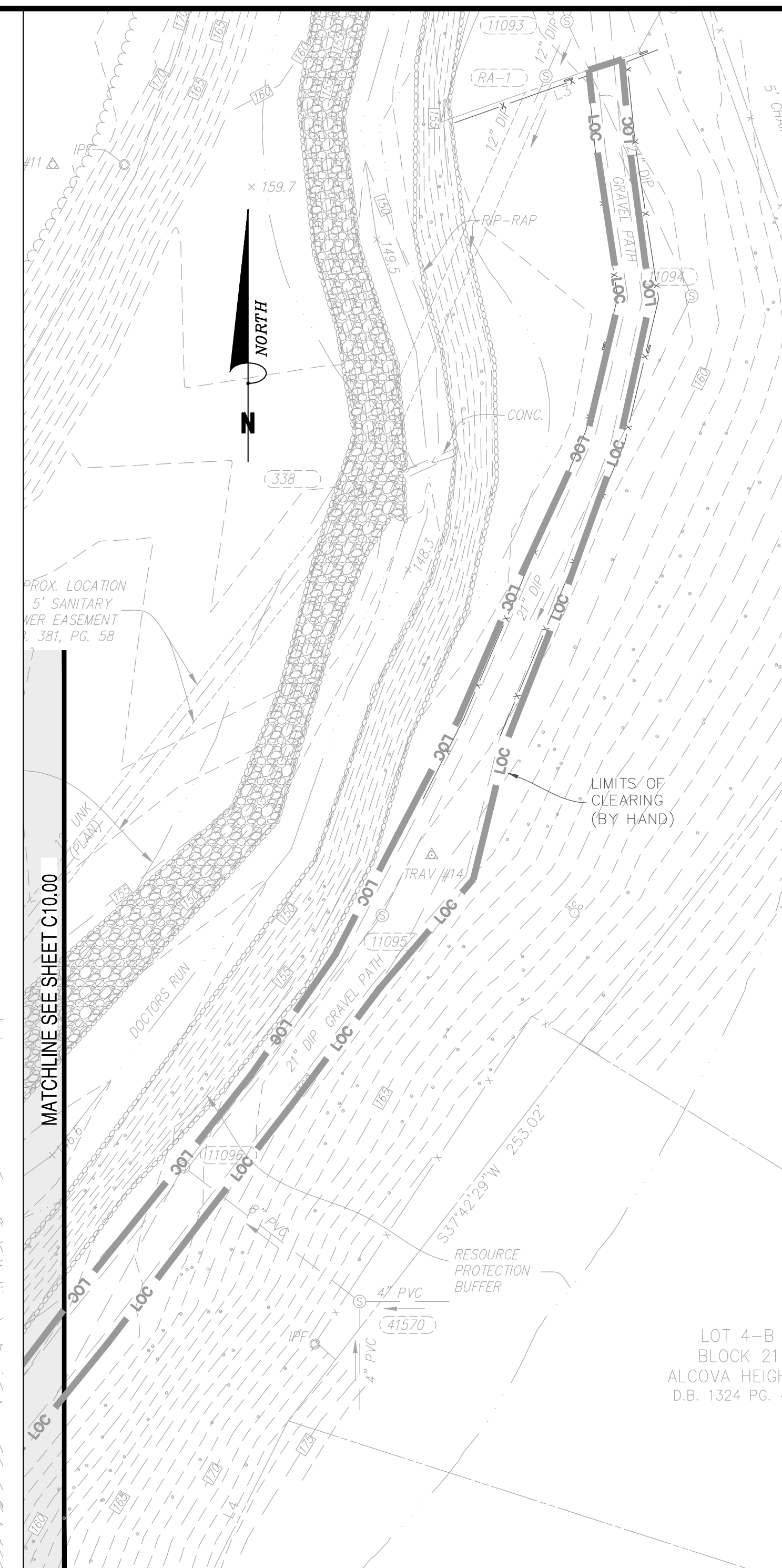
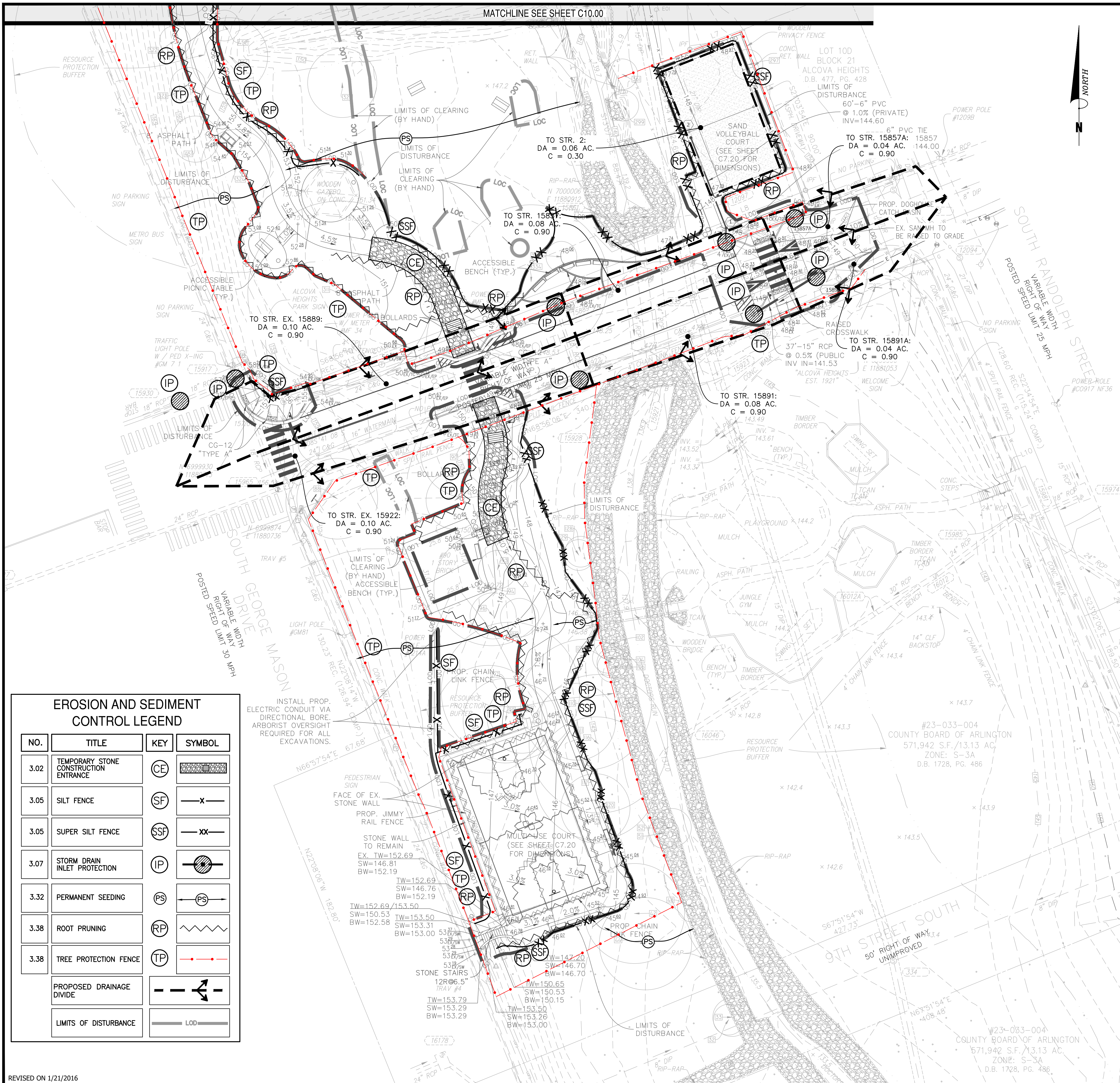
Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A
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PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOULTZMAN

EROSION & SEDIMENT CONTROL PHASE II (1 OF 2) C10.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
EROSION & SEDIMENT CONTROL PHASE II (1 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: 1" = 25' | Number: 17 of 68

MATCHLINE SEE SHEET C10.00



DEPARTMENT OF
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FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: 140049-D-CP-001-ESC2.DWG
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PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
EROSION & SEDIMENT CONTROL PHASE II (2 OF 2)
C10.10

ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
EROSION & SEDIMENT CONTROL PHASE II (2 OF 2)	
Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia	
Scale: 1" = 25'	Number: 18 of 68

NO.	TITLE	KEY	SYMBOL
3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	[Symbol]
3.05	SILT FENCE	SF	[Symbol]
3.05	SUPER SILT FENCE	SSF	[Symbol]
3.07	STORM DRAIN INLET PROTECTION	IP	[Symbol]
3.32	PERMANENT SEEDING	PS	[Symbol]
3.38	ROOT PRUNING	RP	[Symbol]
3.38	TREE PROTECTION FENCE	TP	[Symbol]
	PROPOSED DRAINAGE DIVIDE		[Symbol]
	LIMITS OF DISTURBANCE		[Symbol]

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THE 13.13 AC. SITE IS LOCATED AT 901 S GEORGE MASON DR, ARLINGTON, VA 22204. THE PROJECT PROPOSES IMPROVEMENTS TO ALCOVA HEIGHTS PARK. THE TOTAL LAND DISTURBED AREA FOR THIS PROJECT IS APPROXIMATELY 1.51 ACRES AND INCLUDES THE WORK WITHIN THE RIGHT OF WAY.

EXISTING SITE CONDITIONS

THE EXISTING SITE IS ZONED S-3A AND CONSISTS OF ASPHALT TRAILS, GAZEBOS, PAVILION, BASKETBALL COURT, SAND VOLLEYBALL COURT AND SEVERAL PICNIC TABLES AND GRILLS.

ADJACENT AREAS

THE SITE IS BOUND BY SOUTH GEORGE MASON DRIVE TO THE WEST, SOUTH RANDOLPH STREET TO THE EAST, AND BISECTED BY 8TH STREET SOUTH. THE SITE IS SURROUNDED BY R-6 RESIDENTIAL PROPERTIES TO THE EAST AND WEST; C-2 COMMERCIAL PROPERTY TO THE SOUTH; AND A GOVERNMENT FACILITY TO THE NORTH.

OFF-SITE AREAS

NO OFF-SITE BORROW, WASTE, OR SURPLUS AREAS WILL BE USED FOR CONSTRUCTION. MINOR DISTURBANCE WILL OCCUR IN THE RIGHT-OF-WAY OF S GEORGE MASON DRIVE AND 8TH STREET FOR CONSTRUCTION OF ADA RAMPS, CURB & GUTTER ADJUSTMENTS, AND A NEW SPEED HUMP.

SOILS

THE MAJORITY OF THE SITE CONTAINS UDORTHENTS, LOAMY (13) SOIL. THE SLOPE VARIES BUT IS GENERALLY LESS THAN 10 PERCENT.

CRITICAL AREAS

DEAD RUN CREEK RUNS THROUGH THE SITE. THE DOCTORS RUN RPA IS ALSO LOCATED ONSITE, HOWEVER NO FLOODPLAIN IS LOCATED ONSITE.

EROSION AND SEDIMENT CONTROL MEASURES

THE FOLLOWING EROSION AND SEDIMENT CONTROLS HAVE BEEN DESIGNED TO MINIMIZE EROSION AND RUNOFF FROM THE SITE:

- TEMPORARY CONSTRUCTION ENTRANCE - 3.02
A STABILIZED STONE PAD WITH A FILTER FABRIC UNDERLINER LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE SHALL BE INSTALLED WHERE SHOWN ON THE E&S PLAN TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PAVED PUBLIC ROADS BY CONSTRUCTION VEHICLES.
- SILT FENCE/SUPER SILT FENCE - 3.05
A TEMPORARY SEDIMENT BARRIER CONSISTING OF A SYNTHETIC FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED SHALL BE INSTALLED WHERE SHOWN ON THE E&S PLAN TO INTERCEPT AND DETAIL SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS DURING CONSTRUCTION IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE.
- STORM DRAIN INLET PROTECTION - 3.07
A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN DROP INLET OR CURB INLET SHALL BE INSTALLED AT ALL STORM INLETS WITH THE POTENTIAL OF RECEIVING SEDIMENT LADEN RUNOFF AS SHOWN ON THE E&S PLAN. ANY STORM DRAIN INLET PROTECTION THAT COMPLETELY BLOCK THE THROAT SHALL NOT BE USED.
- TREE PROTECTION FENCING - 3.38
PROTECTION OF DESIRABLE TREES FROM MECHANICAL AND OTHER INJURY DURING LAND DISTURBING AND CONSTRUCTION ACTIVITY SHALL BE INSTALLED WHERE SHOWN ON THE E&S PLAN.
- DUST CONTROL - 3.39
TO PREVENT SURFACE AND AIR MOVEMENT OF DUCT FROM EXPOSED SOIL SURFACES AND REDUCE THE PRESENCE OF AIRBORNE SUBSTANCES WHICH MAY PRESENT HEALTH HAZARDS, TRAFFIC SAFETY PROBLEMS OR HARM ANIMAL OR PLANT LIFE.

NON-STRUCTURAL PRACTICES

- TEMPORARY SEEDING - 3.31
TEMPORARY SEEDING AND MULCHING SHALL BE REQUIRED ONCE AN AREA IS DENuded FOR A MAXIMUM OF 14 DAYS EXCEPT FOR THAT PORTION OF THE SITE IN WHICH WORK WILL BE CONTINUOUS BEYOND 14 DAYS. FOR WINTER STABILIZATION, ANY AREA DENuded FOR 14 DAYS AFTER NOVEMBER 1 SHALL BE SEED AND MULCHED WITH THE APPROPRIATE SEED MIXTURE AS SPECIFIED IN CHAPTER 3 OF THE CURRENT "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK."
- PERMANENT SEEDING - 3.32
THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED SHALL BE INSTALLED WHERE SHOWN IN PHASE II OF THE EROSION AND SEDIMENT CONTROL PLANS TO PERMANENTLY STABILIZE THE DISTURBED AREAS. EXTRA SEEDING SHALL BE DONE WHERE SHOWN ON THE MATERIALS PLAN ON SHEETS C6.00-C6.10 TO FURTHER ESTABLISH VEGETATIVE COVER ON THE SITE.
- MULCHING - 3.35
APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE SHALL BE INSTALLED WHERE SHOWN ON PHASE II OF THE EROSION AND SEDIMENT CONTROL PLAN TO PREVENT EROSION BY PROTECTING THE SOIL SURFACE FROM RAINDROP IMPACT AND REDUCING THE VELOCITY OF OVERLAND FLOW.

STORMWATER DISCHARGE PERMIT

OWNERS/OPERATORS OF ALL CONSTRUCTION ACTIVITIES LARGER THAN 2,500 SQUARE FEET LOCATED IN ARLINGTON COUNTY (A CHESAPEAKE BAY PRESERVATION LOCALITY) ARE REQUIRED TO APPLY TO DEQ FOR REGISTRATION COVERAGE UNDER THE GENERAL PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES.

OVERLAND RELIEF

THE SITE SHEET FLOWS DIRECTLY INTO THE BED AND BANKS OF DOCTORS RUN, LOCATED ONSITE.

PROJECT DATES

THE CONSTRUCTION OF THE PROJECT WILL BE PHASED. THE CONTRACTOR SHALL PROVIDE A PHASING PLAN PRIOR TO THE START OF CONSTRUCTION.

SEQUENCE OF CONSTRUCTION OPERATIONS

(GENERALLY) THE FOLLOWING SEQUENCE SHALL BE FOLLOWED IN THE PLACEMENT OF REQUIRED SEDIMENT CONTROL DEVICES:

PHASE I:

- INSTALL PHASE I PERIMETER EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON SHEETS C9.00-C9.10. PERIMETER CONTROLS INCLUDE TEMPORARY CONSTRUCTION ENTRANCE, SILT FENCE, TREE PROTECTION FENCING, AND INLET PROTECTION. THE EXISTING GRAVEL TRAIL TO THE NORTH AND THE EXISTING ASPHALT TRAIL TO THE SOUTH OF 8TH STREET SHALL BE USED AS A CONSTRUCTION ENTRANCE DURING PHASE I.
- CONTRACTOR SHALL PREPARE PHASING PLANS AND SHALL PHASE ALL WORK SO THAT ONLY THE CURRENT WORK AREA IS EXPOSED AT ONE TIME. ALL DISTURBED AREAS SHALL BE STABILIZED USING TEMPORARY SEEDING WITHIN 7 DAYS.
- CONTRACTOR SHALL ENSURE THAT ALL UTILITY SERVICES (WATER, SANITARY SEWER, NATURAL GAS, ELECTRIC AND COMMUNICATIONS) TO SURROUNDING PROPERTIES REMAIN IN SERVICE DURING CONSTRUCTION.
- COMMENCE CLEARING AND GRADING WITHIN THE PERIMETER CONTROLS.
- CONTRACTOR TO MOVE PORTABLE SEDIMENT TANK AS NECESSARY DURING EXCAVATION.

PHASE II:

- REMOVE UNNEEDED PHASE I MEASURES AND INSTALL PHASE II MEASURES AS SHOWN ON SHEETS C10.00-C10.10. CONTROLS INCLUDE SILT FENCE, TREE PROTECTION FENCING AND INLET PROTECTION.
- COMMENCE CONSTRUCTION OF THE NEW TRAILS AND PICNIC PAVILION.
- INSTALL ALL LANDSCAPING AREA PLANTINGS.
- ONCE THE ENTIRE SITE IS CONSTRUCTED AND STABILIZED, REMOVE ALL TEMPORARY SEDIMENT CONTROL DEVICES IN COORDINATION WITH THE COUNTY INSPECTOR.

EROSION SHALL BE MINIMIZED BY THE FOLLOWING:

- CONTRACTOR SHALL EVALUATE THE SITE TO DETERMINE EXTENSIVE CUT AND FILL AREAS AND SHALL WORK THOSE AREAS TO MINIMIZE THE EXTENT OF HEAVY EQUIPMENT WORK. CONTRACTOR SHALL STRIVE TO BRING AREAS TO GRADE (ROUGH OF FINISH) AND TO STABILIZE WITHIN 7 DAYS, BY TEMPORARY OR PERMANENT VEGETATION.
- FILL AREAS SHALL BE COMPACTED COMPLETELY PRIOR TO THE END OF EACH WORK DAY. FILL SLOPE SURFACES SHALL BE LEFT ROUGHENED TO REDUCE SHEET EROSION OF THE SLOPES. CONTRACTOR SHALL REDIRECT CONCENTRATED RUNOFF, BY EARTH BERMS OR OTHER DEVICES, AROUND ACTIVELY DISTURBED ARE TO STABILIZE OUTLETS.
- CUT SLOPES, AS NECESSARY, SHALL BE PROTECTED FROM CONCENTRATED FLOW BY BERMS ABOVE THE SLOPE AND DIRECTED AROUND THE DISTURBED AREA TO STABILIZED OUTLET.
- IN NEW PAVEMENT AREAS, PLACE THE AGGREGATE BASE STONE OF THE FINISH SUBGRADE AT THE EARLIEST POSSIBLE TIME.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CARRIED OUT AND MAINTAINED ACCORDING TO THE

- STANDARDS AND SPECIFICATIONS IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- ALL DESTABILIZED, DENuded AREAS, SUCH AS STOCKPILES, CUT AND/OR FILL SLOPES, ETC., SHALL BE PROTECTED WITH SLOPE STABILIZATION MATTING OR TARPS AS APPROVED BY ARLINGTON COUNTY EROSION AND SEDIMENT CONTROL INSPECTOR PRIOR TO HEAVY RAINFALL EVENTS. CONTRACTOR SHALL COORDINATE STABILIZATION MEASURES WITH INSPECTOR.

MAINTENANCE

(GENERALLY) A PROGRAM OF MAINTENANCE FOR THE MECHANICAL CONTROL SPECIFIED IN THIS NARRATIVE AND ON THE PLAN IS RECOMMENDED AS FOLLOWS:

- THE SITE SUPERINTENDENT, OR HIS REPRESENTATIVE SHALL MAKE A VISUAL INSPECTION OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E. SEED OR SODDED AREAS) ON A DAILY BASIS (ESPECIALLY AFTER HEAVY RAINFALL) TO INSURE THAT ALL CONTROL ARE IN PLACE AND THAT NONE HAVE BEEN DAMAGED. ANY DAMAGED CONTROL SHALL BE REPAIRED PRIOR TO THE END OF WORK THAT DAY (TO INCLUDE RESEEDING OR RESODDING IF NECESSARY)
- ALL SILT TRAPPING FACILITIES SHALL BE CLEANED OUT AT 50% CAPACITY AND SEDIMENT SHALL BE DISPOSED BY SPREADING ON SITE (OR HAULING AWAY IF NOT SUITABLE)
- AFTER ALL CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS ARE STABILIZED, MECHANICAL SEDIMENT CONTROLS SHALL BE REMOVED AND GROUND SHALL BE RESTORED, INCLUDING ESTABLISHMENT OF VEGETATION, TO ITS NATURAL OR PROPOSED CONDITION.
- ALL DISTURBED AREAS NOT BEING WORKED ON SHALL BE SEED AND/OR SODDED WITHIN 7 DAYS.
- TEMPORARY SEEDING: ALL DENuded AREAS AND STOCKPILES MUST BE STABILIZED IMMEDIATELY AND SHALL BE SEED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED. SEE TEMPORARY SEEDING SCHEDULE.
- PERMANENT SEEDING: PERMANENT SEEDING SHALL BE APPLIED IN AREAS OF PERMANENT VEGETATIVE COVER WHERE CONSTRUCTION HAS BEEN COMPLETED OR IN ROUGH GRADED AREAS WHICH WILL BE BROUGHT TO FINAL GRADE FOR ONE MONTH OR LONGER. ALL DISTURBED AREAS WHICH ARE PLANNED TO BE LANDSCAPED SHALL BE SEED AND LANDSCAPED IMMEDIATELY FOLLOWING FINAL GRADE. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER, AND LIME OR OTHER SOIL ADDITIVES SHALL BE APPLIED PRIOR TO MULCHING.
- ENSURE CONSTRUCTION ENTRANCE AND WASH RACK ARE FUNCTIONING PROPERLY AND VEHICLE TRAVEL WAYS ARE VACUUM SWEEP WEEKLY.
- TO ENSURE ALL OFF-SITE AREAS ARE NOT IMPACTED, ENSURE ALL TRAPPING DEVICES ARE MAINTAINED AS ABOVE.
- THE CONTRACTOR IS TO INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES AND MAINTAIN A MONITORING REPORT FOLLOWING ANY RUNOFF PRODUCING RAINFALL AS OUTLINED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY DCR. THE CONTRACTOR IS RESPONSIBLE TO FOR THE MAINTENANCE AND REPAIR OF ALL EROSION AND SEDIMENT CONTROL MEASURES

TREE PROTECTION/LANDSCAPE NOTE:

WE ACKNOWLEDGE THAT THE TREE PROTECTION/LANDSCAPE PLANS SHALL BE REVIEWED AND APPROVED PRIOR TO THE ISSUANCE OF THE ASSOCIATED LAND DISTURBANCE PERMIT. THE APPROVED TREE PROTECTION AND/OR LANDSCAPE PLAN MUST BE SUBMITTED AS PART OF THE LDA PERMIT PACKAGE ALONG WITH ANY ADDITIONAL REQUIRED ITEMS.

GENERAL LAND CONSERVATION NOTES

- NO DISTURBED AREA WILL REMAIN DENuded FOR MORE THAN 7 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERIMETER CONTROLS.
- ALL STORM AND SANITARY SEWER LINES NOT IN STREETS ARE TO BE MULCHED AND SEEDDED WITHIN 5 DAYS AFTER BACKFILL. NO MORE THAN 500 FEET ARE TO BE OPEN AT ANY ONE TIME.
- ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES ARE TO BE COMPACTED, SEEDDED AND MULCHED WITHIN 5 DAYS OF BACKFILL.
- ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS ARE TO BE MULCHED AND SEEDDED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED. THE SAME APPLIES TO ALL SOIL STOCKPILES.
- DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.
- ANY DISTURBED AREA NOT COVERED BY NOTE # 1 ABOVE AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1ST, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED WITH HAY OR STRAW AT THE RATE OF 2 TONS PER ACRE AND OVER-SEEDDED NO LATER THAN MAY 15TH.
- AT THE COMPLETION OF THE CONSTRUCTION PROJECT AND PRIOR TO BOND RELEASE, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENuded AREAS SHALL BE STABILIZED. ARLINGTON COUNTY INSPECTOR TO APPROVE REMOVAL OF ALL TEMPORARY SILTATION MEASURES.

GENERAL EROSION AND SEDIMENT CONTROL NOTES (TABLE 6-1):

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION CONTROL AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VA503-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED TO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

NON-STORMWATER DISCHARGES:

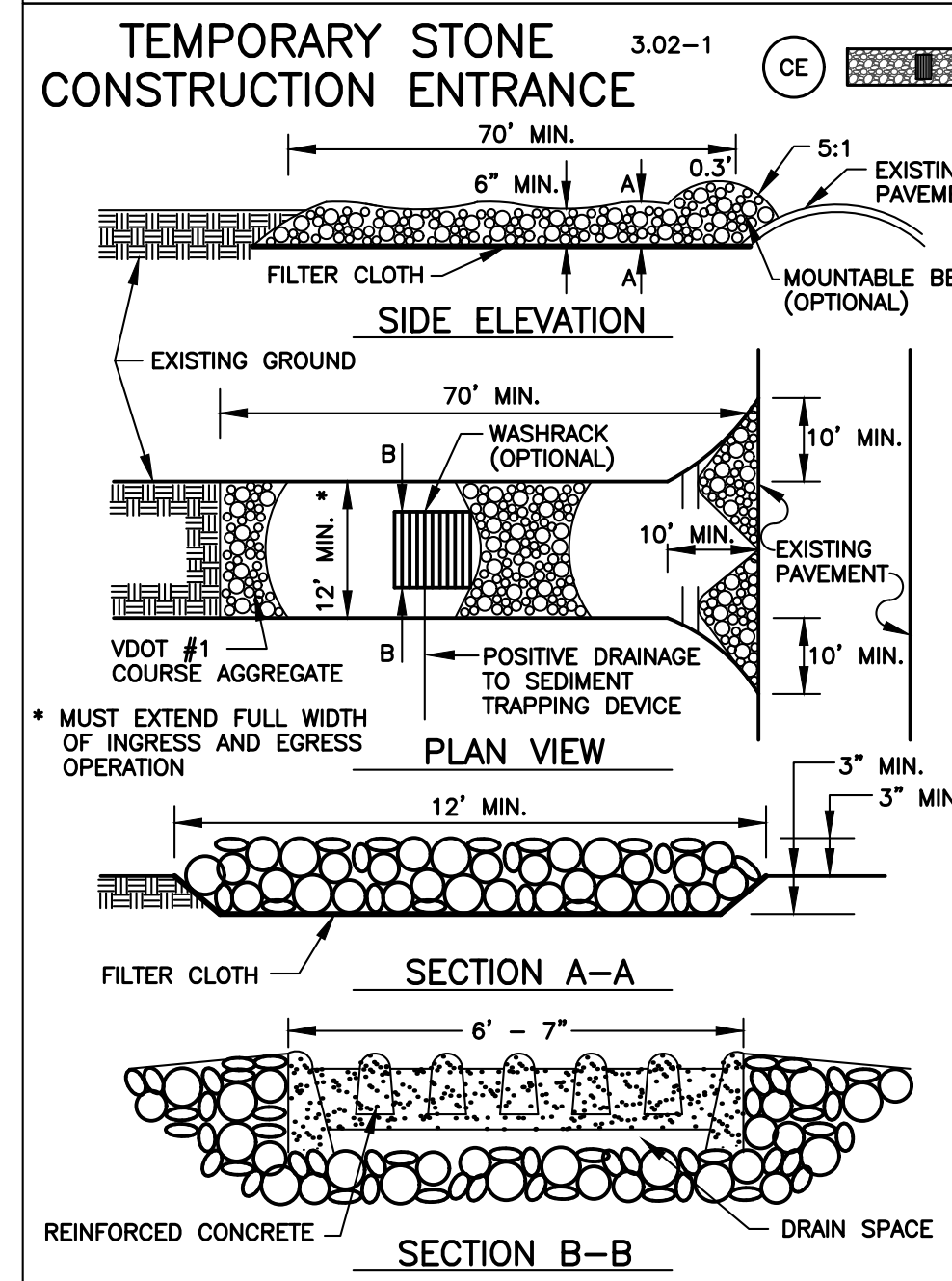
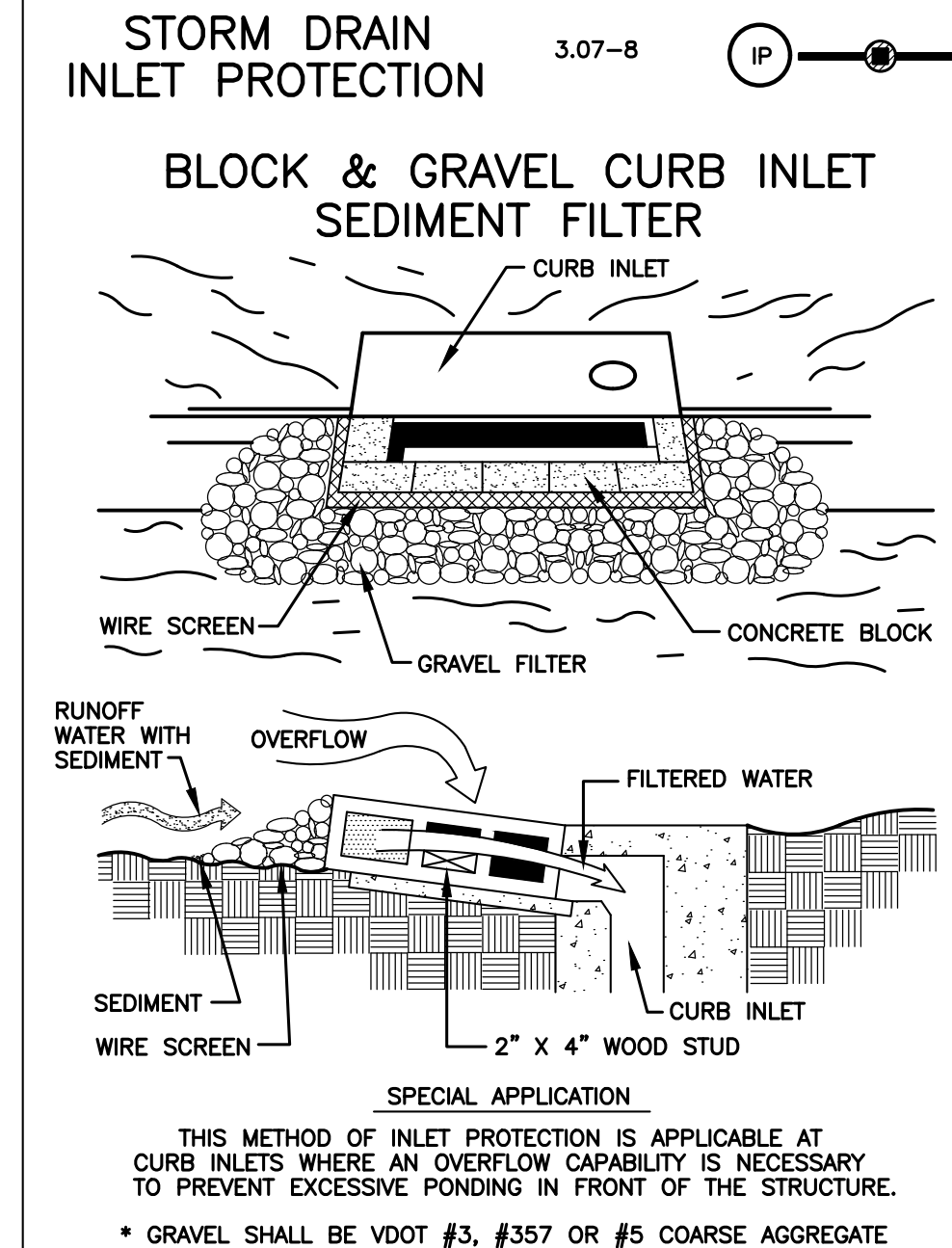
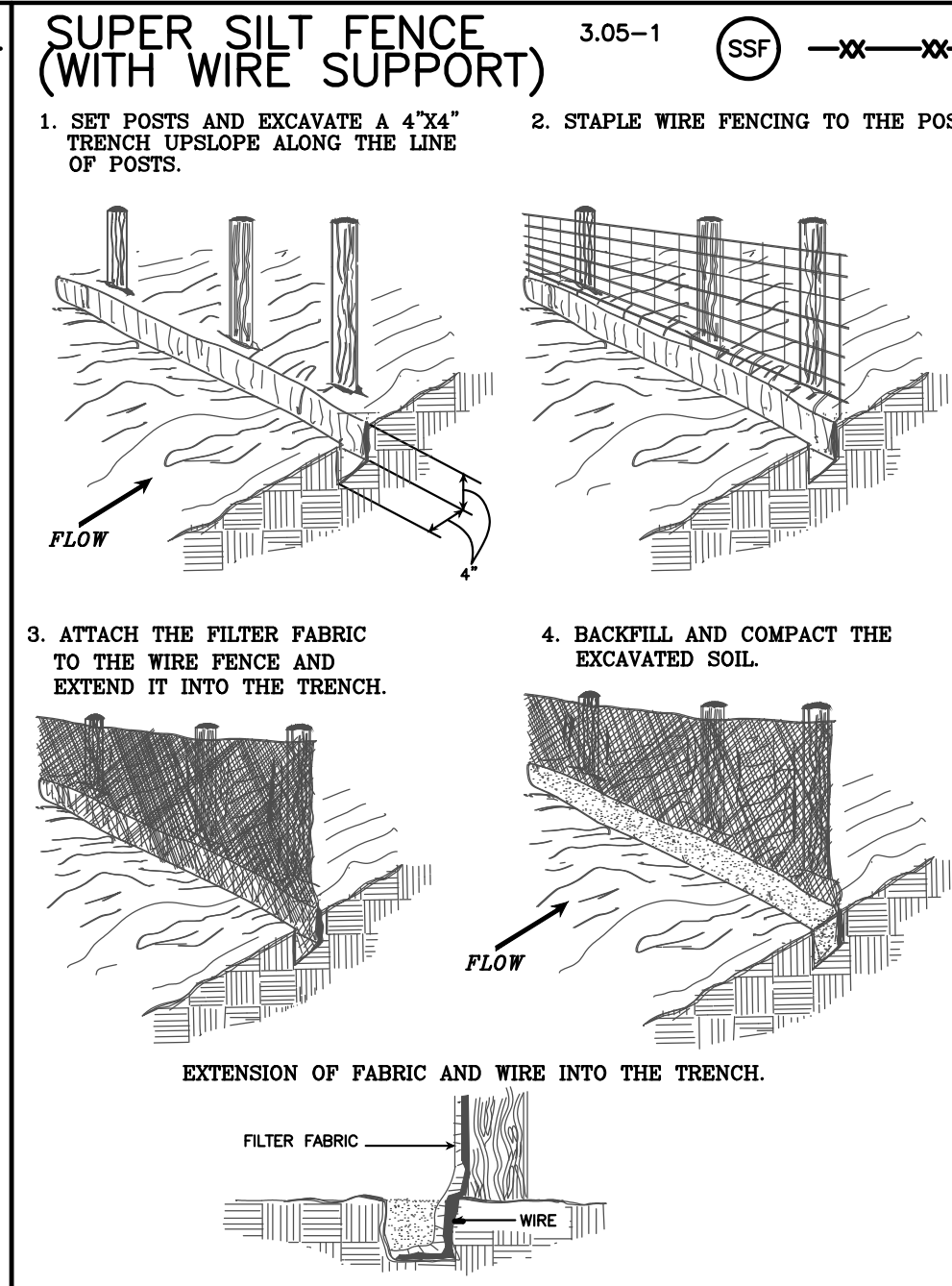
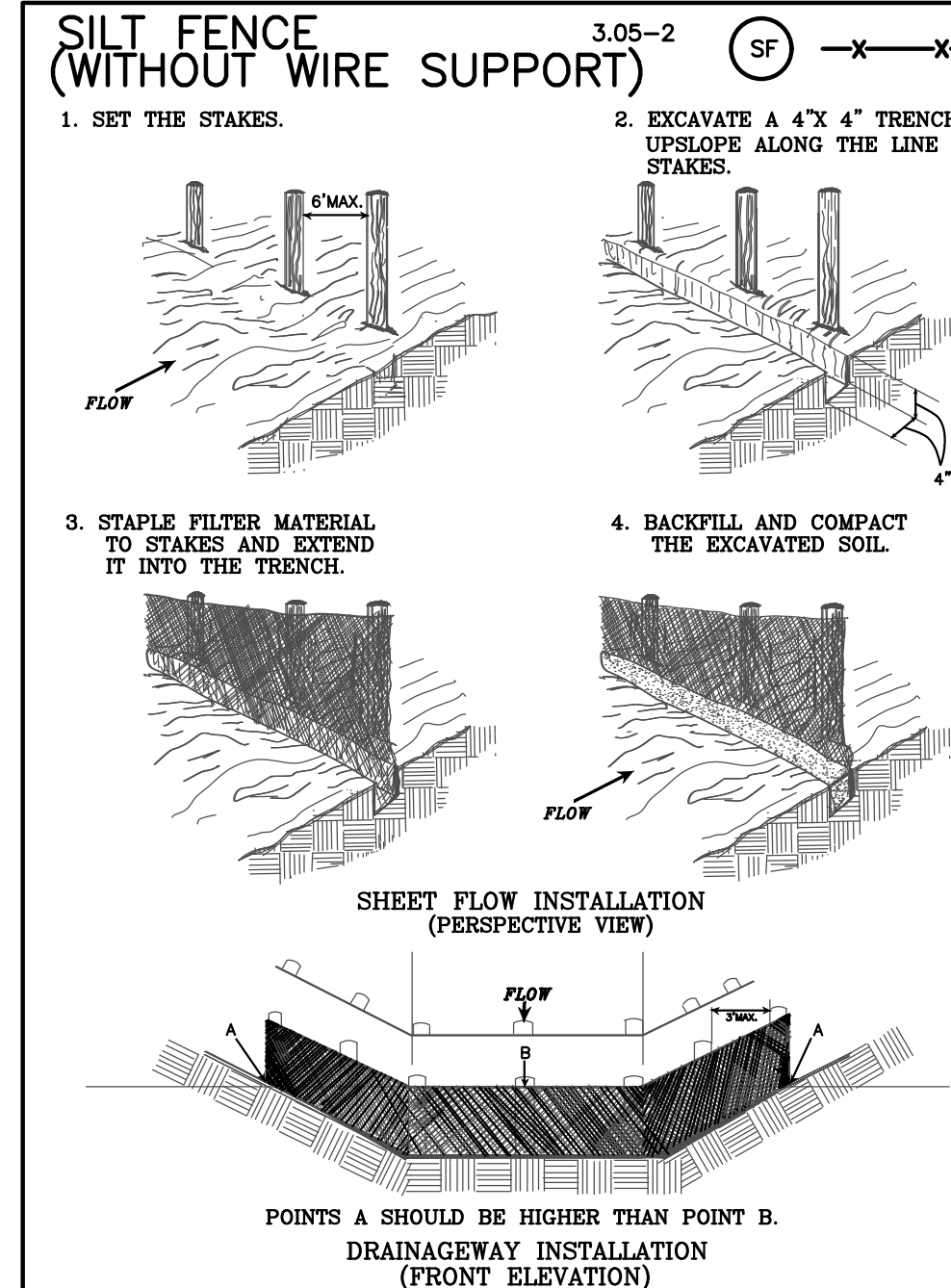
ONLY THE FOLLOWING NON-STORMWATER DISCHARGES ARE AUTHORIZED BY ARLINGTON COUNTY'S MS4 PERMIT, UNLESS THE STATE WATER BOARD, THE VIRGINIA SOIL AND WATER CONSERVATION BOARD (BOARD), OR ARLINGTON COUNTY DETERMINES THE DISCHARGE TO BE A SIGNIFICANT SOURCE OF POLLUTANTS TO SURFACE WATERS:

WATER LINE FLUSHING; LANDSCAPE IRRIGATION; DIVERTED STREAM FLOWS; RISING GROUND WATERS; UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40 CFR 35.2005(20)); UNCONTAMINATED PUMPED GROUND WATER; DISCHARGES FROM POTABLE WATER SOURCES; FOUNDATION DRAINS; AIR CONDITIONING CONDENSATION; IRRIGATION WATER; SPRINGS; WATER FROM CRAWL SPACE PUMPS; FOOTING DRAINS; LAWN WATERING; INDIVIDUAL RESIDENTIAL CAR WASHING; FLOWS FROM PIRANIAN HABITATS AND WETLANDS; DECHLORINATED SWIMMING POOL DISCHARGES; DISCHARGES OR FLOWS FROM FIRE FIGHTING; AND, OTHER ACTIVITIES GENERATING DISCHARGES IDENTIFIED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY AS NOT REQUIRING VPDES AUTHORIZATION.

APPROPRIATE CONTROLS MUST BE IMPLEMENTED TO PREVENT ANY NON-STORMWATER DISCHARGES NOT INCLUDED ON THE ABOVE LIST (E.G., CONCRETE WASH WATER, PAINT WASH WATER, VEHICLE WASH WATER, DETERGENT WASH WATER, ETC.) FROM BEING DISCHARGED INTO ARLINGTON COUNTY'S MS4 SYSTEM, WHICH INCLUDES THE CURB AND GUTTER SYSTEM, AS WELL AS CATCH BASINS AND OTHER STORM DRAIN INLETS, OR STREAM NETWORK.

PER CHAPTER 26 OF THE ARLINGTON COUNTY CODE, IT SHALL BE UNLAWFUL FOR ANY PERSON TO DISCHARGE DIRECTLY OR INDIRECTLY INTO THE STORM SEWER SYSTEM OR STATE WATERS, ANY SUBSTANCE LIKELY, IN THE OPINION OF THE COUNTY MANAGER, TO HAVE AN ADVERSE EFFECT ON THE STORM SEWER SYSTEM OR STATE WATERS.

TEMPORARY SEEDING SCHEDULE		
PLANTING DATES	SPECIES	RATE (LBS/AC)
SEPT. 1-FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLOSUM) AND CEREAL (WINTER) RYE (SEVALL CEREAL)	50-100
FEB. 16-APRIL 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLOSUM)	60-100
MAY 1-AUGUST 31	GERMAN MILLET (SETARIA ITALICA)	50



Qianqian Li, P.E.
ESC Program Administrator
Department of Environmental Services
2100 Clarendon Boulevard, Suite 813
Arlington, Virginia 22201

Re: Erosion and Sediment Control Permit Application for:

street address _____

lot, block, section subdivision _____

permit number _____

Dear Mrs. Li:

I hereby certify that I accept the responsibilities of Responsible Land Disturber for the above referenced project. I understand that these responsibilities include:

- Reviewing the erosion and sedimentation (E&S) plan for the project.
- Walking the site prior to construction to identify critical areas.
- Conducting a pre-construction briefing with earth moving and site contractors to present the E&S plan and highlight the presence of critical areas, the limits of clearing and the required E&S controls and tree protection measures to be installed. Call 703-228-0760 to schedule pre-construction meeting.
- Regularly inspecting the site during construction to ensure that all E&S controls are functioning and are adequate to address erosion and sedimentation. Inspect the site 48 hours after a runoff-generating storm, and provide a copy of the inspection findings to the county.
- Reporting to the owner the presence inadequate or non functioning E&S controls when they are observed.
- Ensuring that temporary soil stabilization is applied within 7 days to areas denuded that will remain undisturbed for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
- Calling (703) 228-0760 at least 80 hours before demolishing any structure.

I may be reached at _____ with questions about this plan or my execution of the duties of Responsible Land Disturber.

Sincerely,

signed _____

name printed _____

professional registration (type and number) _____



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-ESC-NTS.DWG
PATH:P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ITB\IBS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VOLTZMAN

SHEET

EROSION & SEDIMENT CONTROL NOTES AND DETAILS C11.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: NTS

Number: 19 of 68

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM
CONSTRUCTION ACTIVITIES (VAR10)
REGISTRATION STATEMENT 2019

PERMIT #: _____
PLAN/ID #: _____
TECHNICAL CRITERIA: IIB IIC

Application type: NEW PERMIT ISSUANCE
(CHOOSE ONE) MODIFICATION WITH ACREAGE INCREASE
 MODIFICATION WITHOUT ACREAGE INCREASE
 EXISTING PERMIT RE-ISSUANCE

Section I. Operator/Permittee Information.

A. Construction Activity Operator (Permittee). The person or entity that is applying for permit coverage and will have operational control over construction activities to ensure compliance with the general permit. A person with signatory authority for this operator must sign the certification in Section VI. (per Part III. K. of the VAR10 Permit).

Operator Name: Arlington County Department of Parks and Recreation
Contact person: Joshua Serck
Address: 2100 Clarendon Boulevard, Suite 414
City, State Zip Code: Arlington, VA 22201
Phone Number: 703-228-7141
Primary Email: jserck@arlingtonva.us
CC Email: _____

B. Billing Information (leave blank if same as the Operator identified in Section I. A. above). This entity will receive Annual Permit Maintenance and Permit Modification Fee invoices (if applicable).

Name: _____
Contact Person: _____
Address: _____
City, State Zip Code: _____
Phone Number: _____
Primary Email: _____
CC Email: _____

C. May we transmit correspondence electronically? You must choose YES and include a valid email in order to pay by credit card and to receive your permit coverage approval letter via email: YES NO

Section II. Construction Activity Location Information. Project site information.

A. Include a site map showing the location of the existing or proposed land-disturbing activities, the limits of land disturbance, construction entrances and all water bodies receiving stormwater discharges from the site.

B. Construction Activity Name: Alcova Heights Park Renovations
Address: 901 S. George Mason Drive
City and/or County and Zip Code: Arlington, VA 22203
Latitude and Longitude (6-digit, decimal degrees format): 38.861505, -77.102007

C. Construction Activity Entrance Location (description, street address and/or latitude/longitude in decimal degrees):
Driveway entrance off 8th Street South.
38.861941, -77.102622

CONSTRUCTION GENERAL PERMIT (VAR10) REGISTRATION STATEMENT 2019

Section III. Offsite Support Activity Location Information. List all offsite support activities to be included under this permit registration. Enter additional areas on a separate page. Offsite areas not included on this registration will need to obtain coverage under a separate VPDES permit.

A. Offsite Activity Name: _____
Address: _____
City and/or County and Zip Code: _____
Latitude and Longitude (6-digit, decimal degrees format): _____
B. Offsite Activity Entrance Location (description, street address and/or latitude/longitude in decimal degrees): _____

Section IV. Site Information.

A. Property Owner Status: FEDERAL STATE PUBLIC PRIVATE
B. Nature of the Construction Activity Description (i.e. commercial, industrial, residential, agricultural, environmental): Public park improvements
C. Municipal Separate Storm Sewer System (MS4) name(s) (if the site is discharging to a MS4): _____

D. Acreage totals for all land-disturbing activities to be included under this permit coverage. Report to the nearest one-hundredth of an acre.		E. Estimated Project Dates (MM/DD/YYYY)	
Total land area of development (including the entire area to be disturbed as approved in the Stormwater Management Plan):	3.52 AC	Start date:	
Primary estimated area to be disturbed (portions with Erosion and Sediment Control Plan approval only):	1.69 AC	Completion date:	
Offsite estimated area to be disturbed (if applicable):			

F. Is this construction activity part of a common plan of development or sale? YES NO

G. 6th Order Hydrologic Unit Code (HUC) and Receiving Water Name(s). Attach a separate list if needed.

HUC	RECEIVING WATERBODY(S)
P1.25	Doctors Run

Section V. Other Information.

A. A stormwater pollution prevention plan (SWPPP) must be prepared in accordance with the requirements of the General VPDES Permit for Discharges of Stormwater from Construction Activities prior to submitting the Registration Statement. By signing the Registration Statement, the operator is certifying that the SWPPP has been prepared.
B. Has an Erosion and Sediment Control Plan been submitted to the VESC Authority for review? YES NO
Erosion and Sediment Control Plan Approval Date (for estimated area to be disturbed): _____
C. Has land disturbance commenced? YES NO
D. Annual Standards and Specifications. If this project is utilizing approved Annual Standards and Specifications (AS&S), attach the completed AS&S Entity Form.
AS&S Entity Name (if different from the Operator identified in Section II. A.): _____

Section VI. Certification. A person representing the operator as identified in Section I. A. and meeting the requirements of 9VAC25-880-70, Part III. K must physically sign this certification. A typed signature is not acceptable. Please note that operator is defined in 9VAC25-870-10 as follows:

"Operator" means the owner or operator of any facility or activity subject to the Act and this chapter. In the context of stormwater associated with a large or small construction activity, operator means any person associated with a construction project that meets either of the following two criteria: (i) the person has direct operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications or (ii) the person has day-to-day operational control of those activities at a project that are necessary to ensure compliance with a stormwater pollution prevention plan for the site or other state permit or VSMP authority permit conditions (i.e., they are authorized to direct workers at a site to carry out activities required by the stormwater pollution prevention plan or comply with other permit conditions). In the context of stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s), operator means the operator of the regulated MS4 system.

9VAC25-880-70, Part III. K. Signatory Requirements. Registration Statement. All Registration Statements shall be signed as follows:
a. For a corporation; by a responsible corporate officer. For the purpose of this chapter, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this chapter, a principal executive officer of a public agency includes: (i) the chief executive officer of the agency or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

Certification: "I certify under penalty of law that I have read and understand this Registration Statement and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Printed Name: Joshua B Serck
Signature (signed in ink): _____
Date Signed: 9/14/2020

Section VII. Submittal Instructions. Submit this form to the VSMP Authority. If the locality is the VSMP Authority, please send your Registration Statement submittal directly to the locality; do NOT send this form to DEQ. A list of local VSMP Authorities is available here: VSMP Authorities.

If DEQ is the VSMP Authority, please send to:

Department of Environmental Quality
Office of Stormwater Management Suite 1400
PO Box 1105
Richmond VA 23218
construction@deq.virginia.gov

If the locality is the VSMP Authority, please send to:

The Local VSMP Authority (insert address below)



Pre-Storm Erosion and Sediment Control Checklist

Per Erosion and Sediment Control General Note 6, the Contractor is responsible for the installation and maintenance of any additional erosion and sediment control (ESC) measures necessary to prevent erosion and sedimentation as determined by the County. These supplementary practices are in addition to those shown in an ESC plan. ESC practices shall be modified as needed to ensure only clear water is discharged from the site.

The following actions shall be taken prior to storm events with predicted heavy and/or large volume rainfall to prevent sediment discharges from a construction site. A typical summer thunderstorm is an example of a storm event with predicted heavy and/or large volume rainfall.

Perimeter controls

- Silt fence shall be checked for undermining, holes, or deterioration of the fabric. Fencing shall be replaced immediately if the fabric is damaged or worn. Silt fence must be trenched into the ground per state specifications (Std & Spec 3.09).
- Wooden stakes or steel posts shall be properly secured upright into the ground. Damaged posts or stakes must be replaced.
- Sediment that has accumulated against the silt fence should be removed. Accumulated sediment must be removed when the level reaches one-half the height of the fencing.
- Hay bales or a stone berm should be placed across the construction entrance to prevent sediment from leaving the construction site.

Exposed slopes and soil

- Exposed slopes not at the final stabilization phase shall be covered with tarps, plastic sheeting, or erosion control matting. Covering material shall be properly secured/anchored.
- Controls shall be installed to prevent concentrated flow down an exposed slope. Berms or diversion dikes shall be installed at the top of cut / exposed slopes to direct storm flow around the disturbed area.
- Exposed slopes at the final stabilization phase shall be stabilized using slope stabilization practices such as soil stabilization blankets or matting as specified in the Virginia Erosion and Sediment Control Handbook (VESCH) Std & Spec 3.36. Blankets or mats must be properly secured and anchored to the slope using staples, pins, or stakes.
- Seeded areas shall be checked and reseeded as necessary to cover exposed soil. Recently seeded areas shall be protected by straw or soil stabilization blankets to prevent seeding from being washed away.

Stockpiles

- Stockpiled soil and other loose materials that can be washed away shall be covered with a tarp, plastic sheeting, or other stabilization matting. The cover must be properly secured / anchored down to prevent it from being blown off and exposing materials to rain. Controls such as hay bales or booms should be placed along the perimeter of the stock pile (downhill side).

Inlet protection

- Inlet protection controls shall be inspected to ensure they are functioning properly and flooding will not occur. Clogged or damaged controls must be replaced immediately. Ensure controls allow for overflow / bypass of stormwater runoff during significant storm events.

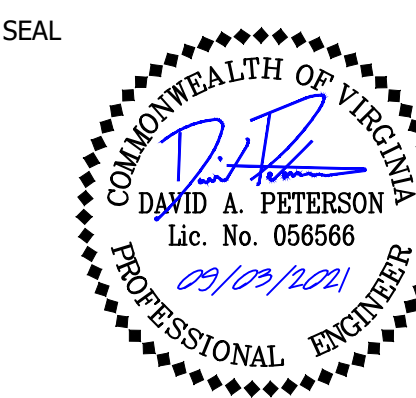
In addition to these pre-storm actions, all erosion and sediment control (ESC) measures must be checked daily and after each significant rainfall.



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova
Heights Park
Renovation
Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-ESC-NTS.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOULTZMAN

SHEET

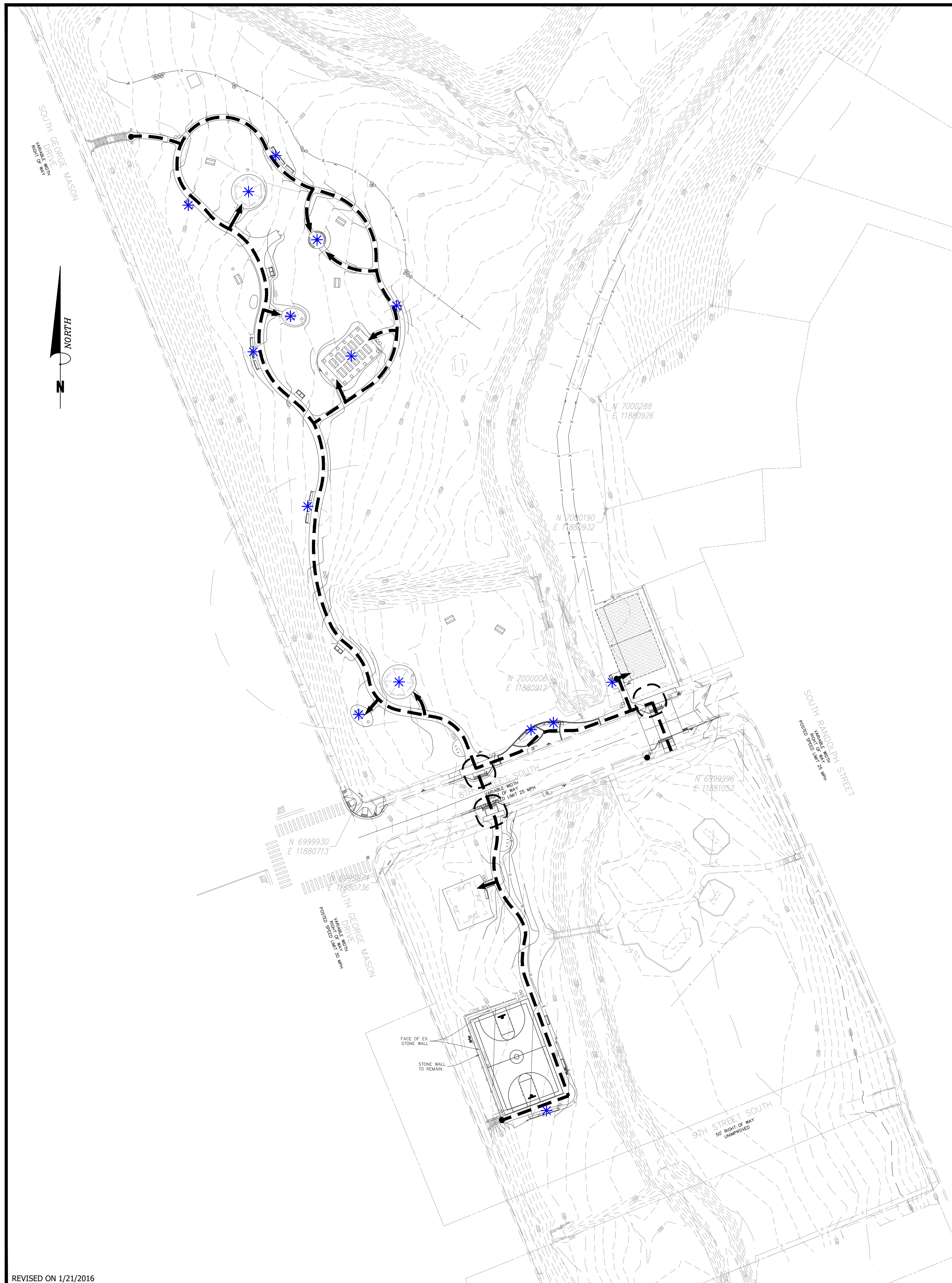
EROSION & SEDIMENT
CONTROL NOTES AND
DETAILS
C11.10

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: NTS Number: 19A of 68



2016 ROAD & BRIDGE STANDARDS

CG-12

GENERAL NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING SHALL BE FROM THE MATERIALS APPROVED LIST FOR THE DETECTABLE WARNING SURFACE. PRODUCTS NOT LISTED SHALL MEET THE REQUIREMENTS OF THE SPECIAL PROVISION FOR CG-12 DETECTABLE WARNING SURFACE AND SHALL BE SUBMITTED TO THE STANDARDS AND SPECIAL DESIGN SECTION FOR APPROVAL.
3. SLOPING SIDES OF CURB RAMP MAY BE FINISHED MONOTONICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BANS.
4. IF RAMP FLOOR IS FINISHED, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FINISHED SURFACES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A.
5. REQUIRED BARS ARE TO BE NO. 5 X 8' PLACED 1' CENTER TO CENTER ALONG ALL 4 SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1/2".
6. CURB / CURB AND OUTLET SLOPE TRANSITIONS ADJACENT TO CURB RAMP ARE INCLUDED IN PAVEMENT FOR CURB / CURB AND OUTLET.
7. CURB RAMP ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER AND SHALL NOT BE LOCATED BEHIND VEHICLE TOP LINES, LIGHTING SIGN POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNINTERRUPTED STRAIGHT PATH AND IS NOT PERMITTED WITH CONNECTING ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMP MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RAMP CANNOT ACCOMMODATE THE TURNING MOVEMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE HEAVY TRUCK TRAFFIC FOR CONCRETE DEPTH.
10. WHEN CURB RAMP ARE USED IN CONNECTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH.
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4' SQUARE LANDING SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR LANDING AREA SHALL INCLUDE 2' X 2' TRAVELWAY THIS 4' X 4'.
12. ALL CASES WHERE CURB RAMP INTERSECT A RADIAL SECTION OF CURB AT ENTRANCES OR STREET CONNECTIONS, THE DETECTABLE WARNING SURFACE SHALL HAVE A FACTORY RADIUS OR BE FIELD MODIFIED AS RECOMMENDED BY THE MANUFACTURER TO MATCH THE BACK OF CURB.

NOTE: COMPONENTS OF CURB RAMP CONSIST OF THE FOLLOWING: CURB, RAMP, SIDEWALK, DETECTABLE WARNING SURFACE AREA IN SQUARE YARDS. EACH OF THE ABOVE ITEMS IS A SEPARATE PAY ITEM AND SHOULD BE SUMMARIZED FOR EACH CURB CUT RAMP.

TYPE A PERPENDICULAR

TYPE B PARALLEL

TYPE C PARALLEL & PERPENDICULAR

DETECTABLE WARNING INSTALLED ON A RADIUS

TRUNCATED DOME DETAIL

DETECTABLE WARNING DETAIL

VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES)	SPECIFICATION REFERENCE
SHEET 1 OF 5	REVISION DATE 07/15	105 502
203.05	203.05	

2016 ROAD & BRIDGE STANDARDS

CG-12

SECTION A-A

SECTION B-B

TYPICAL DESIGN

TYPE A WITH BUFFER STRIP

NOTES:

1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WEER SIDEWALK, LANDING AT INTERSECTIONS OR STREET CONNECTIONS. MINIMUM CURB RAMP LENGTH 8 FEET FOR NEW CONSTRUCTION.

TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK

TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK WITH BUFFER STRIP

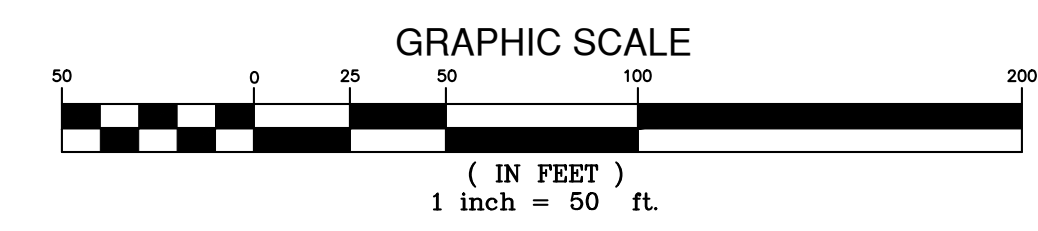
CROSSWALK DIAGONAL PLACEMENT

CROSSWALK PLACEMENT WITH BUFFER STRIP

4' SQUARE LANDING AREA OUTSIDE OF TRAVELWAY SHALL BE PROVIDED WITHIN THE MARKED CROSSWALK AREA

4' SQUARE LANDING AREA OUTSIDE OF TRAVELWAY SHALL BE PROVIDED WITHIN THE MARKED CROSSWALK AREA

VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE TYPE A (PERPENDICULAR) APPLICATION	SPECIFICATION REFERENCE
SHEET 2 OF 5	REVISION DATE 07/15	105 502
203.06	203.06	



- LEGEND
- ← ADA ACCESSIBLE ROUTE
 - ADA PARK ENTRY
 - * ADA ACCESSIBLE SEATING
 - END OF ADA ACCESSIBLE ROUTE

- NOTES:
1. CONSTRUCTION OF THESE PLANS SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 AND ALL REVISIONS.
 2. IT IS THE CONTRACTORS RESPONSIBILITY TO EXECUTE THESE PLANS IN ACCORDANCE TO THIS LAW.
 3. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY AND ALL ITEMS THAT DO NOT CONFORM TO THIS LAW.



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL

DRAWN: CLL

CHECKED: DAP

MISS UTILITY TRANSMITTAL #: N/A

FILENAME:

140049-D-CP-001-ADA.DWG

PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP

PLOTTED: September 20, 2021

PLOTTED BY: VHOLTZMAN

SHEET

A.D.A. ROUTE PLAN

C12.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

A.D.A. ROUTE PLAN

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 50' Number: 20 of 68



APPROVALS _____ DATE _____

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS _____ DATE _____

Project Name and Location

Alcova Heights Park Renovation Phase I

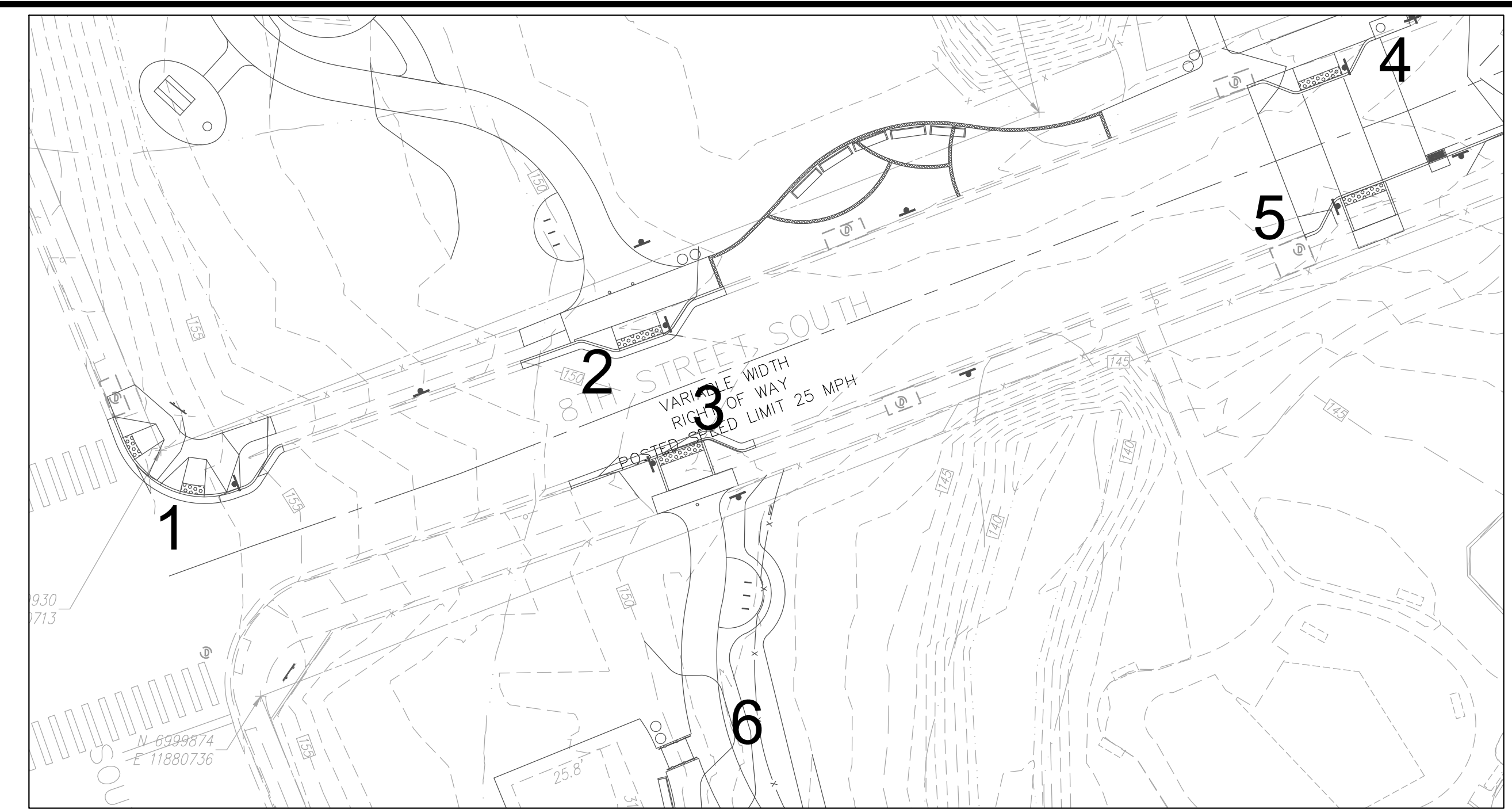
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DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: 140049-D-CP-001-ADA.DWG
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PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
A.D.A. ACCESS PLAN
C12.10

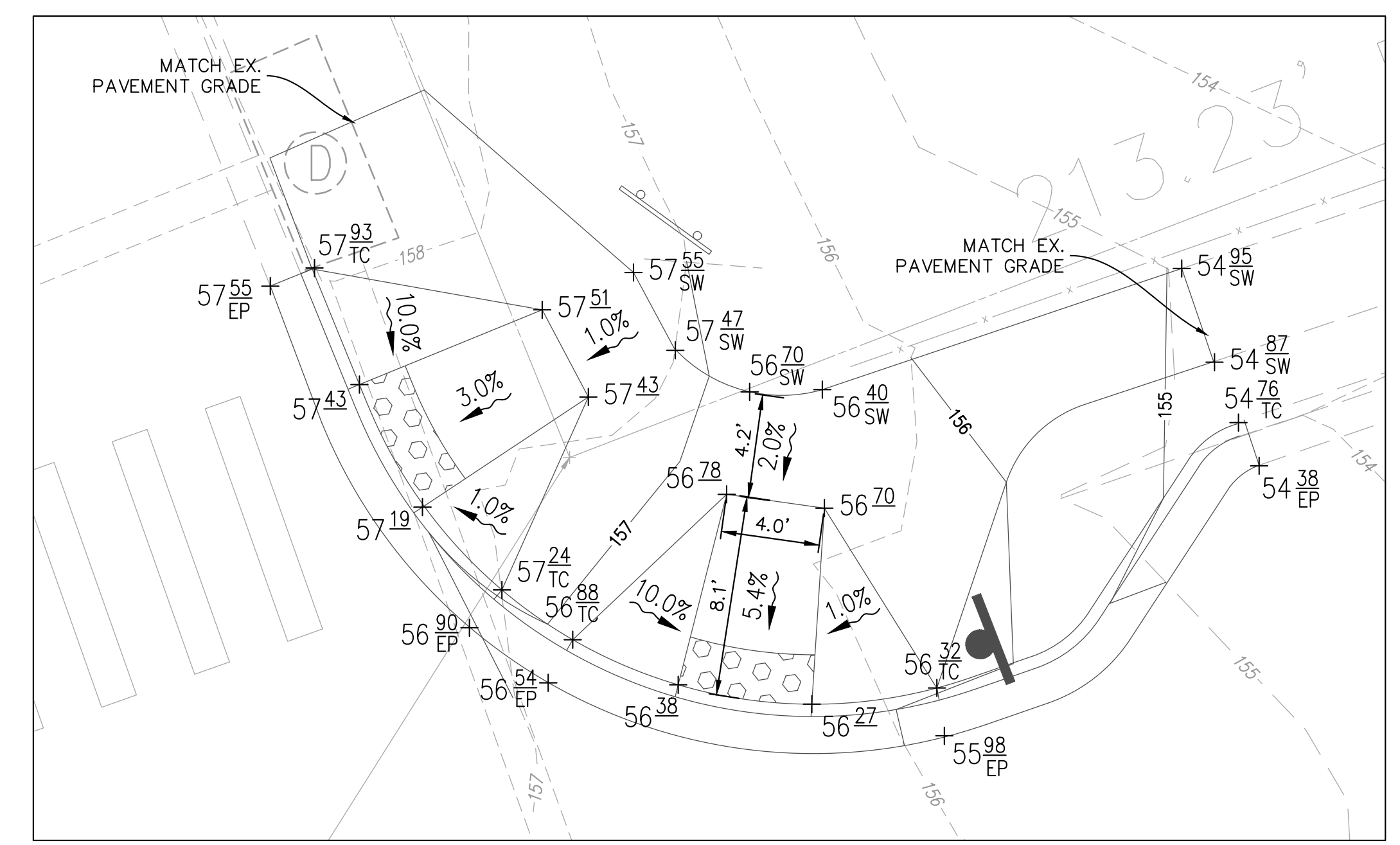
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

A.D.A. ACCESS PLAN
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

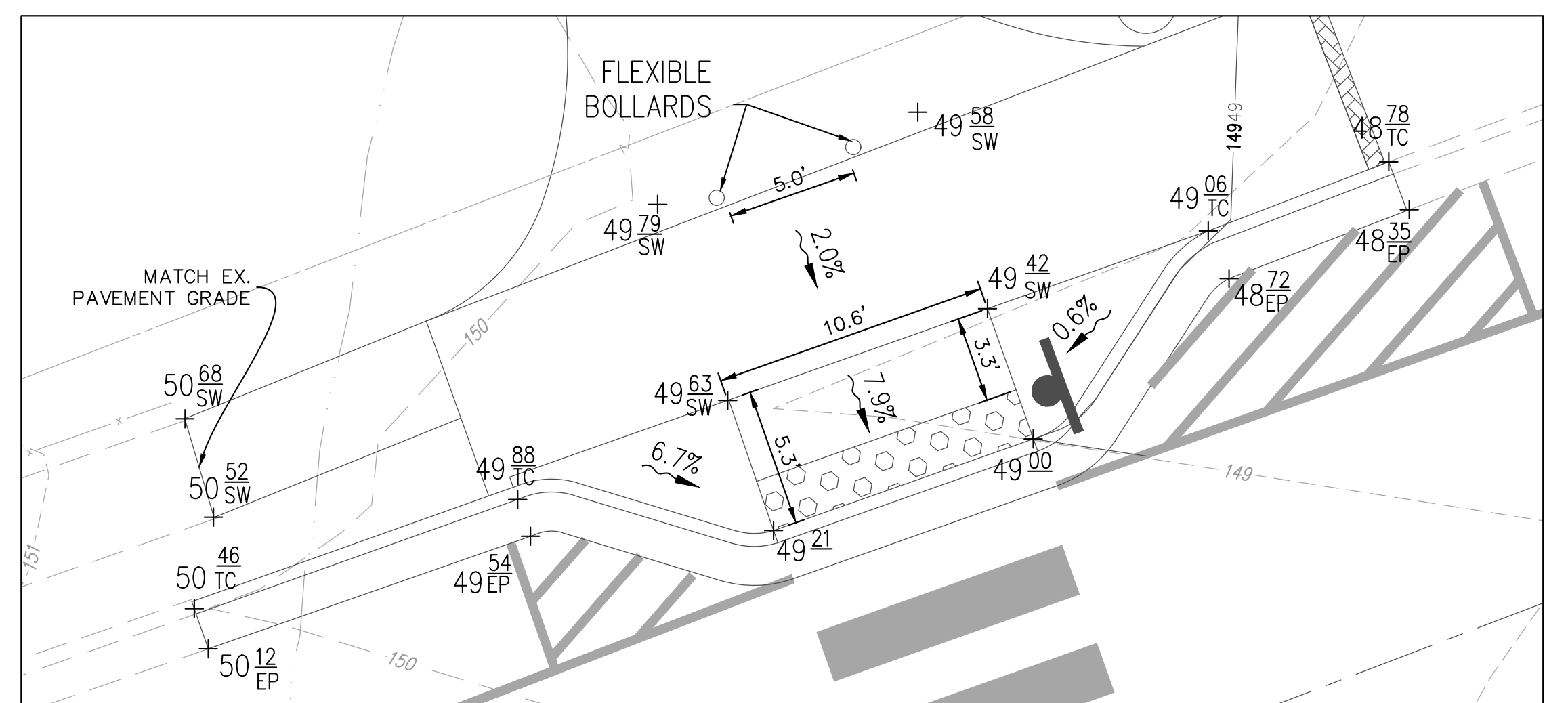
Scale: AS SHOWN | Number: 21 of 68



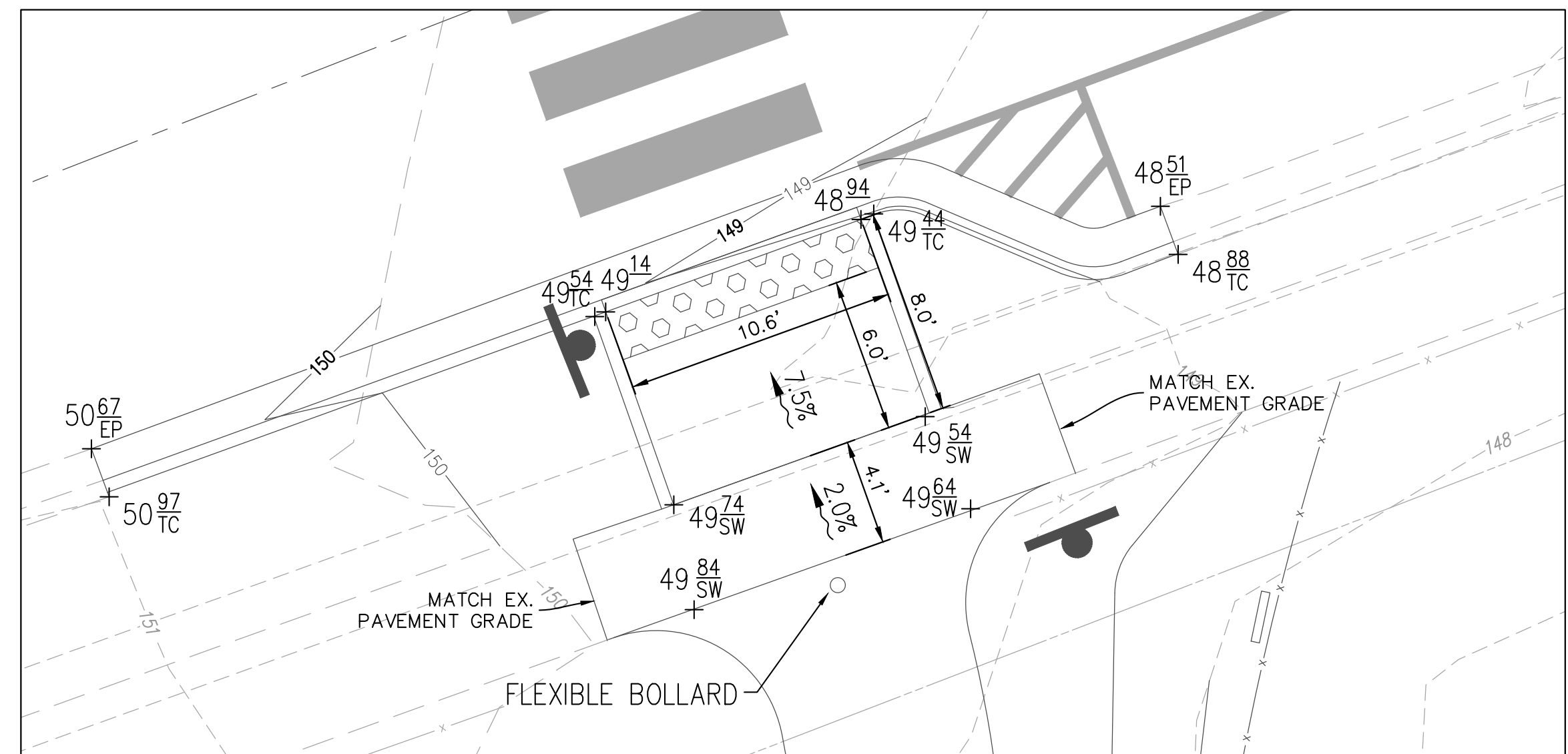
ADA MAP
SCALE 1"=25'



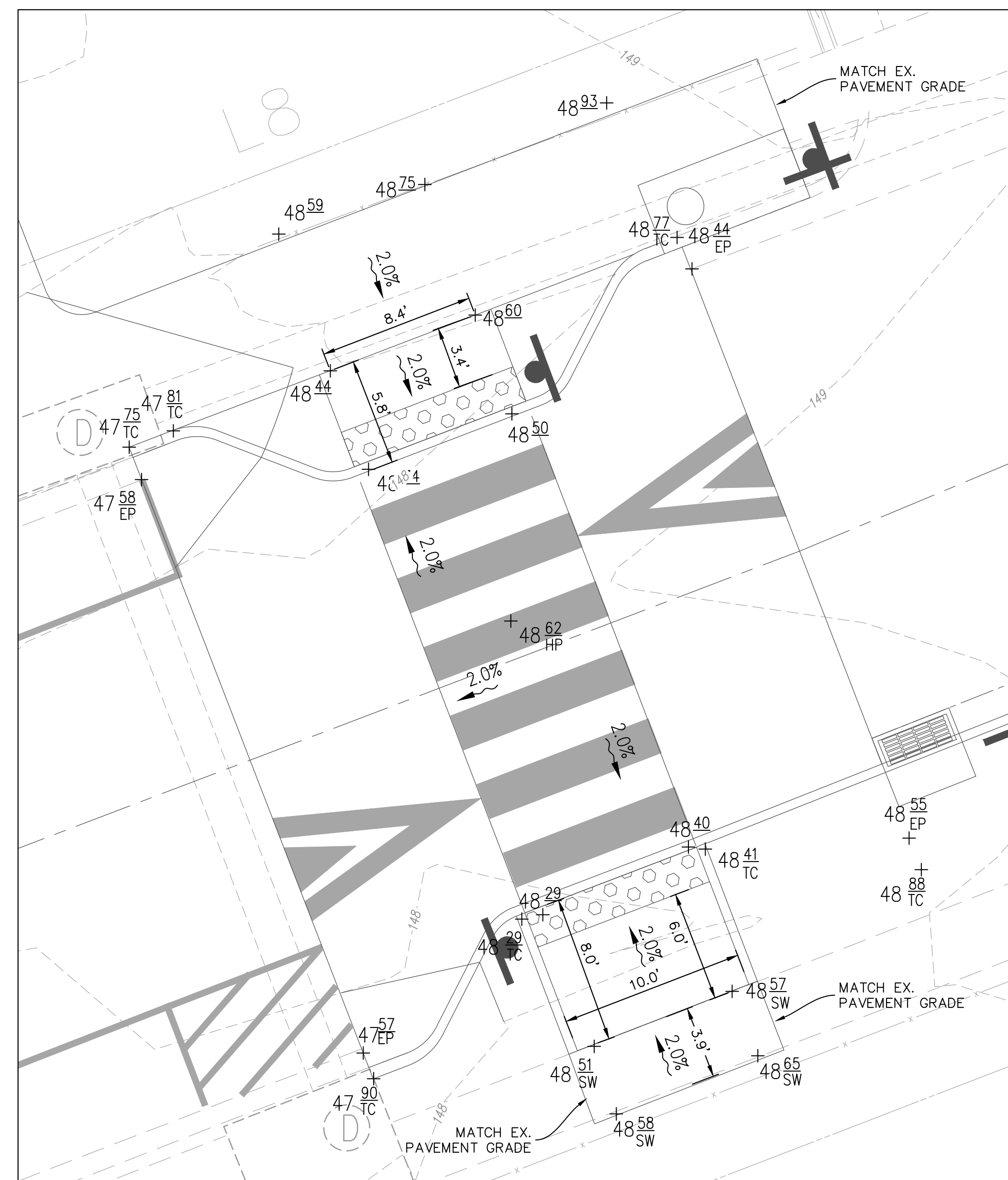
ADA RAMP #1
SCALE 1"=5'



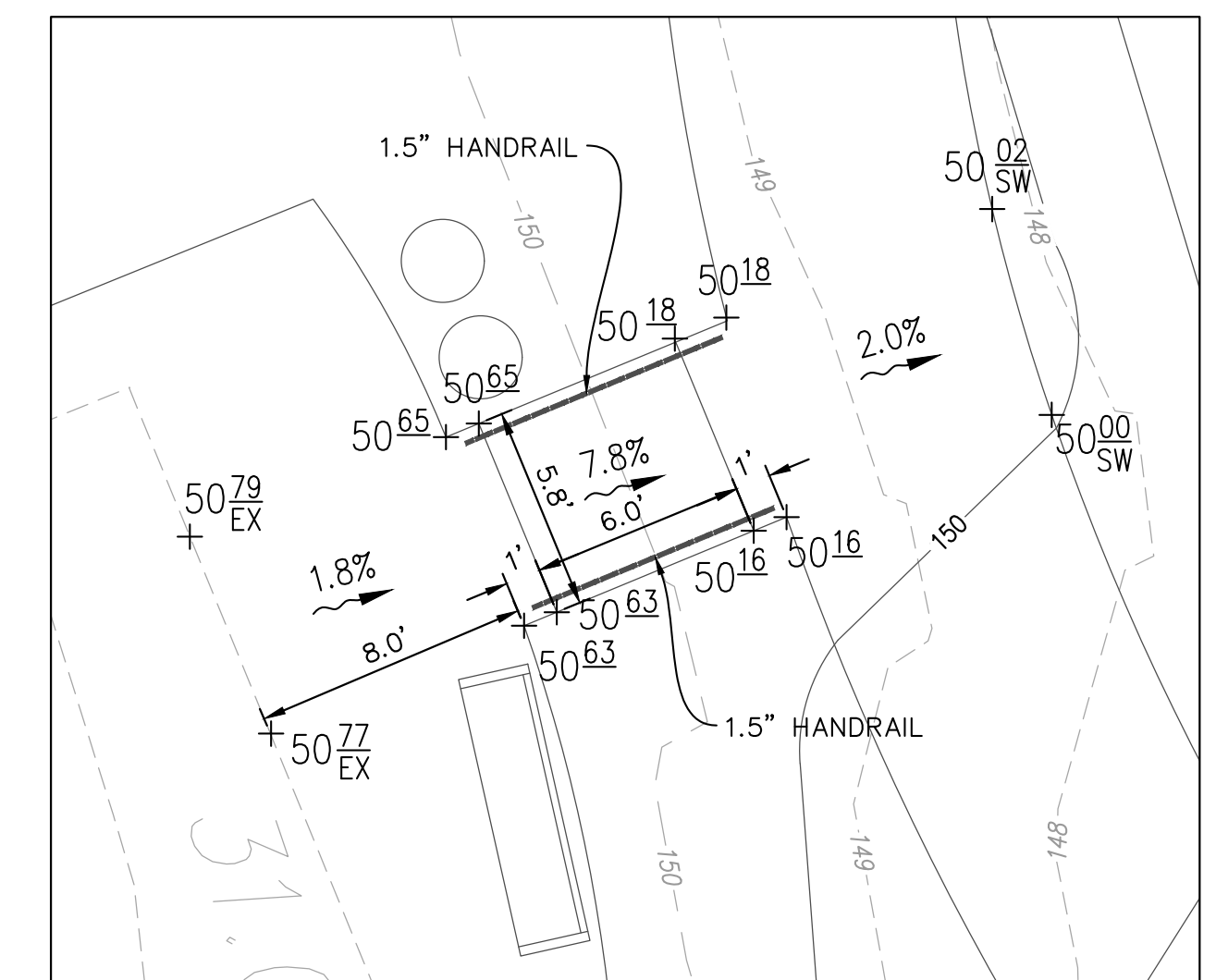
ADA RAMP #2
SCALE 1"=5'



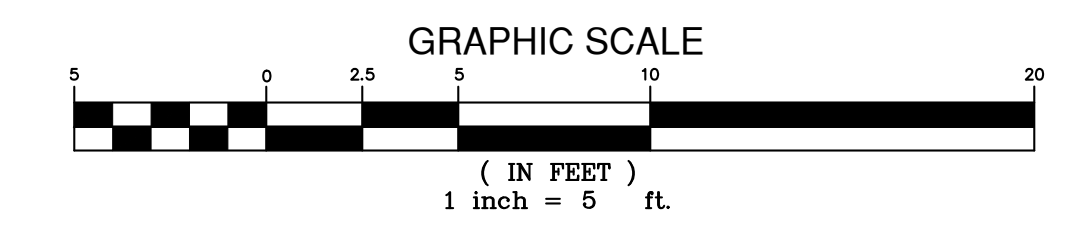
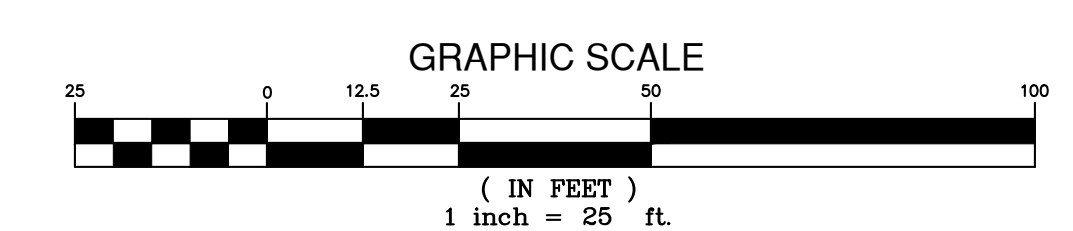
ADA RAMP #3
SCALE 1"=5'



ADA RAMP #4 & #5
SCALE 1"=5'

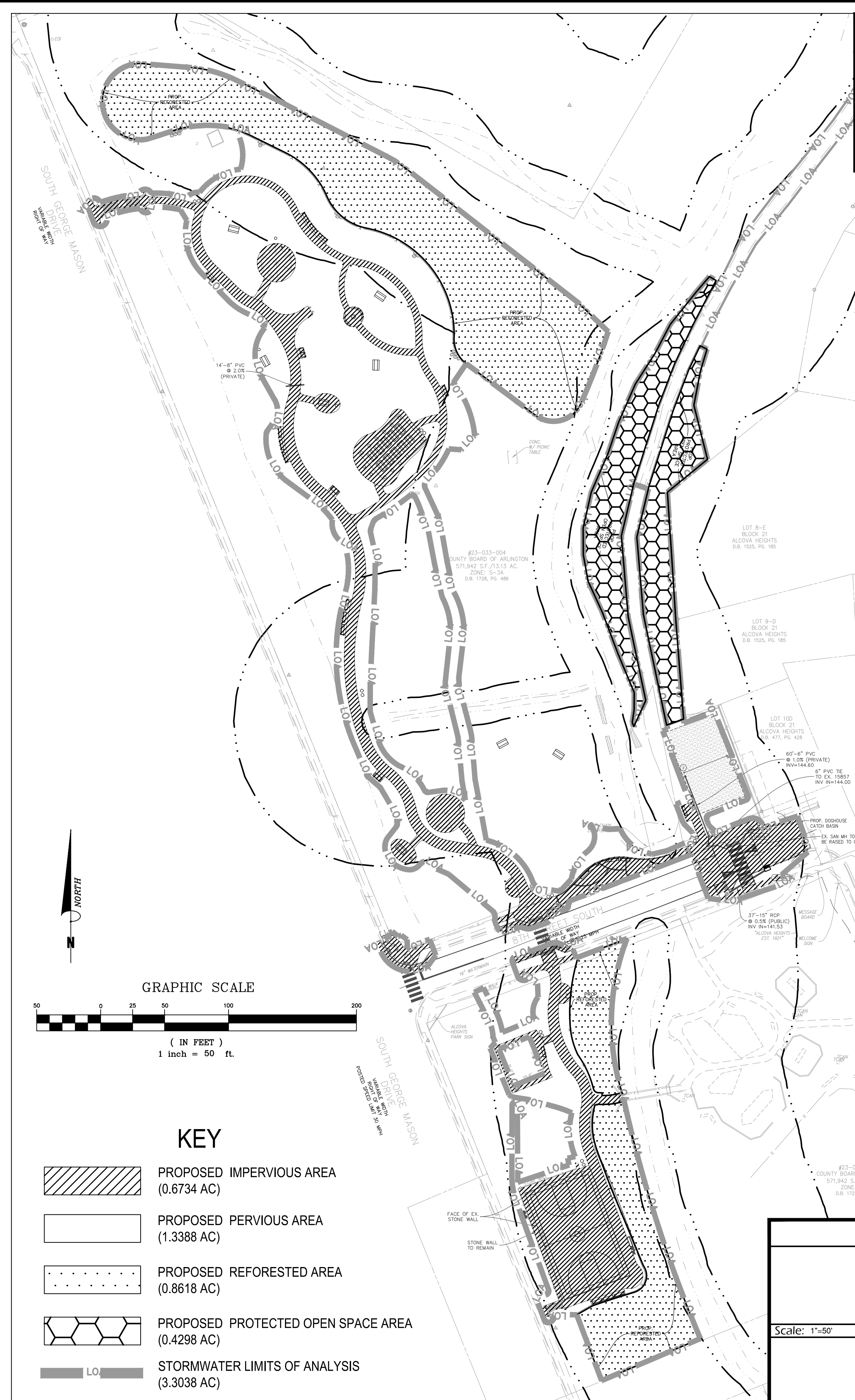


ADA RAMP #6 TO RESTROOMS
SCALE 1"=5'

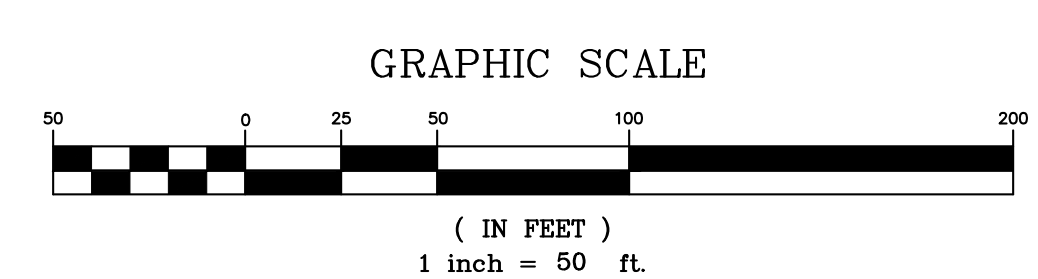
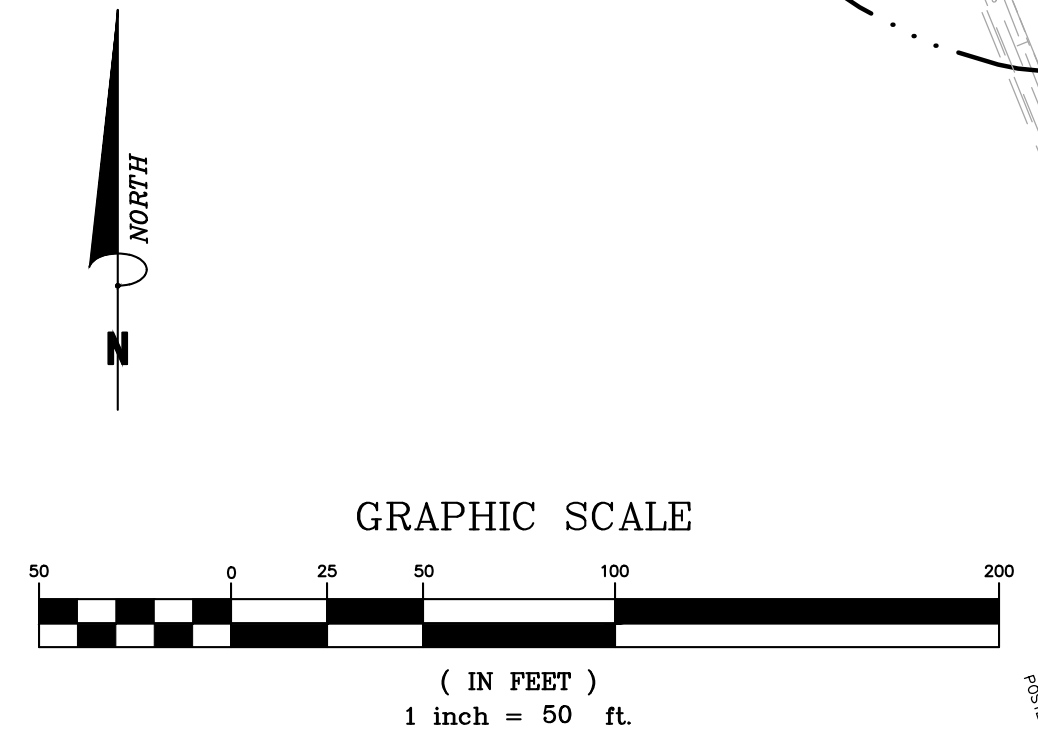




EXISTING IMPERVIOUS AREA MAP



PROPOSED IMPERVIOUS AREA MAP

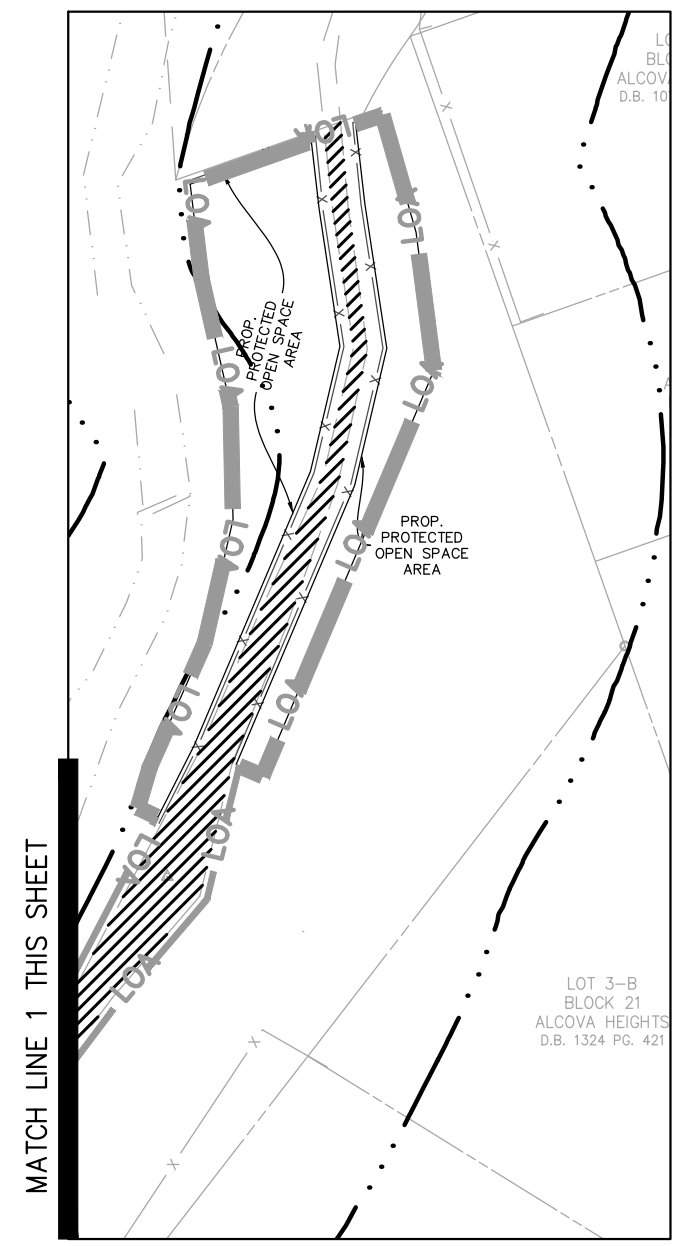


KEY

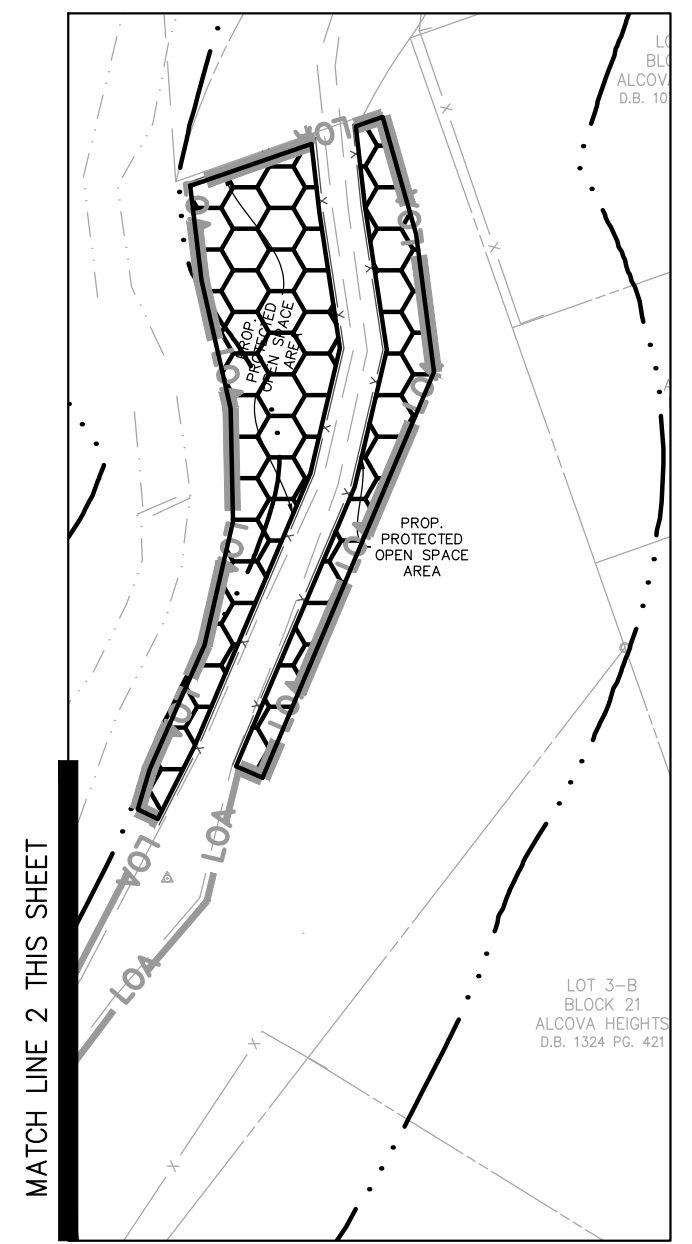
	EXISTING IMPERVIOUS AREA (0.6820 AC)
	EXISTING PERVIOUS AREA (2.6218 AC)
	STORMWATER LIMITS OF ANALYSIS (3.3038 AC)

KEY

	PROPOSED IMPERVIOUS AREA (0.6734 AC)
	PROPOSED PERVIOUS AREA (1.3388 AC)
	PROPOSED REFORESTED AREA (0.8618 AC)
	PROPOSED PROTECTED OPEN SPACE AREA (0.4298 AC)
	STORMWATER LIMITS OF ANALYSIS (3.3038 AC)



EXISTING IMPERVIOUS AREA MAP



PROPOSED IMPERVIOUS AREA MAP



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-SWM.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

STORMWATER MANAGEMENT PLAN (1 OF 2)

C13.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

STORMWATER MANAGEMENT PLAN (1 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1"=50' Number: 22 of 68

Project Name: **ALCOVA HEIGHTS PARK**
 Date: **10/30/2020**
 Linear Development Project? **No**

CLEAR ALL
(Ctrl-Shift-R)

data input cells
 constant values
 calculation cells
 final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → **1.5126**

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0.0000
Post-Development TP Load Reduction for Site (lb/yr):	-0.0084

Check:
 BMP Design Specifications List: 2013 Draft Stds & Specs
 Linear project? **No**
 Land cover areas entered correctly? **✓**
 Total disturbed area entered? **✓**
TP LOAD REDUCTION NOT REQUIRED

Pre-ReDevelopment Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.0000
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				2.6218	2.6218
Impervious Cover (acres)				0.6820	0.6820
					3.3038

Post-Development Land Cover (acres)	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested				1.2916	1.2916
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				1.3388	1.3388
Impervious Cover (acres)				0.6734	0.6734
					3.3038

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
PI (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Pre-ReDevelopment	Listed	Adjusted ¹
Forest/Open Space Cover (acres)	0.0000	0.0000
Weighted Rv(forest)	0.0000	0.0000
% Forest	0%	0%
Managed Turf Cover (acres)	2.6218	2.6218
Weighted Rv(turf)	0.2500	0.2500
% Managed Turf	79%	79%
Impervious Cover (acres)	0.6820	0.6820
Rv(impervious)	0.9500	0.9500
% Impervious	21%	21%
Total Site Area (acres)	3.3038	3.3038
Site Rv	0.3945	0.3945

LAND COVER SUMMARY -- POST DEVELOPMENT

Post ReDev. & New Impervious	Post-Development	Post-Development New Impervious
Forest/Open Space Cover (acres)	1.2916	1.2916
Weighted Rv(forest)	0.0500	0.0500
% Forest	39%	39%
Managed Turf Cover (acres)	1.3388	1.3388
Weighted Rv (turf)	0.2500	0.2500
% Managed Turf	41%	41%
Impervious Cover (acres)	0.6734	0.6734
Rv(impervious)	0.9500	0.9500
% Impervious	20%	20%
Final Site Area (acres)	3.3038	3.3038
Final Post Dev Site Rv	0.3145	0.3145

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.1086	0.1086
Pre-ReDevelopment Treatment Volume (cubic feet)	4,731.1605	4,731.1605
Pre-ReDevelopment TP Load (lb/yr)	2.9726	2.9726
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.9000	0.9000
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		1.3546

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.0866	Post-Development Treatment Volume (acre-ft)	0.0866	Post-Development Treatment Volume (cubic feet)	3,771.6063	Post-Development TP Load (lb/yr)	2.3697	Post-Development TP Load (lb/yr)	--
Final Post-Development Treatment Volume (cubic feet)	3,771.6063	Post-Development Treatment Volume (cubic feet)	3,771.6063	Final Post-Development TP Load (lb/yr)	2.3697	Final Post-Development TP Load per acre (lb/acre/yr)	0.7200	Max. Reduction Required (Below Pre-ReDevelopment Load)	20%
Final Post-Development TP Load (lb/yr)	2.3697	Final Post-Development TP Load (lb/yr)	2.3697	TP Load Reduction Required for Redeveloped Area (lb/yr)	-0.0084	TP Load Reduction Required for New Impervious Area (lb/yr)	0		

¹Adjusted Land Cover Summary:
 Pre-ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column 1 shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/yr).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	-0.0084	**	TP LOAD REDUCTION NOT REQUIRED
------------------------------------	----------------	----	--------------------------------

Site Information - Revised 9/19/2017

Project SWM #	LDA Permit #	Disturbed Area (acres)	% Impervious	% Post-Impervious	Pre-Development TP load (lb/yr)	Post-Development TP load (lb/yr)	TP load reduction achieved (lb/yr)	Pre-Development TN load (lb/yr)	Post-Development TN load (lb/yr)	TN load reduction achieved (lb/yr)	Total Site Area (acres)	Pre-Forest Area (acres)	Pre-Turf Area (acres)	Pre-Impervious Area (acres)	Post-Forest Area (acres)	Post-Turf Area (acres)	Post-Impervious Area (acres)	Pre-Runoff Volume	Post-Runoff Volume	Runoff Reduction on Achieved	Site Latitude (Decimal Degrees)	Site Longitude (Decimal Degrees)	Anticipated Start Date
20-0037		1.5126	20.6	20.4	2.97	2.37	0.00	21.27	16.95	0.00	3.3038	0.0000	2.6218	0.6820	1.2916	1.3388	0.6734	4731.1605	3771.6063	0.0000	38°51'47.8"N	77°06'09.4"W	3/1/2021

Stormwater Management Facility Information- Revised 3/19/2019

Facility Type**	Description	Location	LDA Permit #	Project SWM #	Building Permit #	BMP downstream of another BMP (in Series)?	Upstream (Primary) BMP	Chesapeake Bay Segment	Watershed	HUC6	Soils	Runoff Treated (in)	Volume Treated (ft ³)	Treated Area (acres)	Forest Area (acres)	Turf Area (acres)	Impervious Area (acres)	RPC	Phosphorus Efficiency (%)	Nitrogen Efficiency (%)	Sediment Efficiency (%)	TP load removed (lbs)	TN load removed (lbs)
RPA	Reforestation	Site perimeter adjacent to stream East of Doctors Run, North of the volleyball court	0	20-0037		No		POTTF_VA	Doctor's Branch	PL25	C/D	#N/A	N/A	N/A	0.8618	0.0000	0.0000	23033004	#N/A	#N/A	#N/A	N/A	N/A
RPA	Protected Open Space		0	20-0037		No		POTTF_VA	Doctor's Branch	PL25	C/D	#N/A	N/A	N/A	0.4298	0.0000	0.0000	23033004	#N/A	#N/A	#N/A	N/A	N/A

RPA TREE REPLACEMENT CALCULATIONS

TOTAL RPA TREES REMOVED: 54
 TOTAL RPA REPLACEMENTS REQUIRED: 68
 *SEE SHEET L.J2.05 FOR FULL TREE REPLACEMENT CALCULATIONS

- PLANTING WITHIN REFORESTED AREAS SHALL OCCUR SUBSEQUENT TO REFORESTATION SEEDING AND STABILIZATION. BIO MAT SHALL BE CAREFULLY PULLED APART TO ALLOW PLANTING OF PLANT MATERIAL. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- REFORESTATION MINIMUM WIDTH IS 35', AS SHOWN ON THE LANDSCAPE PLAN.

COVER GOALS:

- WHEN CONSTRUCTION IS COMPLETE, NO BARE SOIL AND 80% NON-TURF COVER SHALL BE PROVIDED.
- WHEN CONSTRUCTION IS COMPLETE, DPR AND/OR THEIR THIRD PARTY INSPECTOR SHALL PROVIDE A SIGNED LETTER CERTIFYING THAT: 1) THE COVERAGE REQUIREMENT IS MET, AND 2) THE PLAT STOCK, LOCATIONS, QUANTITIES, SPECIES, NATIVE SEEDING, ETC. MEETS THE REQUIREMENTS OF THIS PLAN. THIS LETTER SHALL BE ADDRESSED TO CHRISTIN JOLICOEUR, WATERSHED PLANNER, ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES (DES), CHESAPEAKE BAY DEPT.
- SHALL MAINTAIN NO BARE SOIL OR TURF COVER WITH (GROUND LAYER) TO BE VEGETATED OR WITH NATURAL MATERIALS SUCH AS LEAF LITTER AND MULCH) 90% DENSITY WITHIN THE 5 YEARS. PNR TO PROVIDE ASSESSMENT AND MANAGEMENT OF REFORESTED AREA FOR 5 YEARS AFTER PROJECT COMPLETION.

REFORESTATION NARRATIVE:

THE PURPOSE OF THIS PROJECT IS TO REFOREST 0.86 ACRES ADJACENT TO DOCTORS RUN AT ALCOVA HEIGHTS PARK. SOME OF THIS AREA IS IN THE RPA. THE SITE WILL UNDERGO TWO FOLIAR HERBICIDE APPLICATIONS TO KILL THE TURF GRASS ONSITE. THE AREA WILL BE DENSELY PLANTED WITH NATIVE TREES, SHRUBS AND UNDERSTORY PLANTS. AFTER PLANTING, THE AREA WILL BE SEEDED WITH A MIX OF NATIVE GRASS AND PERENNIAL SEED. THE REFORESTATION GOALS INCLUDE ESTABLISHING 90% NATIVE COVER BY THE END OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE 5 YEARS. THE INVASIVE PLANT MANAGEMENT PLAN INCLUDES TREATMENT OF PRIORITIZED INVASIVE PLANT SPECIES IDENTIFIED BY COUNTY STAFF, WITH TWO ANNUAL HERBICIDE TREATMENTS.

FUNDING FOR 5 YEARS OF MAINTENANCE WILL NOT BE INCLUDED IN THE COST OF THE PROJECT. MAINTENANCE IS TO BE PERFORMED BY A THIRD PARTY. OVERALL RESPONSIBILITY IS A PARTNERSHIP BETWEEN PARKS AND NATURAL RESOURCES AND IPC. MAINTENANCE WILL BE DONE BY IPC AND PARKS AND NATURAL RESOURCES WILL BE RESPONSIBLE FOR OVERSEEING IT. INFORMATIONAL SIGNAGE WILL BE INCLUDED IN THE PROJECT. THE REFORESTATION AREA SHALL BE INSPECTED BY A CERTIFIED 3RD PARTY AND/OR LANDSCAPE ARCHITECT INDICATING THAT THE REFORESTATION PLANTINGS HAVE BEEN INSTALLED PER PLAN AND THAT THE COVERAGE REQUIREMENTS HAVE BEEN MET. FOLLOWING COMPLETION OF THE PROJECT, DPR OR GENERAL CONTRACTOR SHALL SUBMIT CERTIFIED INSPECTION REPORT TO DES.

IN PLACES WHERE THE TRAIL CROSSES EXISTING DRAINAGE SWALES AND WETLANDS DEPRESSIONS, WHERE EXISTING DRAINAGE PATTERNS CONCENTRATE RUNOFF, THE PROPOSED CONSTRUCTION WILL NOT CREATE ANY NEW POINTS OF CONCENTRATED RUNOFF WHICH WILL HAVE AN ADVERSE EFFECT ON THE DOWNSTREAM FLOODPLAIN. THE PROPOSED TRAIL IS BEING DESIGNED TO PROMOTE HYDROLOGIC CONNECTIVITY THROUGHOUT THE SITE AS A WAY OF FURTHER REDUCING THE VELOCITY OF ANY WATER THAT FLOWS THROUGH ANY CROSSINGS. THE DOWNSTREAM CHANNELS FOR THE PROPOSED CROSSING ARE ADEQUATE, SINCE THEY ARE NATURAL CHANNELS WHICH ARE CAPABLE OF CONVEYING THE 2-YEAR STORM EVENT. ANY KNOWN EXISTING EROSION ISSUES ARE BELIEVED TO BE REPAIRED DURING THE REFORESTATION AND MAINTAINED BY ARLINGTON COUNTY PARKS. THUS, IT IS THE OPINION OF THE SUBMITTING ENGINEER THAT AN ADEQUATE OUTFALL EXISTS, AND THAT NO NEGATIVE IMPACT WILL OCCUR DOWNSTREAM OF THIS DEVELOPMENT.

REFORESTATION MAINTENANCE NARRATIVE

THE REFORESTATION PLOT AREA WILL BE ON PUBLIC LAND MANAGED BY ARLINGTON COUNTY DEPARTMENT OF PARKS AND RECREATION. THIS WILL INCLUDE A LONG-TERM MANAGEMENT PARTNERSHIP BETWEEN PARKS AND NATURAL RESOURCES, CONSISTENT WITH THE PROVISIONS OF THE YSMP REGULATIONS TO ALLOW INSPECTION AND MAINTENANCE. THE PARK, TRAIL AND PLAYGROUND AREAS WILL BE MAINTAINED TO PROVIDE CONTROL OF SEDIMENT RUNOFF AND/OR EROSION AREAS. A PLANTING LIST IS PROVIDED ON LANDSCAPE PLANS PROVIDED WITH THIS SITE PLAN. INVASIVE PLANT MANAGEMENT/REMOVAL FOR THIS AREA IS ONGOING UNDER A SEPARATE CONTRACT (LUBBER RUN PLAN). THE GENERAL CONTRACTOR IS NOT RESPONSIBLE FOR ANY INVASIVE SPECIES MANAGEMENT.

ANNUAL INSPECTIONS ARE REQUIRED AND SHOULD BE CONDUCTED IN THE NON-GROWING SEASON TO MAKE IT EASIER TO SEE THE FLOW PATH. THE INSPECTIONS SHOULD CHECK TO ENSURE THAT:

- DEBRIS AND SEDIMENT DOES NOT BUILD UP AT THE TOP OF THE REFORESTATION AREA.
- FOOT OR VEHICULAR TRAFFIC DOES NOT COMPROMISE THE REFORESTATION AREA.
- SCOUR AND EROSION DO NOT OCCUR WITHIN THE REFORESTATION AREA.
- VEGETATED DENSITY EXCEEDS AN 90% COVER IN THE REFORESTATION AREA AT THE END OF 5 YEARS.
- NO MOWING IS PERMITTED IN THE REFORESTATION AREA AND EDUCATIONAL SIGNAGE AND PHYSICAL DEMARCATION OF THE AREA TO PREVENT ACCIDENTAL MOWING IS PROVIDED.

CONSTRUCTION NARRATIVE

THE ENTIRE CONSTRUCTION SEQUENCE CAN BE FOUND ON THE "SEQUENCE OF CONSTRUCTION NARRATIVE" ON THE EROSION AND SEDIMENT CONTROL PLANS.

- ADDITIONAL NOTES:
- ONLY VEHICULAR TRAFFIC NECESSARY FOR THE REFORESTATION AREA CONSTRUCTION SHOULD BE ALLOWED WITHIN 10 FEET OF THE REFORESTATION AREA.
 - VEHICULAR ACCESS FOR THE PLANT INSTALLATION SHALL OCCUR FROM THE EXISTING TRAIL ON THE SOUTH SIDE OF THE PARK. THE TRAIL IS ACCESSIBLE FROM NORTH EDISON STREET.
 - IF EXISTING TOPSOIL IS STRIPPED DURING GRADING, IT SHALL BE STOCKPILED AND STABILIZED FOR LATER USE.
 - THE PROPOSED REFORESTATION AREA AND SHALL HAVE FILTER LOGS (SEE EROSION & SEDIMENT CONTROL PLANS) AND TREE PROTECTION FENCE (SEE TREE PRESERVATION PLANS) AROUND THE PERIMETER.
 - THE PROPOSED REFORESTATION AREA SHALL BE PHASED BY THE CONTRACTOR TO MIRROR THE CONSTRUCTION SCHEDULE WITH THE MAIN GOAL TO LIMIT THE SIZE OF BARE AREAS TO NO MORE THAN 0.25 ACRE BETWEEN SEEDINGS.

MINIMUM REFORESTATION PLANTING REQUIREMENTS:

REFORESTATION CALCULATIONS:
 0.86 ACRES TO BE PLANTED FOR REFORESTATION
 *SEE SHEETS L2.00 & L2.01 FOR REFORESTATION/PROTECTED OPEN SPACE PLANT SCHEDULE

CANOPY TREE REQUIREMENT:
 100 x .86 = 86

UNDERSTORY TREE REQUIREMENT:
 200 x .86 = 172

SHRUB REQUIREMENT:
 1089 x .86 = 937

GRASSES/PERENNIALS:
 1089 x .86 = 937

NOTE: DO NOT PLANT OVERSTORY/CANOPY TREES WITHIN 10' OF OVERHEAD UTILITY LINES. COORDINATE SPECIFIC LOCATION WITH PROJECT OFFICER.

NOTE: SEE PLANTING PLAN FOR SEE MIX, PLANTING SCHEDULE AND ARLINGTON COUNTY STANDARD PLANTING DETAILS.



DEPARTMENT OF PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
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APPROVALS **DATE**

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
 DRAWN: CLL
 CHECKED: DAP
 MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
 140049-D-CP-001-SWM.DWG
 PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
 PLOTTED: September 20, 2021
 PLOTTED BY: VHOLTZMAN

SHEET

STORMWATER MANAGEMENT PLAN (2 OF 2) C13.10

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES
 STORMWATER MANAGEMENT PLAN (2 OF 2)
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: N.A. Number: 22A of 68

BID SET: 21-DPR-ITB-291

PROTECTED OPEN SPACE NOTES

PROTECTED OPEN SPACE AREA: 18,722 SF = 0.43 AC.

- CONTRACTOR TO CONTACT ARLINGTON COUNTY URBAN FORESTER 72 HOURS PRIOR TO PLANTING TO SCHEDULE INSPECTION OF THE TREE STOCK.
- TURF GRASS IN OPEN SPACE AREA WILL BE TREATED WITH A FOLIAR APPLICATION OF HERBICIDE AND TREATED A SECOND TIME AFTER ANY REMAINING TURF GRASS IN SEED BANK RETURNS.
- INVASIVE PLANT MANAGEMENT (IPM) WILL BE CARRIED OUT FOR 5 YEARS AFTER INSTALLATION OF OPEN SPACE PLANTINGS. REPLACEMENT PLANTINGS WILL BE CARRIED OUT AS NEEDED TO MEET THE COVER GOALS OUTLINED BELOW. THE IMP PLAN WILL BE PERFORMED BY THIRD PARTY FOR A TOTAL OF 9 VISITS WITHIN 5 YEARS AND THE BI-ANNUAL VISIT WILL INCLUDE INSPECTION AND REPLACEMENT OF PLANTINGS INCLUDING SEEDS.
- SEE TREE PROTECTION, DEMOLITION AND EROSION AND SEDIMENT CONTROL PLANS FOR TREE PROTECTION PHASING DETAILS.
- NO MAJOR DISTURBANCE SHALL OCCUR WITHIN THE PROTECTED OPEN SPACE AREA DURING OR AFTER CONSTRUCTION (I.E. NO CLEARING OR GRADING EXCEPT TEMPORARY DISTURBANCE FOR UTILITY CONSTRUCTION, RESTORATION OPERATIONS, OR MANAGEMENT OF NUISANCE VEGETATION).
- THE PROTECTED OPEN SPACE AREA SHALL NOT BE STRIPPED OF TOPSOIL.
- PROTECTED OPEN SPACE AREAS SHALL BE PROTECTED BY SIGNAGE AND EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.

COVER GOALS:

- THE PURPOSE OF THIS PLAN IS TO ACHIEVE A COVER GOAL MEETING THE MINIMUM REQUIREMENTS OF A WOODLAND EDGE. SEE MINIMUM PLANTING REQUIREMENTS THIS SHEET AND L2.00-L2.01.
- WHEN CONSTRUCTION IS COMPLETE, THERE SHALL BE NO BARE SOIL AND AN 80% NON-TURF COVER SHALL BE PROVIDED. FIVE (5) YEARS AFTER CONSTRUCTION IS COMPLETED, A 90% COVER SHALL BE MAINTAINED.
- WHEN CONSTRUCTION IS COMPLETE, DPR AND/OR THEIR THIRD PARTY INSPECTOR SHALL PROVIDE A SIGNED LETTER CERTIFYING THAT: 1) THE COVERAGE REQUIREMENT IS MET, AND 2) THE PLANT STOCK, LOCATIONS, QUANTITIES, SPECIES, NATIVE SEEDING, ETC. MEETS THE REQUIREMENTS OF THIS PLAN. THIS LETTER SHALL BE ADDRESSED TO CHRISTIN JOLICOEUR, WATERSHED PLANNER, ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES (DES) CHESAPEAKE BAY DEPT.
- SHALL MAINTAIN NO BARE SOIL OR TURF COVER WITH (GROUND LAYER TO BE VEGETATED OR WITH NATURAL MATERIALS SUCH AS LEAF LITTER AND MULCH) 90% DENSITY WITHIN THE 5 YEARS.
- PNR TO PROVIDE ASSESSMENT AND MANAGEMENT OF OPEN SPACE AREA FOR 5 YEARS AFTER PROJECT COMPLETION.

EXISTING CONDITIONS:

THE EXISTING CONDITIONS OF THE PROPOSED PROTECTED OPEN SPACE ARE A COMBINATION OF HERBACEOUS PLANTINGS AND TURF GRASS IN POOR CONDITION. IN ORDER TO MEET COVERAGE GOALS FOR VEGETATION, EXISTING TURF SHALL BE REMOVED OR TREATED AND HERBACEOUS PLANTINGS, UNDERSTORY TREES AND SHRUBS SHALL BE PLANTED AT $\frac{1}{2}$ THE DENSITY REQUIRED FOR REFORESTATION ALONG THE SITE'S WOODLAND EDGE.

PROTECTED OPEN SPACE NARRATIVE:

THE GOAL OF ESTABLISHING PROTECTED OPEN SPACE IS TO PROTECT A VEGETATED AREA CONTIGUOUS TO A RECEIVING SYSTEM, SUCH AS A STREAM OR NATURAL CHANNEL, FOR TREATING STORMWATER RUNOFF. THE PURPOSE OF THIS PROJECT IS TO CREATE 0.43 ACRES OF PROTECTED OPEN SPACE ADJACENT TO DOCTORS RUN AT ALCOVA HEIGHTS PARK MEETING THE MINIMUM REQUIREMENTS FOR WOODLAND EDGE. SOME OF THIS AREA IS IN THE RPA. THE SITE WILL UNDERGO TWO FOLIAR HERBICIDE APPLICATIONS TO KILL THE TURF GRASS ONSITE. THE AREA WILL BE DENSELY PLANTED WITH NATIVE TREES, SHRUBS AND UNDERSTORY PLANTS. AFTER PLANTING, THE AREA WILL BE SEEDED WITH A MIX OF NATIVE GRASS AND PERENNIAL SEED. THE OPEN SPACE GOALS INCLUDE ESTABLISHING 80% NATIVE COVER BY THE END OF CONSTRUCTION AND 90% MAINTAINED THROUGHOUT THE 5 YEARS. THE INVASIVE PLANT MANAGEMENT PLAN INCLUDES TREATMENT OF PRIORITIZED INVASIVE PLANT SPECIES IDENTIFIED BY COUNTY STAFF, WITH TWO ANNUAL HERBICIDE TREATMENTS.

FUNDING FOR 5 YEARS OF MAINTENANCE WILL NOT BE INCLUDED IN THE COST OF THE PROJECT. MAINTENANCE IS TO BE PERFORMED BY A THIRD PARTY. OVERALL RESPONSIBILITY IS A PARTNERSHIP BETWEEN PARKS AND NATURAL RESOURCES AND IPC. MAINTENANCE WILL BE DONE BY IPC AND PARKS AND NATURAL RESOURCES WILL BE RESPONSIBLE FOR OVERSEEING IT. INFORMATIONAL SIGNAGE WILL BE INCLUDED IN THE PROJECT. THE PROTECTED OPEN SPACE AREA SHALL BE INSPECTED BY A CERTIFIED 3RD PARTY AND/OR LANDSCAPE ARCHITECT INDICATING THAT THE PROTECTED OPEN SPACE COVERAGE REQUIREMENTS HAVE BEEN MET. FOLLOWING COMPLETION OF THE PROJECT, DPR OR GENERAL CONTRACTOR SHALL SUBMIT CERTIFIED INSPECTION REPORT TO DES.

IN PLACES WHERE THE TRAIL CROSSES EXISTING DRAINAGE SWALES AND WETLANDS DEPRESSIONS, WHERE EXISTING DRAINAGE PATTERNS CONCENTRATE RUNOFF, THE PROPOSED CONSTRUCTION WILL NOT CREATE ANY NEW POINTS OF CONCENTRATED RUNOFF WHICH WILL HAVE AN ADVERSE EFFECT ON THE DOWNSTREAM FLOODPLAIN. THE PROPOSED TRAIL IS BEING DESIGNED TO PROMOTE HYDROLOGIC CONNECTIVITY THROUGHOUT THE SITE AS A WAY OF FURTHER REDUCING THE VELOCITY OF ANY WATER THAT FLOWS THROUGH ANY CROSSINGS. THE DOWNSTREAM CHANNELS FOR THE PROPOSED CROSSING ARE ADEQUATE, SINCE THEY ARE NATURAL CHANNELS WHICH ARE CAPABLE OF CONVEYING THE 2-YEAR STORM EVENT. ANY KNOWN EXISTING EROSION ISSUES ARE BELIEVED TO BE REPAIRED DURING CONSTRUCTION AND MAINTAINED BY ARLINGTON COUNTY PARKS. THUS, IT IS THE OPINION OF THE SUBMITTING ENGINEER THAT AN ADEQUATE OUTFALL EXISTS, AND THAT NO NEGATIVE IMPACT WILL OCCUR DOWNSTREAM OF THIS DEVELOPMENT.

PROTECTED OPEN SPACE MAINTENANCE NARRATIVE

THE PROTECTED OPEN SPACE AREA WILL BE ON PUBLIC LAND MANAGED BY ARLINGTON COUNTY DEPARTMENT OF PARKS AND RECREATION. THIS WILL INCLUDE A LONG-TERM MANAGEMENT PARTNERSHIP BETWEEN PARKS AND NATURAL RESOURCES, CONSISTENT WITH THE PROVISIONS OF THE VSPM REGULATIONS TO ALLOW INSPECTION AND MAINTENANCE. THE PARK, TRAIL AND PLAYGROUND AREAS WILL BE MAINTAINED TO PROVIDE CONTROL OF SEDIMENT RUNOFF AND/OR EROSION AREAS. A PLANTING LIST IS PROVIDED ON LANDSCAPE PLANS PROVIDED WITH THIS SITE PLAN. INVASIVE PLANT MANAGEMENT/REMOVAL FOR THIS AREA IS ONGOING UNDER A SEPARATE CONTRACT (LUBBER RUN PLAN). THE GENERAL CONTRACTOR IS NOT RESPONSIBLE FOR ANY INVASIVE SPECIES MANAGEMENT.

ANNUAL INSPECTIONS ARE REQUIRED AND SHOULD BE CONDUCTED IN THE NON-GROWING SEASON TO MAKE IT EASIER TO SEE THE FLOW PATH. THE INSPECTIONS SHOULD CHECK TO ENSURE THAT:

- DEBRIS AND SEDIMENT DOES NOT BUILD UP AT THE TOP OF THE PROTECTED OPEN SPACE AREA
- FOOT OR VEHICULAR TRAFFIC DOES NOT COMPROMISE THE PROTECTED OPEN SPACE AREA.
- SCOUR AND EROSION DO NOT OCCUR WITHIN THE PROTECTED OPEN SPACE AREA.
- NO MOWING IS PERMITTED IN THE PROTECTED OPEN SPACE AREA AND EDUCATIONAL SIGNAGE AND PHYSICAL DEMARCATION OF THE AREA TO PREVENT ACCIDENTAL MOWING IS PROVIDED. SEE SHEET C6.00 FOR SIGNAGE LOCATIONS.

CONSTRUCTION NARRATIVE

THE PROTECTED OPEN SPACE AREA MUST BE FULLY PROTECTED DURING THE CONSTRUCTION STAGE OF DEVELOPMENT AND KEPT OUTSIDE THE LIMITS OF DISTURBANCE ON THE EROSION AND SEDIMENT CONTROL PLANS. THE ENTIRE CONSTRUCTION SEQUENCE CAN BE FOUND ON THE "SEQUENCE OF CONSTRUCTION NARRATIVE" ON THE EROSION AND SEDIMENT CONTROL PLANS. SEE SHEET C11.00.

ADDITIONAL NOTES:

- NO CLEARING, GRADING OR HEAVY EQUIPMENT ACCESS IS ALLOWED EXCEPT TEMPORARY DISTURBANCES ASSOCIATED WITH INCIDENTAL UTILITY CONSTRUCTION, RESTORATION OPERATIONS, OR MANAGEMENT OF NUISANCE VEGETATION.
- THE PERIMETER OF THE OPEN SPACE AREA SHALL BE PROTECTED FROM CONSTRUCTION SEDIMENT BY COIR LOGS AND ORANGE SAFETY FENCE.
- ANY LIGHT GRADING AROUND OPEN SPACE PERIMETER SHALL BE DONE WITH TRACKED VEHICLES TO PREVENT COMPACTION.
- ONLY VEHICULAR TRAFFIC NECESSARY FOR THE PROTECTED OPEN SPACE AREA CONSTRUCTION SHOULD BE ALLOWED WITHIN 10 FEET OF THE PROTECTED OPEN SPACE AREA.
- IF EXISTING TOPSOIL IS STRIPPED DURING GRADING, IT SHALL BE STOCKPILED AND STABILIZED FOR LATER USE.

SEE DETAIL 6/L1.06 FOR PROTECTED OPEN SPACE SIGNAGE. SEE SHEETS C6.00-C6.10 FOR SIGN LOCATIONS.

MINIMUM PLANTING REQUIREMENTS:

0.43 ACRES TO BE PLANTED FOR PROTECTED OPEN SPACE
*SEE SHEETS L2.00 & L2.01 FOR REFORESTATION/PROTECTED OPEN SPACE PLANT SCHEDULE

CANOPY TREE REQUIREMENT:

50 x .43 = 17 (*5 ALREADY PROPOSED)

UNDERSTORY TREE REQUIREMENT:

100 x .43 = 43

SHRUB REQUIREMENT:

545 x .43 = 234

GRASSES/PERENNIALS:

545 x .43 = 234

NOTE: DO NOT PLANT OVERSTORY/CANOPY TREES WITHIN 10' OF OVERHEAD UTILITY LINES. COORDINATE SPECIFIC LOCATION WITH PROJECT OFFICER.

NOTE: SEE PLANTING PLAN FOR SEE MIX, PLANTING SCHEDULE AND ARLINGTON COUNTY STANDARD PLANTING DETAILS.



DEPARTMENT OF
PARKS & RECREATION
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FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova
Heights Park
Renovation
Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-SWM.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VOLTZMAN

SHEET

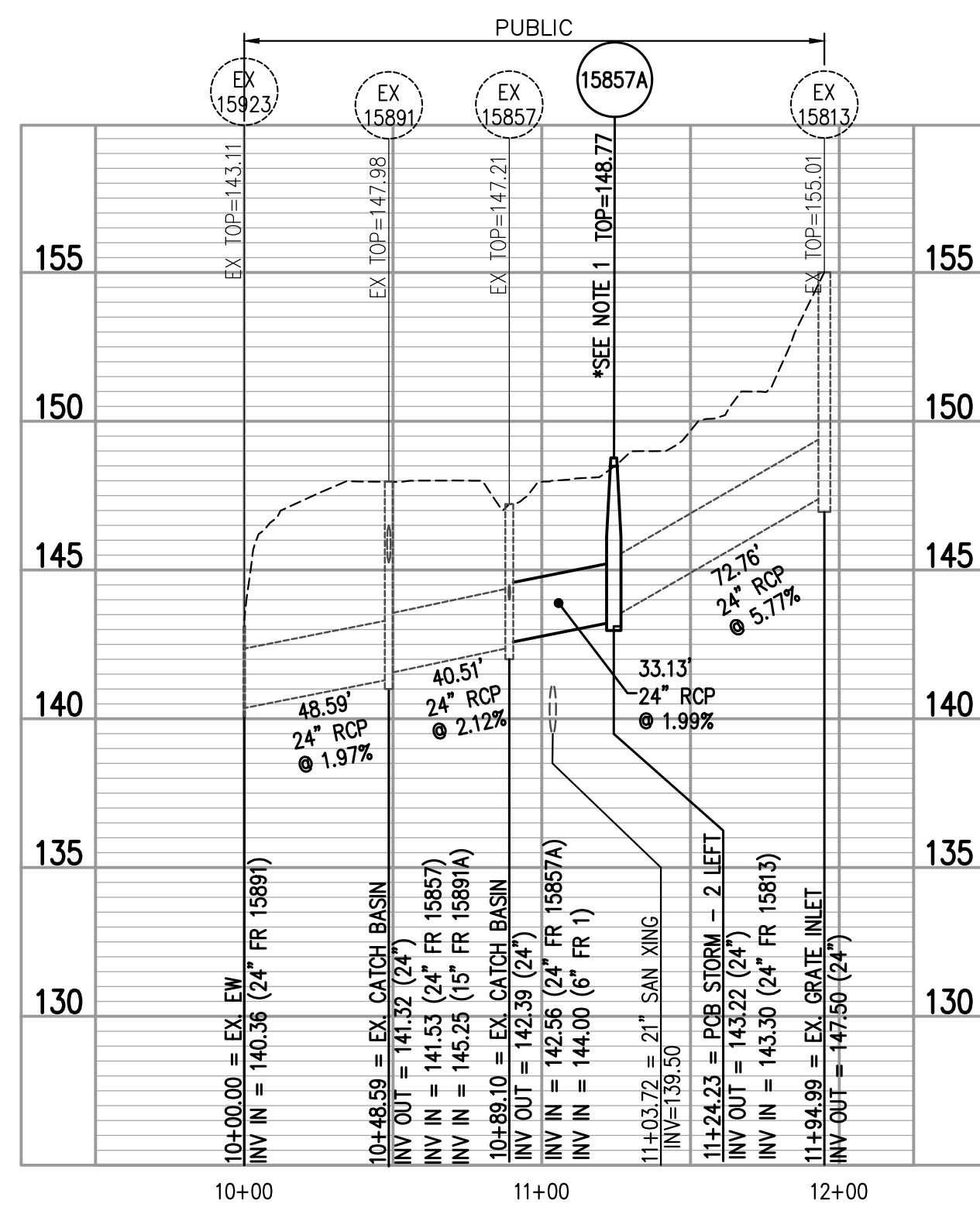
PROTECTED OPEN
SPACE NOTES
C13.20

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

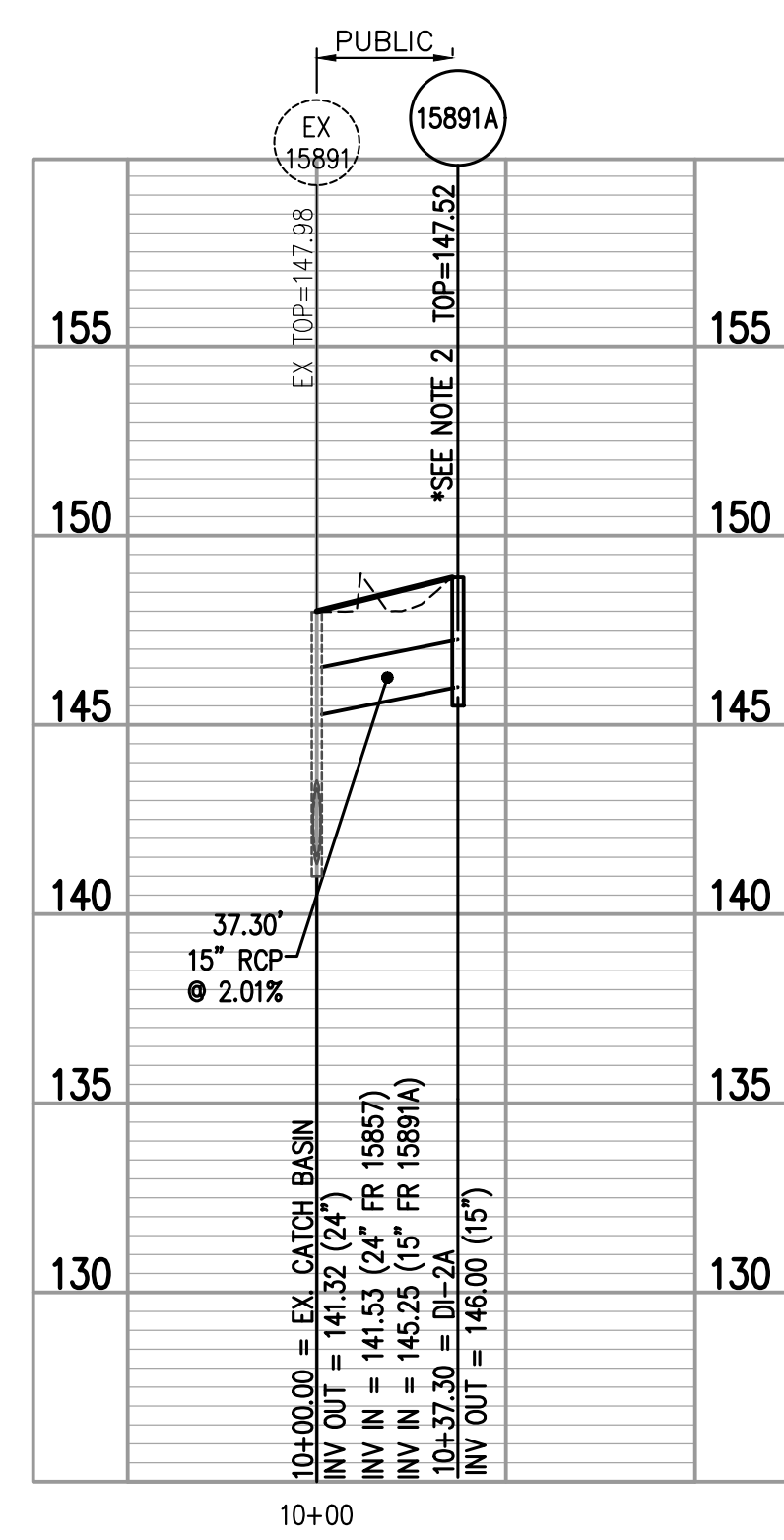
PROTECTED OPEN SPACE NOTES
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: N.A. Number: 22B of 68

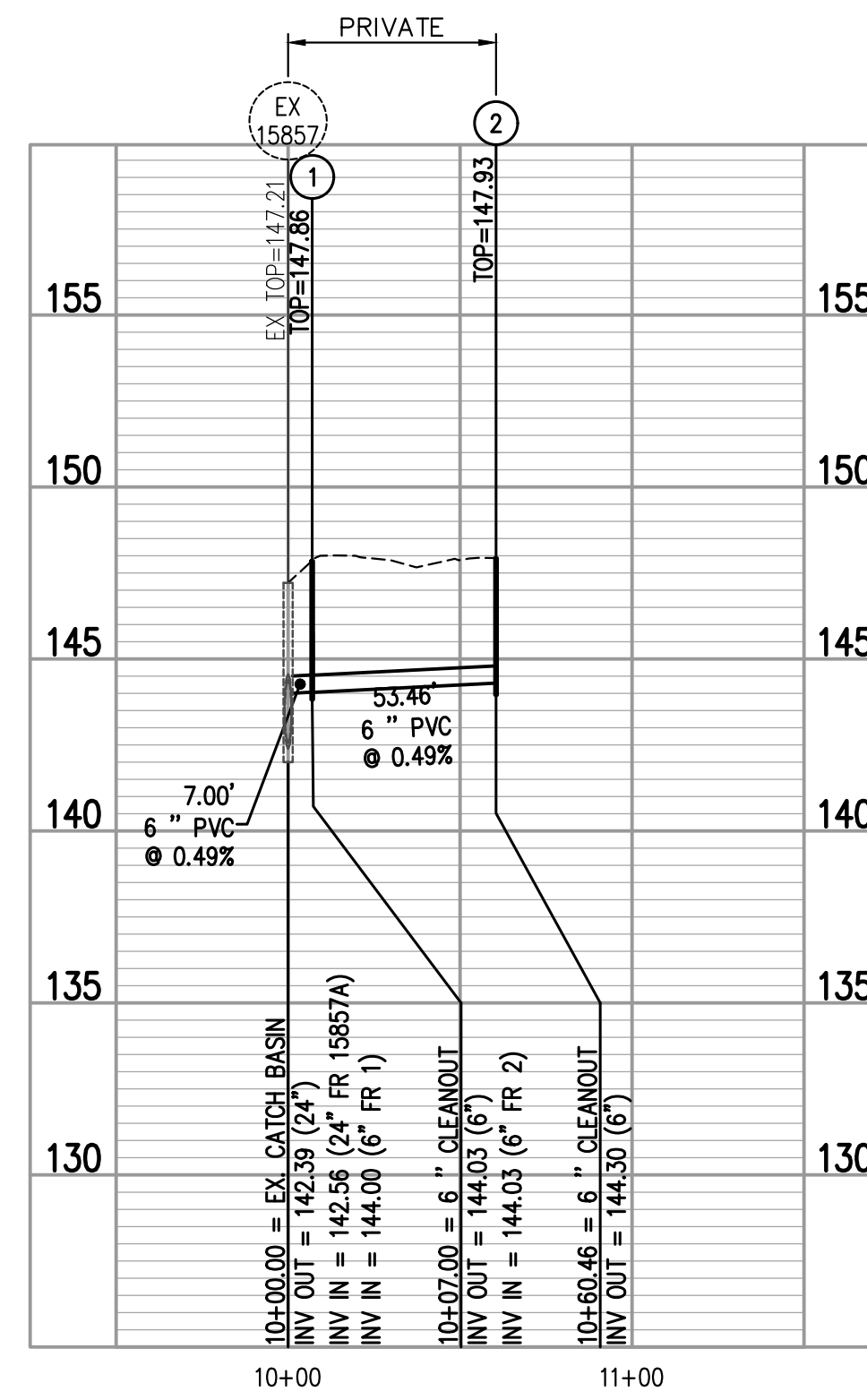
BID SET: 21-DPR-ITB-29 I



STORM EX. 15923 - EX. 15813 PROFILE VIEW
 HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=5'



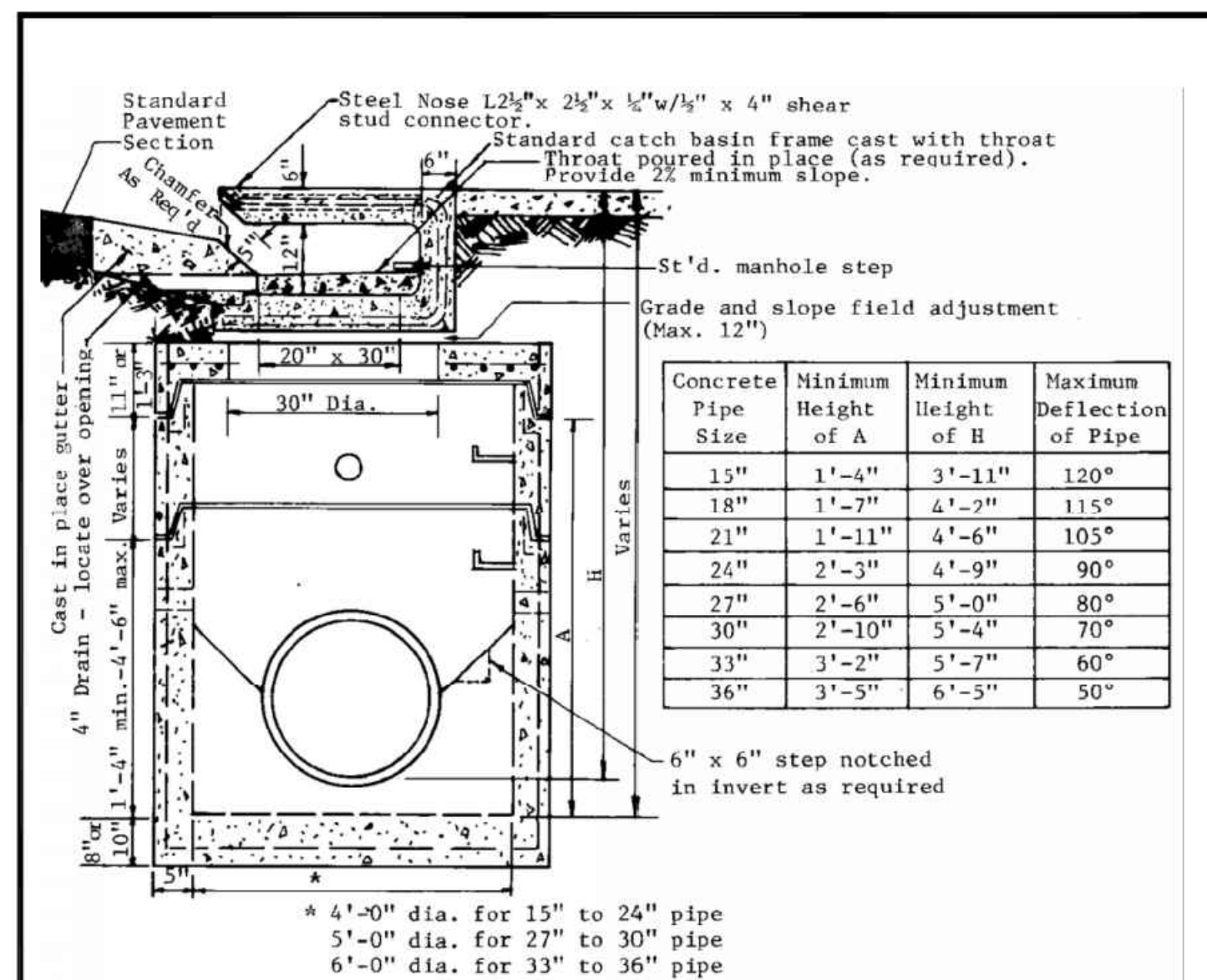
STORM EX. 15891 - 15891A PROFILE VIEW
 HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=5'



UNDERDRAIN PROFILE VIEW
 HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=5'

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UNDERGROUND ELECTRIC UTILITY LINE BEFORE EXCAVATING FOR CONSTRUCTION OF STRUCTURE 15857A.
- CONTRACTOR SHALL VERIFY LOCATION OF EXISTING 16" WATER MAIN ADJACENT TO PROPOSED STRUCTURE 15891A AND TAKE PRECAUTION DURING EXCAVATION AND INSTALLATION TO MAINTAIN HORIZONTAL SEPARATION.



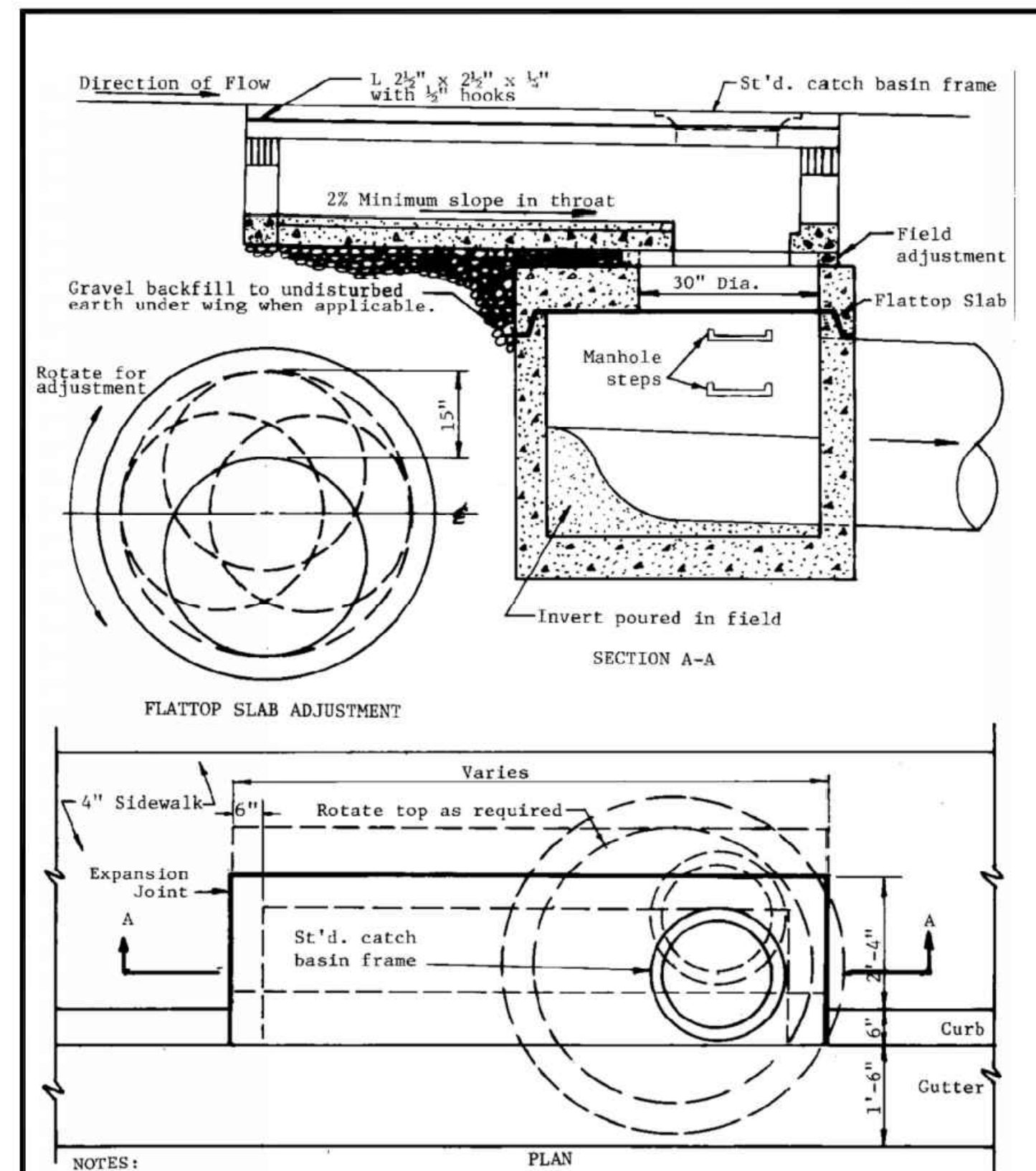
- NOTES:**
- Precast catch basins shall meet all requirements of ASTM C-478 or AASHTO M199.
 - Reinforcing shall meet ASTM A-615 for bars and A-497 for welded wire fabric.
 - Two lift holes for handling purposes to be provided 180° apart or approved equal for each unit.
 - Flat top section may be specified with circular hole when major adjustment is necessary in alignment. See Drawing D-1.6.
 - Pipe opening shall include 4" minimum clearance and 8" maximum clearance.
 - Precast base sections shall be 48" diameter for pipe sizes through 36".
 - Concrete to be Class "A4". Joints to be tongue and groove and/or O-ring.
 - For catch basins on slopes the extended throat shall be to the uphill side on a minimum slope of 2%, and for sags the throat is to be extended equally to both sides with basin situated in the middle. Length of throat, L, varies from 8'-0" to 20'-0" as specified.
 - Dimensions shown are minimum. Actual dimensions may vary with manufacturer.
 - Step for handhold to be provided in back of throat directly over access opening.
 - See drawing D-1.7 and D-1.8 for additional notes and details.

PRECAST CATCH BASIN, PCB-2

REVISION & DATE

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

DRAWING NO. D-1.5



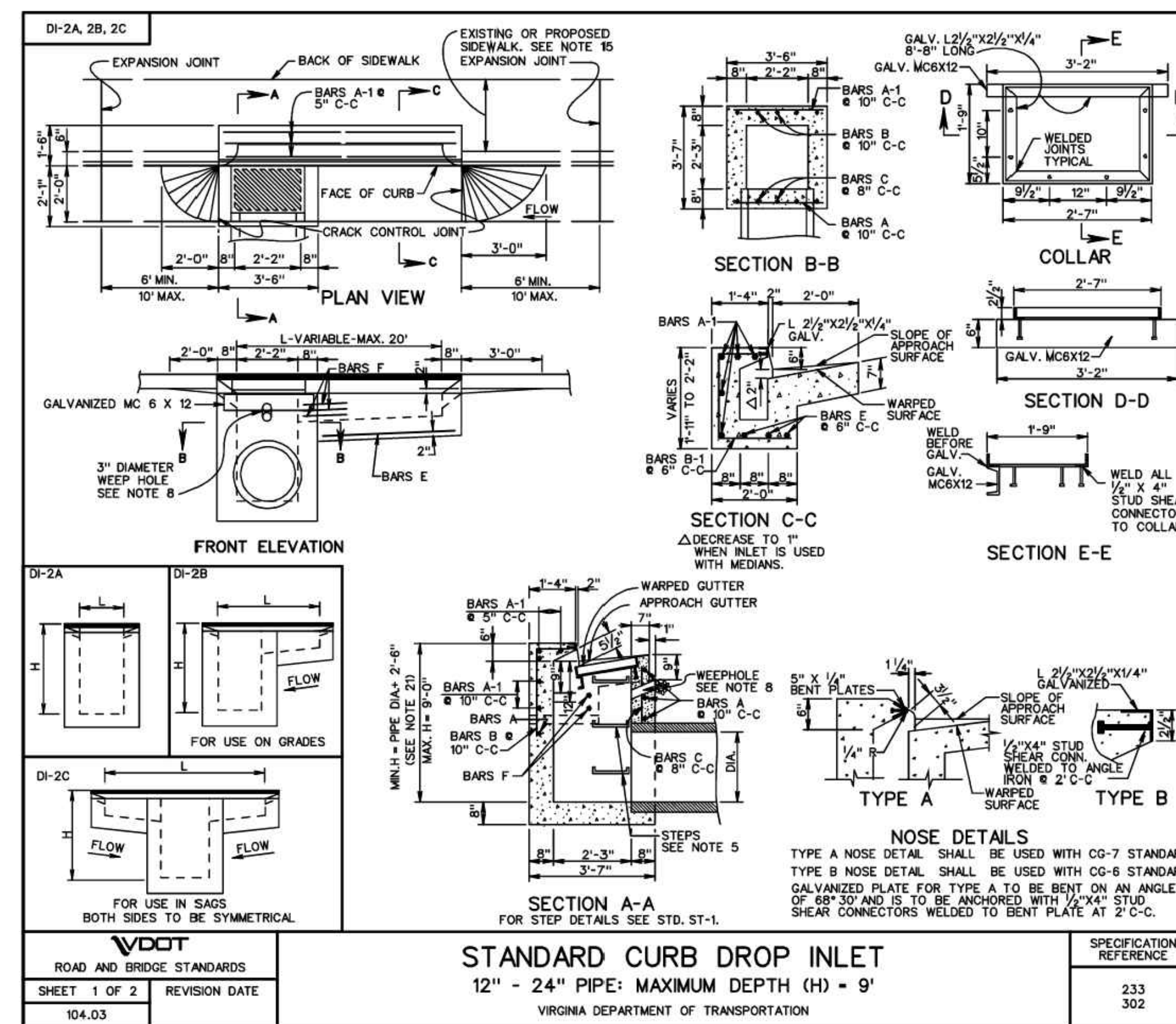
- NOTES:**
- This precast catch basin is for use on slopes only. When a precast catch basin is to be used in sags, the throat shall be extended equally to the left and right with the sump located in the middle. For additional notes, see Dwg. D-1.5.

DETAILS FOR PRECAST CATCH BASIN, PCB-2

REVISION & DATE

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

DRAWING NO. D-1.6



STANDARD CURB DROP INLET
 12" - 24" PIPE: MAXIMUM DEPTH (H) = 9"
 VIRGINIA DEPARTMENT OF TRANSPORTATION

10 YEAR STORM SEWER COMPUTATIONS

Structure	Drainage Area (acre)	C	CA		Tc	I	Q	Slope (%)		n	DIA (in)	DISCHARGE CAPACITY	VELOCITY		LENGTH	TIME IN PIPE		Upper Inv	Lower Inv	
			Incr.	Accum.				(min)	(in/hr)				(min)	(actual)		F.F.	ACT			FEET
2	1	0.06	0.06	0.30	0.02	0.02	5.00	7.56	0.14	0.05	0.51	0.012	6	0.43	2.20	1.89	53.46	28.36	144.30	144.00
1	EX 15857	0.00	0.00	0.00	0.00	0.02	5.00	7.56	0.14	0.05	0.43	0.012	6	0.40	2.03	1.78	7.00	7.00	144.03	144.00
15891A	EX 15891	0.04	0.04	0.90	0.04	0.04	5.00	7.56	0.27	0.00	2.10	0.013	15	9.35	7.62	2.82	35.78	12.71	146.00	145.25
EX 15813	15857A	1.50	1.50	0.80	1.20	1.20	5.00	7.56	9.07	0.16	5.77	0.013	24	54.35	17.30	12.15	72.76	5.99	147.50	143.30
15857A	EX 15857	0.04	1.54	0.90	0.04	1.24	5.00	7.56	9.34	0.17	1.99	0.013	24	31.93	10.16	8.51	33.13	3.89	143.22	142.56
EX 15857	EX 15891	0.08	1.68	0.90	0.07	1.33	5.00	7.56	10.02	0.20	2.12	0.013	24	32.96	10.49	8.89	40.51	4.56	142.39	141.53
EX 15891	EX 15923	0.08	1.80	0.90	0.07	1.43	5.00	7.56	10.84	0.23	1.98	0.013	24	31.80	10.12	8.90	48.59	5.46	141.32	140.36

10 YEAR HYDRAULIC GRADELINE COMPUTATIONS

Structure Number	Surface Flow	Inlet Shaping	Outlet W.S.E.	n	Factor	Dv	Qo	Lo	Sf	Hf	H.G.L. @ Struct. Outlet	Vv	Hv	Qv	Vv	Hv	Angle K' Value	Hs	Ht	H (Adj. Int. Shaping)	H (Adj. Int. Shaping)	H.G.L. @ Top Struct. Inlet	Top Struct. Elev.	H.G.L. Elev. Below Top Struct.		
																									0.01	0.14
2	NO	NO	144.40	0.012	6	0.14	7.00	0.40	0.03	144.43	1.78	0.01	0.14	1.89	0.02	0.16	0.01	0.04 <td>0.04 <td>0.04 <td>144.47 <td>147.86 <td>3.39</td> </td></td></td></td>	0.04 <td>0.04 <td>144.47 <td>147.86 <td>3.39</td> </td></td></td>	0.04 <td>144.47 <td>147.86 <td>3.39</td> </td></td>	144.47 <td>147.86 <td>3.39</td> </td>	147.86 <td>3.39</td>	3.39			
15891A	YES	YES	142.53	0.013	15	0.27	35.78	1.48	0.53	143.06	2.82	0.03								0.00	0.03	0.04	0.02	143.08	149.00	5.92
EX 15891	NO	NO	141.96	0.013	24	10.84	48.59	1.84	0.89	142.85	8.90	0.31	10.02	8.89	0.43	0.61	0.75	1.49	1.49	1.49	144.34	147.98	3.64			
EX 15857	NO	NO	143.13	0.013	24	10.02	40.51	1.95	0.79	143.92	8.89	0.31	9.34	8.51	0.39	0.70	0.79	1.49	1.49	1.49	145.41	147.21	1.80			
15857A	YES	YES	144.16	0.013	24	9.34	33.13	1.82	0.60	144.76	8.51	0.28	9.07	12.15	0.80	0.00	0.00	1.08	1.08	0.54	145.30	148.49	3.19			
EX 15813	YES	YES	144.90	0.013	24	9.07	72.76	5.07	3.69	148.59	12.15	0.57								0.00	0.57	0.75	0.37	148.96	155.01	6.05

INLET COMPUTATIONS

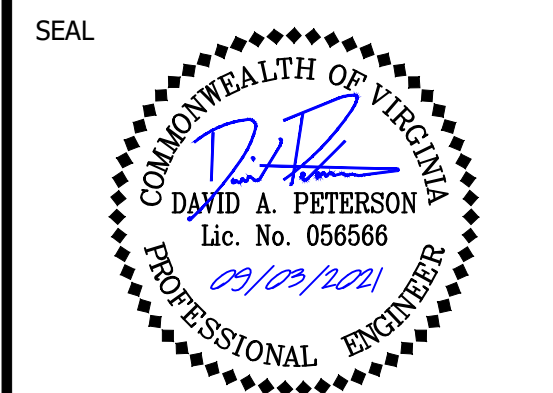
Bentley FlowMaster V8i (SELECTseries 1)

Label	Discharge (ft³/s)	Spread (ft)	Gutter Width (ft)	Gutter Cross Slope (ft/ft)	Road Cross Slope (ft/ft)	Curb Opening Length (ft)	Opening Height (ft)	Local Depression (in)	Local Depression Width (ft)	Depth (ft)	Gutter Depression (ft)	Total Depression (ft)
15891A	0.34	0.3	1.5	0.83	0.02	4	0.5	2	0.42	0.27	1.2	1.37
15857A	0.34	0.3	1.5	0.83	0.02	8	0.5	2	0.42	0.27	1.2	1.37



DEPARTMENT OF PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 414
 ARLINGTON, VA 22201
 PHONE: 703.228.4747
 FAX: 703.228.3328

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
 DRAWN: CLL
 CHECKED: DAP
 MISS UTILITY TRANSMITTAL #: N/A

FILENAME: 140049-D-CP-001-SDP.DWG
 PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\PLANS\CEP
 PLOTTED: September 20, 2021
 PLOTTED BY: VOLTZMAN

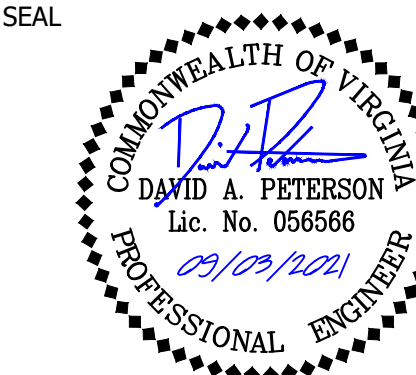
STORM SEWER PROFILES C14.00

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

STORM SEWER PROFILES
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: AS SHOWN Number: 23 of 68

SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

**Alcova
Heights Park
Renovation
Phase I**

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049-D-CP-001-AUTOTURN.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001
(ENG) - ALCOVA HEIGHTS
PARK\ENGINEERING\ENGINEERING PLANS\CEP
PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET

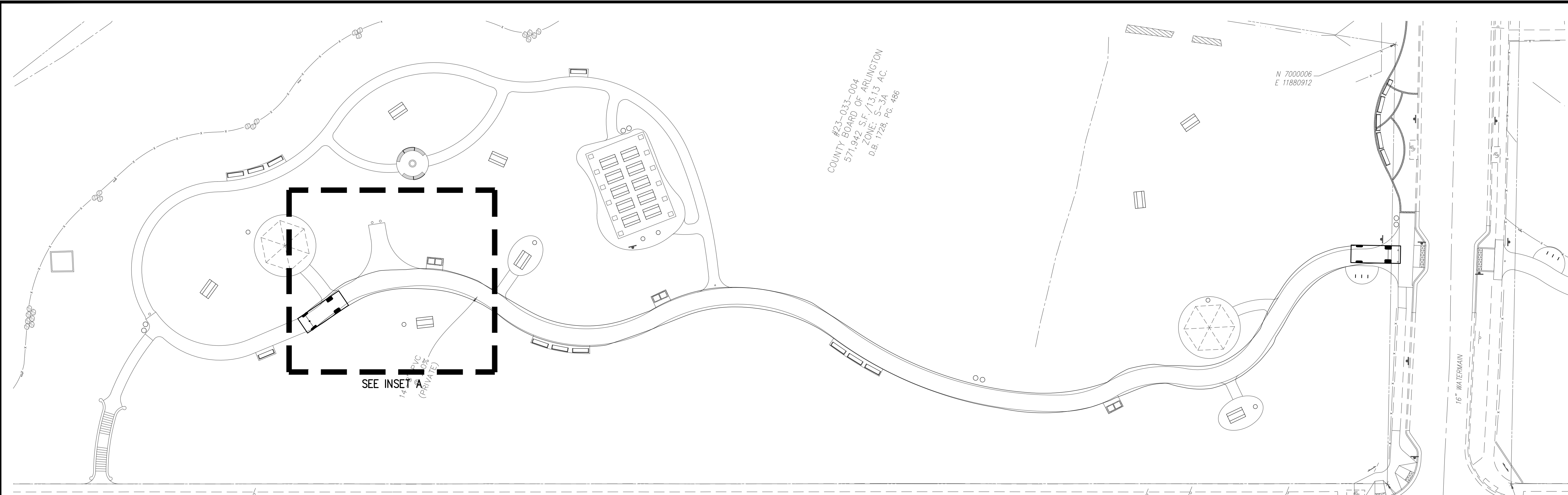
**TRUCK TURNING
MOVEMENTS
C15.00**

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

TRUCK TURNING MOVEMENTS
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: AS SHOWN

Number: 24 of 68



COUNTY BOARD OF ARLINGTON
#23-033-004
571,942 S.F./13 AC.
ZONE: S-3A
D.B. 1728, PG. 486

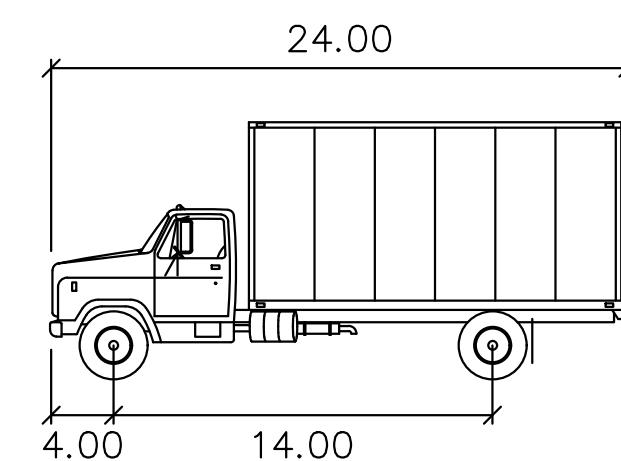
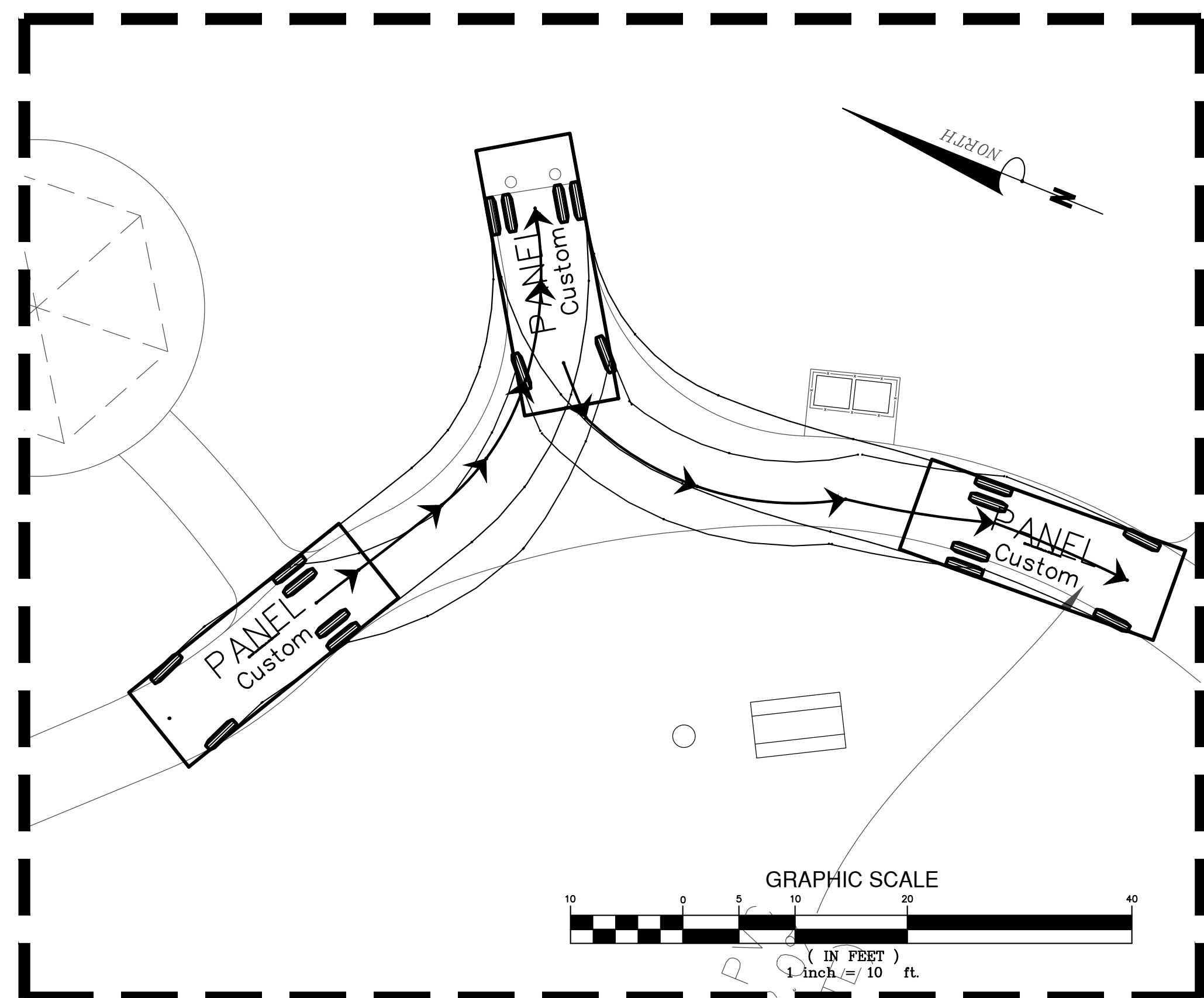
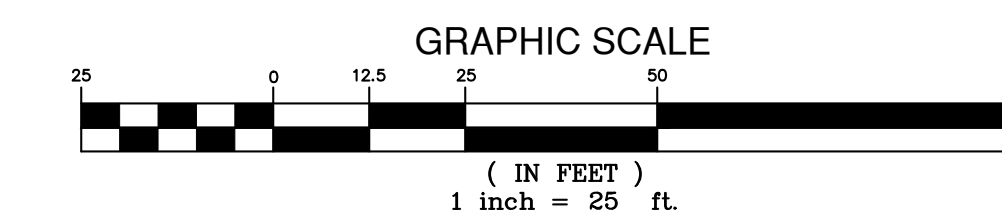
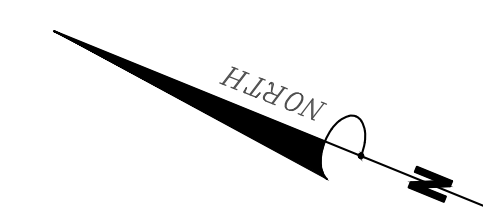
N 7000006
E 11880912

16" WATERMAIN

N 6999874
E 11880736

N 6999930
E 11880713

**SOUTH GEORGE MASON
DRIVE**
VARIABLE WIDTH
RIGHT OF WAY



PANEL
feet
Width : 8.50
Track : 8.50
Lock to Lock Time : 6.0
Steering Angle : 31.6

INSET A - TRUCK TURN AROUND

POLLUTION PREVENTION PLAN NOTES

- ONLY THE FOLLOWING NON-STORMWATER DISCHARGES ARE AUTHORIZED BY ARLINGTON COUNTY'S MS4 PERMIT, UNLESS THE STATE WATER CONTROL BOARD, THE VIRGINIA SOIL AND WATER CONSERVATION BOARD (BOARD), OR ARLINGTON COUNTY DETERMINES THE DISCHARGE TO BE A SIGNIFICANT SOURCE OF POLLUTANTS TO SURFACE WATERS: WATER LINE FLUSHING; LANDSCAPE IRRIGATION; DIVERTED STREAM FLOWS; RISING GROUND WATERS; UNCONTAMINATED GROUND WATER INFILTRATION; DISCHARGES FROM POTABLE WATER SOURCES; FOUNDATION DRAINS; AIR CONDITIONING CONDENSATION; IRRIGATION WATER; SPRINGS; WATER FROM CRAWL SPACE PUMPS; FOOTING DRAINS; LAWN WATERING; INDIVIDUAL CAR WASHING; FLOWS FROM RIPARIAN HABITATS AND WETLANDS; DECHLORINATED SWIMMING POOL DISCHARGES; DISCHARGES OF FLOWS FROM FIRE FIGHTING; AND OTHER ACTIVITIES GENERATING DISCHARGES IDENTIFIED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY AS NOT REQUIRING VPDES AUTHORIZATION.
- APPROPRIATE CONTROLS MUST BE IMPLEMENTED TO PREVENT ANY NON-STORMWATER DISCHARGES NOT INCLUDED ON THE ABOVE LIST (E.G., CONCRETE WASH WATER, PAINT WASH WATER, VEHICLE WASH WATER, DETERGENT WASH WATER, ETC.) FROM BEING DISCHARGED INTO ARLINGTON COUNTY'S MS4 SYSTEM, WHICH INCLUDES THE CURB AND GUTTER SYSTEM, AS WELL AS CATCH BASINS AND OTHER STORM DRAIN INLETS, OR STREAM NETWORK.
- PER CHAPTER 26 OF THE ARLINGTON COUNTY CODE, IT SHALL BE UNLAWFUL FOR ANY PERSON TO DISCHARGE DIRECTLY INTO THE STORM SEWER SYSTEM OR STATE WATERS, ANY SUBSTANCE LIKELY, IN THE OPINION OF THE COUNTY MANAGER, TO HAVE AN ADVERSE EFFECT ON THE STORM SEWER SYSTEM OR STATE WATERS.

2.0 Authorized Non-Stormwater Discharges

Type of Authorized Non-Stormwater Discharge	Likely Present at Your Project Site?	
External buildings wash down	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Uncontaminated foundation or footing drains	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Uncontaminated excavation dewatering	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Landscape irrigation	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Others [Air conditioning condensation]	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

STORMWATER POLLUTION PREVENTION PLAN
Insert Project/Site Name

5.0 Potential Sources of Pollution & Pollution Prevention Practices

Pollutant-Generating Activity	Likely Present at your Project Site?	Pollutants										Pollution Prevention Practice	Responsible Party		
		Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	Other Toxic Chemicals					
Cleaning, grading, excavating, and un-stabilized areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X										X	(1)	Construction Activity Operator (See Cover Page of this SWPPP)	
Paving operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X					X					X	(2)		
Concrete washout and cement waste	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X							X	(3)		
Structure construction, stucco, painting, and cleaning	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			X	X							X	X		(4)
Dewatering operations	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	X									X	(5)		
Material delivery and storage	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X	X	X	X	X	X	X	X	X		X	X		(6)
Material use during building process	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X	X	X	X	X	X	X	X		X	X		(7)
Solid waste disposal	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											X	X		(8)
Sanitary waste	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	X		X						X					(9)
Landscape operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	X	X			X					X	X	(10)		
Others	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No														(11)

Arlington County – SWPPP 7/2014

STORMWATER POLLUTION PREVENTION PLAN
Insert Project/Site Name

Pollution Prevention Practices:

- Clearing, grading, excavating and un-stabilized areas** – Utilize erosion and sediment controls to prevent sediment laden or turbid runoff from leaving the construction site. Dispose of clearing debris at acceptable disposal sites. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities.
- Paving operations** – Cover storm drain inlets during paving operations and utilize pollution prevention materials such as drip pans and absorbent/oil dry for all paving machines to limit leaks and spills of paving materials and fluids.
- Concrete washout and cement waste** – Direct concrete wash water into a leak-proof container or leak-proof settling basin that is designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes.
- Structure construction, stucco, painting and cleaning** – Enclose, cover or berm building material storage areas if susceptible to contaminated stormwater runoff. Conduct painting operations consistent with local air quality and OSHA regulations. Mix paint indoors, in a containment area or in a flat unpaved area. Prevent the discharge of soaps, solvents, detergents and wash water from construction materials, including the clean-up of stucco paint, form release oils and curing compounds.
- Dewatering operations** – Construction site dewatering from building footings or other sources may not be discharged without treatment. Sediment laden or turbid water shall be filtered, settled or similarly treated prior to discharge.
- Material delivery and storage** – Designate areas of the construction site for material delivery and storage. Place near construction entrances, away from waterways, and avoid transport near drainage paths or waterways.
- Material use during building process** – Use materials only where and when needed to complete the construction activity. Follow manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals.
- Solid waste disposal** – Designate a waste collection area on the construction site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterway. Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. Schedule waste collection to prevent the containers from overflowing.
- Sanitary waste** – Prevent the discharge of sanitary waste by providing convenient and well-maintained portable sanitary facilities. Locate sanitary facilities in a convenient location away from waterways.
- Landscape operations** – Maintain as much existing vegetation as practicable. Apply permanent or temporary stabilization, sodding and/or mulching to denuded areas in accordance with the erosion and sediment control specifications and the general VPDES permit for discharges of stormwater from construction activities. Apply nutrients in accordance with manufacturer's recommendations and not during rainfall events.
- Others** – If applicable, describe your Pollution Prevention Practice.

7.0 Spill Prevention & Response

Most spills can be cleaned up following manufacturer specifications. Absorbent/oil dry, sealable containers, plastic bags, and shovels/brooms are suggested minimum spill response items that should be available at this location.

- 1st Priority: Protect all people
- 2nd Priority: Protect equipment and property
- 3rd Priority: Protect the environment

- Check for hazards (flammable material, noxious fumes, cause of spill) – If flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave the area and call 911. **LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.**
- Make Sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
- Stop the spill source.
- Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers.
- If possible, stop spill from entering drains (use absorbent or other material as necessary).
- Stop spill from spreading (use absorbent or other material).
- If spilled material has entered a storm sewer, contact locality's storm water department.
- Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials and do not flush area with water.
- Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications.

Emergency Contacts:

Normal Working Hours
DEQ Northern Regional Office 703-583-3800

Nights, Holidays & Weekends

VA Dept. of Emergency Management 804-674-2400
24 Hour Reporting Service

Local Contacts

Local Fire Department 703-228-3362
Local Police Department 703-558-2222

Appendix C. Water Quality Impact Assessment Data Sheet

Project Address 901 S. George Mason Drive	Date: October 18, 2019, rev. Dec. 18, 2020
Applicant Name/Affiliation: Department of Parks and Recreation, Attn: Joshua B. Serck	Applicant Contact Information (phone and email): 703.228.4715, jserck@arlingtonva.us
Owner/Client Name: Department of Parks and Recreation, Attn: Joshua B. Serck	Owner/Client Contact Information (phone and email): 703.228.4715, jserck@arlingtonva.us

Section 1: Type of activity proposed

Activity type (check all that apply): <input type="checkbox"/> New construction (residential, commercial, public, etc.) <input checked="" type="checkbox"/> Alteration of non-residential structure <input type="checkbox"/> Residential addition <input type="checkbox"/> Detached residential structure	<input type="checkbox"/> Deck, patio, or retaining wall <input checked="" type="checkbox"/> Landscaping (includes tree removal) <input checked="" type="checkbox"/> Utility work <input type="checkbox"/> Fence <input type="checkbox"/> Other (please describe):	The Project proposes demolition activities and the redevelopment of the existing Alcova Heights Park including a 5-foot asphalt trail, basketball court, and sand volleyball court.
---	---	---

Section 2: Key details of the proposed activity

Complete all that apply	Explanation
Total area of disturbance on parcel (sf)	58,975 sf Includes building footprint plus a 10 foot buffer. Also includes all soil disturbance, ingress/egress areas, stockpiling areas, etc.
Area of disturbance within RPA (sf)	39,431 sf Includes removal of trees ≥ 3" in diameter
Area of disturbance on slopes greater than or equal to 15 percent located adjacent to landward RPA boundary (sf)	0 sf Does not apply to RPA parcels along Chain Bridge Road (15 percent and greater slopes are included as part of RPA)

Complete all fields	Existing condition	Proposed condition	Explanation
RPA encroachment (ft)			
Left third of parcel or site	51	45	The distance (in feet) from the existing or proposed structure to the designated RPA feature (edge of stream or open channel, wetland, etc.).
Middle third of parcel or site	N/A	N/A	Encroachments of zero (0) indicate the project will impact the stream or other RPA feature.
Right third of parcel or site	35	35	
Total development footprint in RPA (sf)	22,665	19,988	The existing footprint includes the area of any existing structures, patios, decks, walkways, etc. Proposed footprint is the anticipated post-project area of all structures, additions, decks, walkways, graded area behind a retaining wall, etc.
Impervious footprint in RPA (sf)	22,665	19,988	Total area of impervious surfaces within the RPA (rooftops, pavement, etc.)

STAFF USE ONLY

Building/demolition/LDA/Fence permit number(s):

Major WQIA required? Yes No

Date WQIA/Exception request information complete:

Date Chesapeake Bay Preservation Ordinance and E/S ordinance (if applicable) approvals issued in Permits Plus:

Section 3: Plan and Narrative

Provide a plan showing the location of the proposed activity, along with the RPA boundary. Briefly describe the proposed project, including any potential water quality impacts and mitigation measures proposed. The narrative must address three impact categories 1. Tree/vegetation impacts, 2. Stormwater and runoff 3. Erosion and sediment control. Please refer to the WQIA plan/narrative checklist for additional information.

The location of existing vegetation onsite is included on Sheets LJ1.01 through LJ5.02 (Tree Preservation Plan, Schedule, Notes, and Details) of the Civil Engineering Plan. As detailed in the Tree Preservation Plan, 93 trees will be removed in association with the proposed Park improvements.

A re-vegetation or vegetation enhancement plan to supplement the existing RPA buffer is included on Sheets L2.00 through L3.00 (Planting Plan and Details). To compensate for the RPA encroachments at the Project, Reforestation Areas totaling approximately 37,539 square feet (0.86 acre) have been identified for enhancement, consisting of the application of a woody seed mix and planting of 86 shade trees, 172 understory trees, 937 shrubs, 937 perennials, and 5,580 bulbs within the Project. Additionally, approximately 18,722 square feet (0.43 acre) within the RPA has been identified as proposed protected open space.

As shown on the WQIA Exhibit and the Erosion and Sediment Control Plans, Notes, and Details included as Sheets C9.00 through C11.00 of the Civil Engineering Plan, the Project complies with the requirements of Chapter 57 – Erosion and Sediment Control Ordinance and Chapter 60 – Stormwater Management Ordinance. A variety of temporary stormwater pollutant controls are being implemented during construction for the Alcova Heights Park Project as shown on the E&S Control Plans. These mainly include two construction entrances, super silt fence, silt fence, inlet protection, tree protection, and root pruning. Inspections of all E&S controls at the Project will be conducted at a frequency of (i) at least once every four business days or (ii) at least once every five business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day.

The proposed Park improvements are subject to the redevelopment criteria of the Virginia Runoff Reduction Method (VRRM). Existing managed turf areas will be reforested with shade trees, shrubs, perennials, bulbs, and meadow understory seeding on the eastern and western side of Doctors Run within the Project. Based on the VRRM, the pre-redevelopment total phosphorus (TP) load is 2.9726 lb/year, and the post-redevelopment TP load is 2.3697 lb/year. Because the post redevelopment TP load is less than the pre-redevelopment TP load, no BMPs are required for the Project. Refer to the Stormwater Management Plan, Notes, and Calculations on Sheet C13.10 of the Civil Engineering Plan for more information.

Within the RPA, the Project proposes the redevelopment of an existing permeable sand volleyball court to a proposed permeable sand volleyball court, the redevelopment of an existing impervious basketball court, and the installation of passive recreation facilities. The redevelopment of the basketball court will increase the RPA encroachment by 6 linear feet for ADA compliance and safety concerns, including the location of an existing stone retaining wall that currently directly abuts the existing court. As shown on the Existing and Proposed Impervious Surface Maps included on Sheet 16.30, RPA encroachment within the overall Project area has been significantly reduced. The existing impervious trail within the northeastern portion of the Project will be removed and converted into permeable open space and the existing impervious trail within the northwestern portion of the Project will be removed and redeveloped approximately 82 linear feet further away from the regulated waterbody. Overall, the existing impervious surface within the RPA is 22,665 square feet, and the proposed impervious surface within the RPA is 19,988 square feet, for a reduction in impervious surface within the RPA of 2,677 square feet.

Additional Water Quality Impact Assessment Information

The information supplied on this form satisfies the minimum requirements for a Minor Water Quality Impact Assessment. For projects that disturb over 2500 square feet, elements of a Major Water Quality Impact Assessment may also be required, depending on the nature and extent of the proposed RPA encroachment, as outlined in Section 61-12 of the ordinance.



DEPARTMENT OF PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
DRAWN: CLL
CHECKED: DAP
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
140049 - WQIA EXHIBIT.DWG
PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENV) - ALCOVA HEIGHTS PARK\ENVIRONMENTAL\ENV PLANS\WQIA
PLOTTED: September 20, 2021
PLOTTED BY: VOLTZMAN

SHEET

POLLUTION PREVENTION PLAN AND WATER QUALITY IMPACT ASSESSMENT C16.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

POLLUTION PREVENTION PLAN AND WATER QUALITY IMPACT ASSESSMENT

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: N/A Number: 25 of 68

Legend

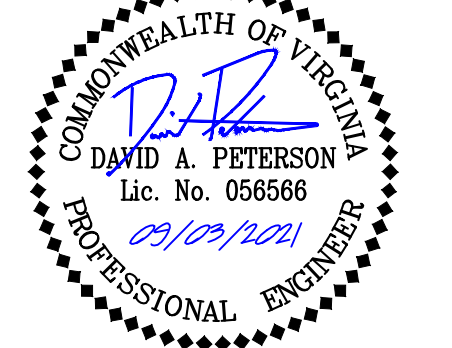
- Index Contours
- Contours (CI=2')
- Perennial Streams (R3)
- Limits of Disturbance
- Resource Protection Area (RPA)
- Prop. Impervious Surface (Passive)
- Prop. Impervious Surface (Active)
- Prop. Construction Entrances
- Prop. Tree Protection Fence
- Prop. Silt Fence
- Prop. Super Silt Fence
- Prop. Inlet Protection
- Prop. Root Pruning
- Prop. Shade Tree Planting
- Prop. Reforestation Area
- Prop. Protected Open Space Area



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

NOTES

- The approximately 13.13-acre Alcova Heights Park Project is identified as a portion of RPC 23-033-004 and located at 901 S. George Mason Drive in Arlington County, Virginia. More generally, the Project is located at 38°51'43"N Latitude and 77°08'08"W Longitude on the Alexandria, VA-DC-MD USGS Quadrangle Map. The site drains towards the MS4 operated by Arlington County and Doctors Run, which is located within the Potomac River - Fourmile Run watershed (PL25) of Hydrologic Unit Code (HUC) 02070010 (Middle Potomac - Anacostia - Occoquan).
 - Property boundary, topographic, and existing conditions mapping provided by Rice Associates, Inc. Proposed site plan information provided by Bowman Consulting Group, Ltd. (BCG). The waters of the U.S. and wetland boundaries provided by Arlington County Department of Parks and Recreation.
 - The RPA and stream boundaries as depicted on this Exhibit were provided by the Arlington County Department of Parks and Recreation and are based on a 100-foot offset from the surveyed top-of-bank of onsite perennial streams. There are no landward steep slopes on the Project, nor any wetlands identified as contiguous to or connected by surface flow to a water body with perennial flow. Therefore, in accordance with Section 51-5.B.1. of the CBPO and the Virginia Department of Conservation and Recreation's (DCR) Resource Protection Areas: Nontidal Wetlands, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations (Adopted June 18, 2007, Revised December 10, 2007), the site-specific RPA boundary is mapped 100-feet upslope or landward of Doctors Run and its unnamed perennial tributaries.
 - A total of approximately 39,431 square feet (0.91 acre) of the RPA will be disturbed by the proposed Park improvements associated with the construction of a 5-foot wide asphalt trail and other passive recreation amenities, and renovation of the existing basketball court and volleyball court (active recreation).
 - Approximately 14,553 square feet (0.33 acre) of impervious surface are proposed within the RPA associated with the 5-foot wide asphalt trail and other passive recreation amenities; these improvements are considered "exempt" from the requirements of the CBPO under Section 61-15.C.
 - Approximately 4,619 square feet (0.11 acre) of impervious surface is present within the RPA associated with active recreation in the existing condition. The post-renovation condition proposes 5,435 square feet (0.12 acre) of impervious surface within the RPA associated with active recreation. Therefore, impervious surfaces associated with active recreation within the RPA will be increased by approximately 616 square feet (0.02 acre).
- As shown on the Existing and Proposed Impervious Surface Maps included on Sheet 16.30, RPA encroachment within the overall Project area has been significantly reduced. The existing impervious trail within the northeastern portion of the Project will be removed and converted into permeable open space, and the existing impervious trail within the northwestern portion of the Project will be removed and redeveloped approximately 82 linear feet further away from the regulated waterbody. Overall, the existing impervious surface within the RPA is 22,665 square feet, and the proposed impervious surface within the RPA is 19,988 square feet, for a reduction in impervious surface within the RPA of 2,677 square feet.
- Given that there is a reduction in impervious surface within the RPA and that overall encroachment into the RPA associated with the renovation of the recreation facilities at the Project has been decreased, these improvements are considered redevelopment and should therefore be considered "allowable" within the RPA without an exception in accordance with Section 61-7.A.

Summary of Impervious Surface within the RPA

Usage	Existing (SF)	Proposed (SF)
Active Recreation ¹	4,619	5,435
Passive Recreation ²	18,046	14,553
Totals	22,665	19,988

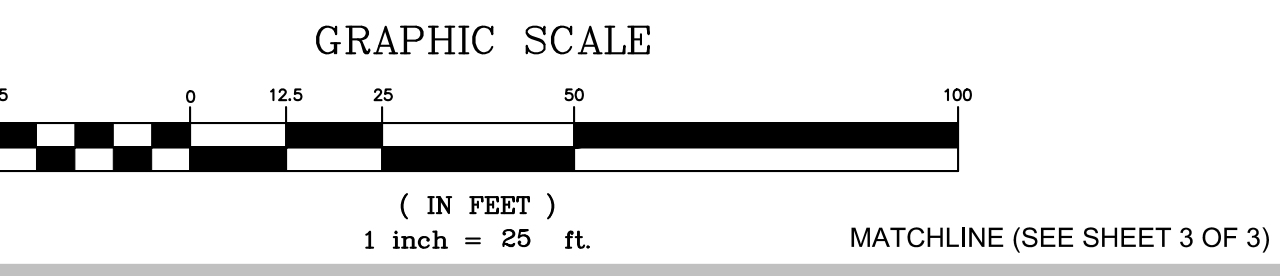
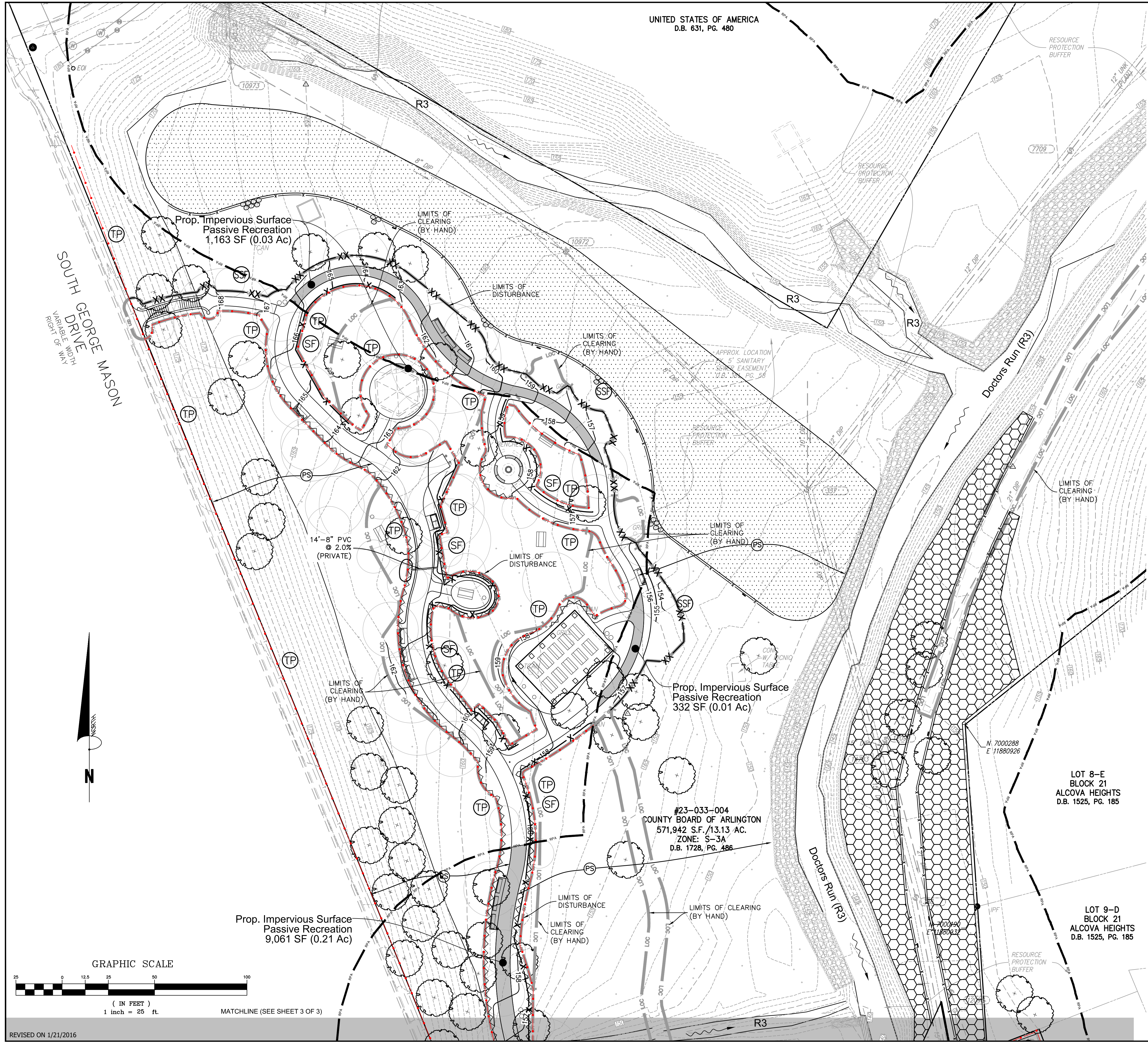
¹ Active recreation includes the basketball court and volleyball court
² Passive recreation includes trails/walkways

Project Name and Location
Alcova Heights Park Renovation Phase I

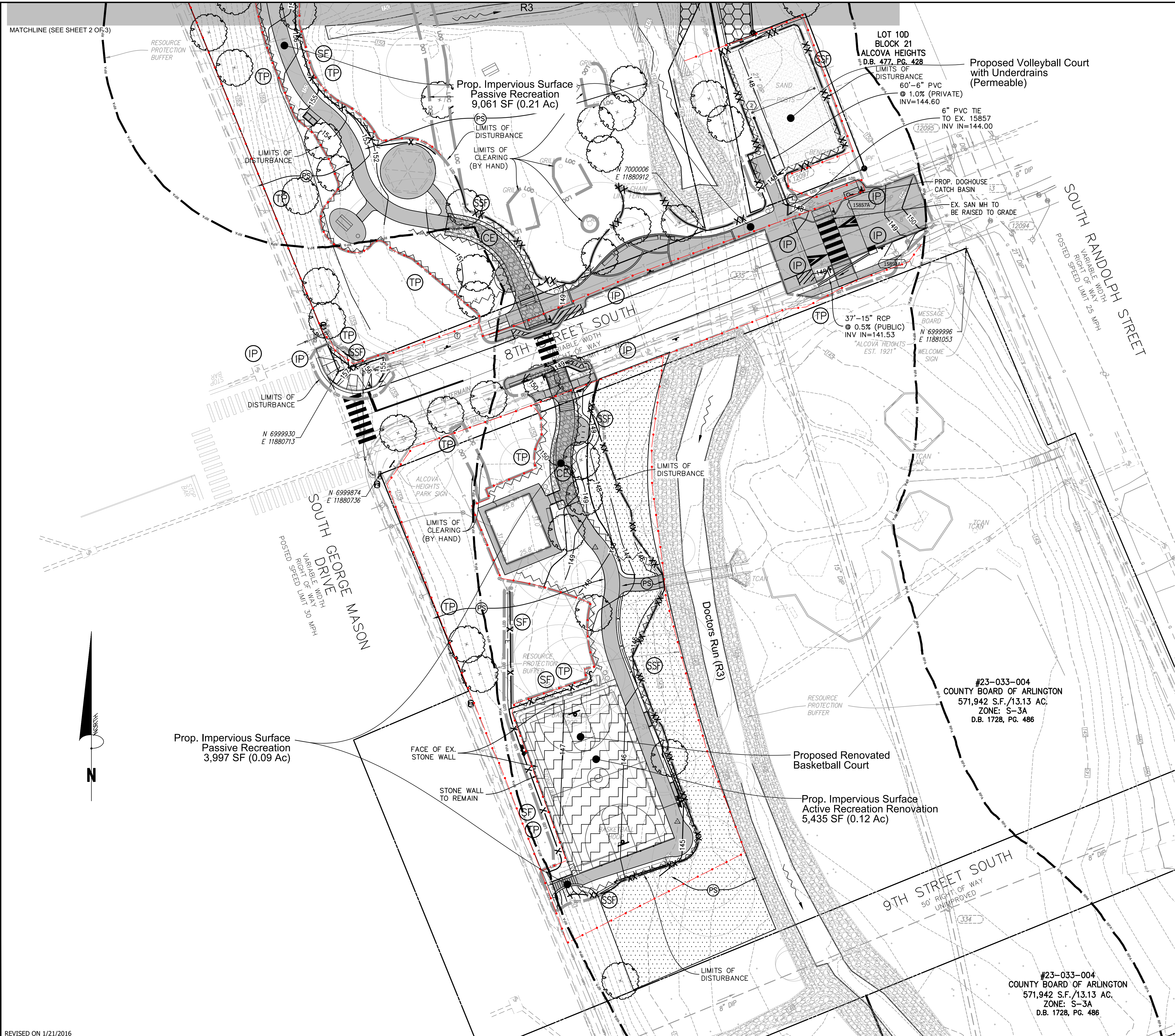
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CHECKED: DAP
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PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
WATER QUALITY IMPACT ASSESSMENT
C16.10

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER QUALITY IMPACT ASSESSMENT
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: 1" = 25' Number: 26 of 68



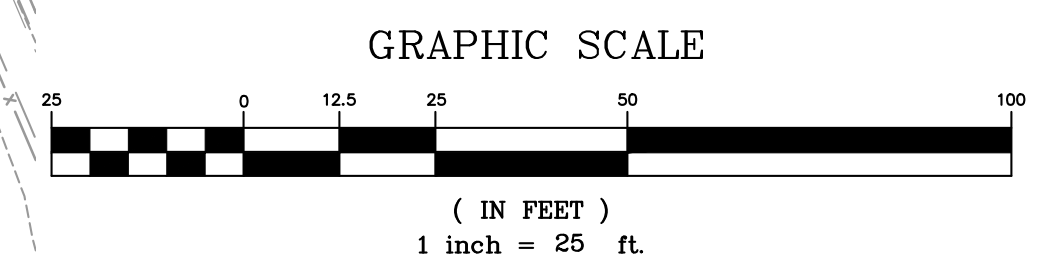
MATCHLINE (SEE SHEET 2 OF 3)



Legend

- Index Contours
Contours (CI=2')
Perennial Streams (R3)
Limits of Disturbance
Resource Protection Area (RPA)
Prop. Impervious Surface (Passive)
Prop. Impervious Surface (Active)
Prop. Construction Entrances
Prop. Tree Protection Fence
Prop. Silt Fence
Prop. Super Silt Fence
Prop. Inlet Protection
Prop. Root Pruning
Prop. Shade Tree Planting
Prop. Reforestation Area
Prop. Protected Open Space Area

Summary of Impervious Surface within the RPA
Usage Existing (SF) Proposed (SF)
Active Recreation 4,619 5,435
Passive Recreation 18,046 14,553
Totals 22,665 19,988



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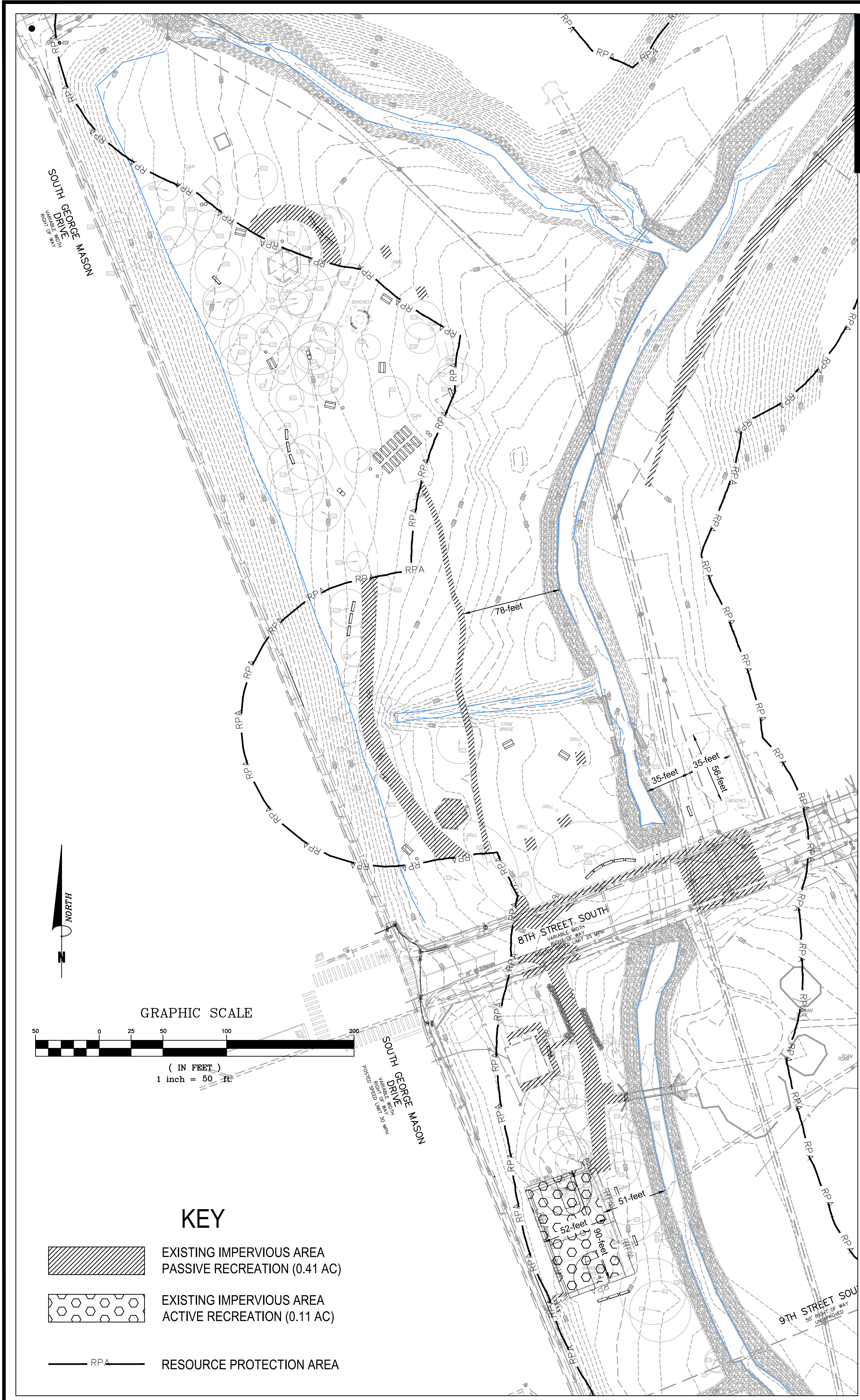
APPROVALS DATE
DESIGN TEAM ENGINEER SUPERVISOR
CONSTRUCTION MANAGEMENT SUPERVISOR
WATER, SEWER, STREETS BUREAU CHIEF
TRANSPORTATION DIRECTOR
PROJECT MANAGER
REVISIONS DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

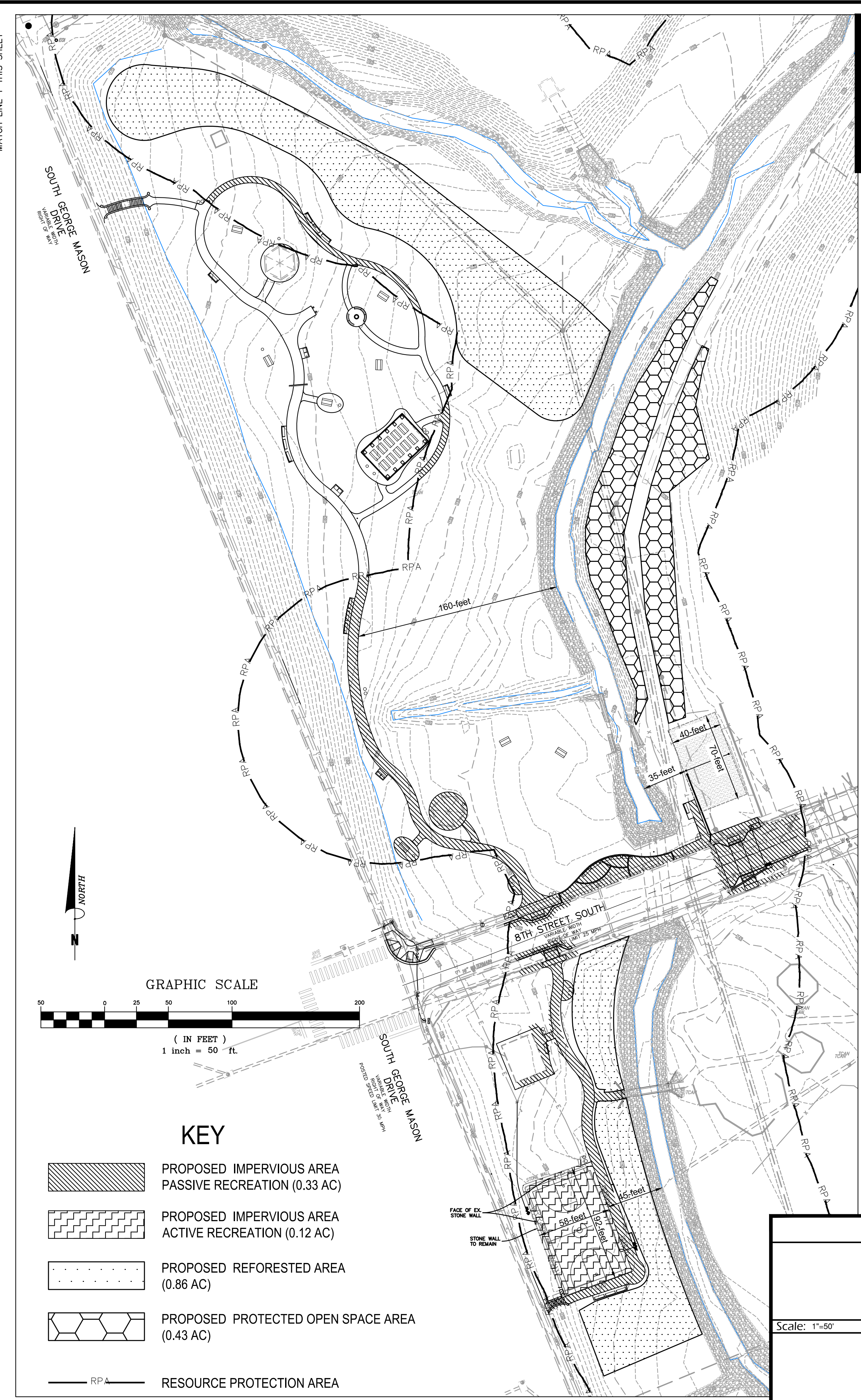
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PLOTTED: September 20, 2021
PLOTTED BY: VHOLTZMAN

SHEET
WATER QUALITY IMPACT ASSESSMENT
C16.20

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER QUALITY IMPACT ASSESSMENT
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: 1" = 25' Number: 27 of 68



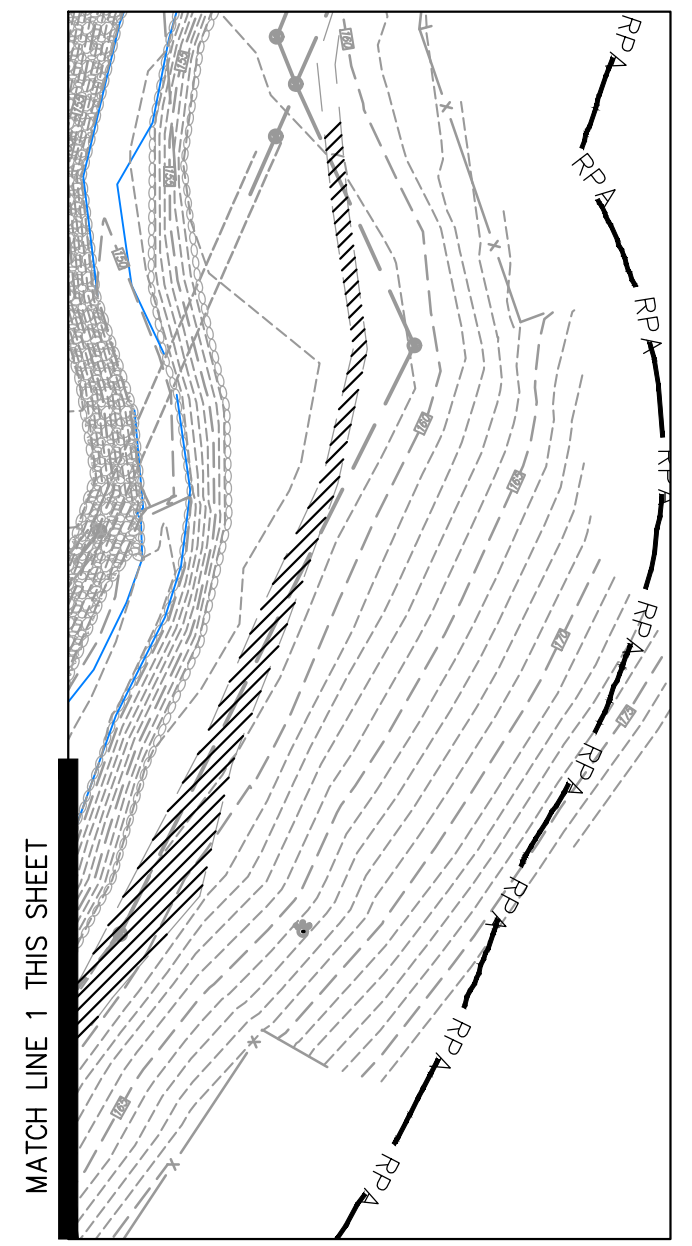
EXISTING IMPERVIOUS AREA MAP



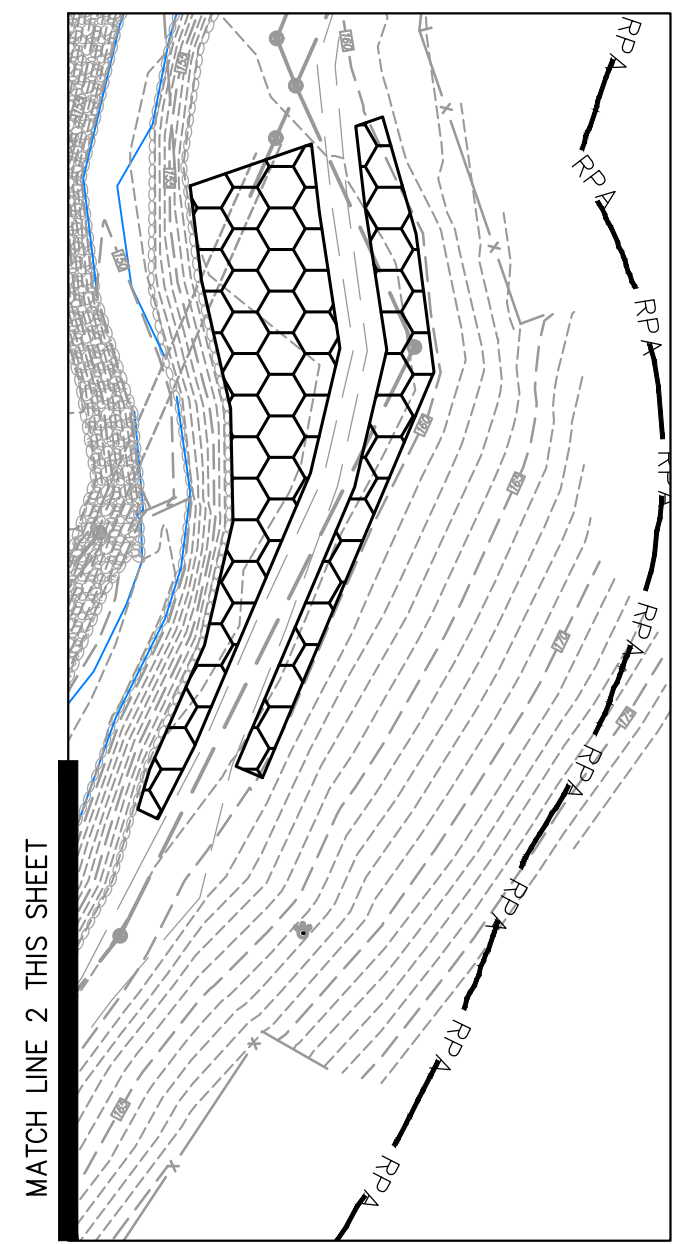
PROPOSED IMPERVIOUS AREA MAP



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE



EXISTING IMPERVIOUS AREA MAP



PROPOSED IMPERVIOUS AREA MAP

Project Name and Location
Alcova Heights Park Renovation Phase I

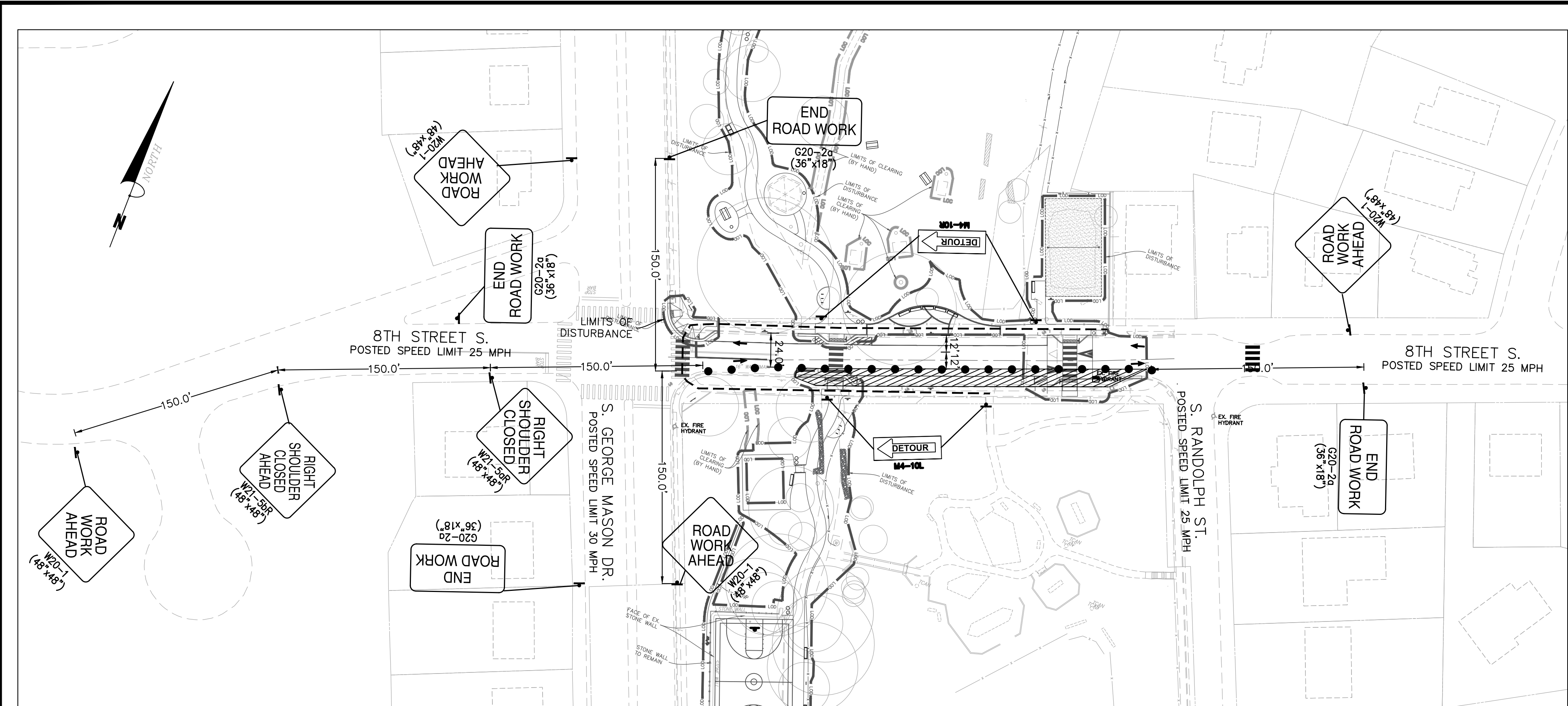
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 DRAWN: CLL
 CHECKED: DAP
 MISS UTILITY TRANSMITTAL #: N/A

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 PLANS\WQIA
 PLOTTED: September 20, 2021
 PLOTTED BY: VHOULTZMAN

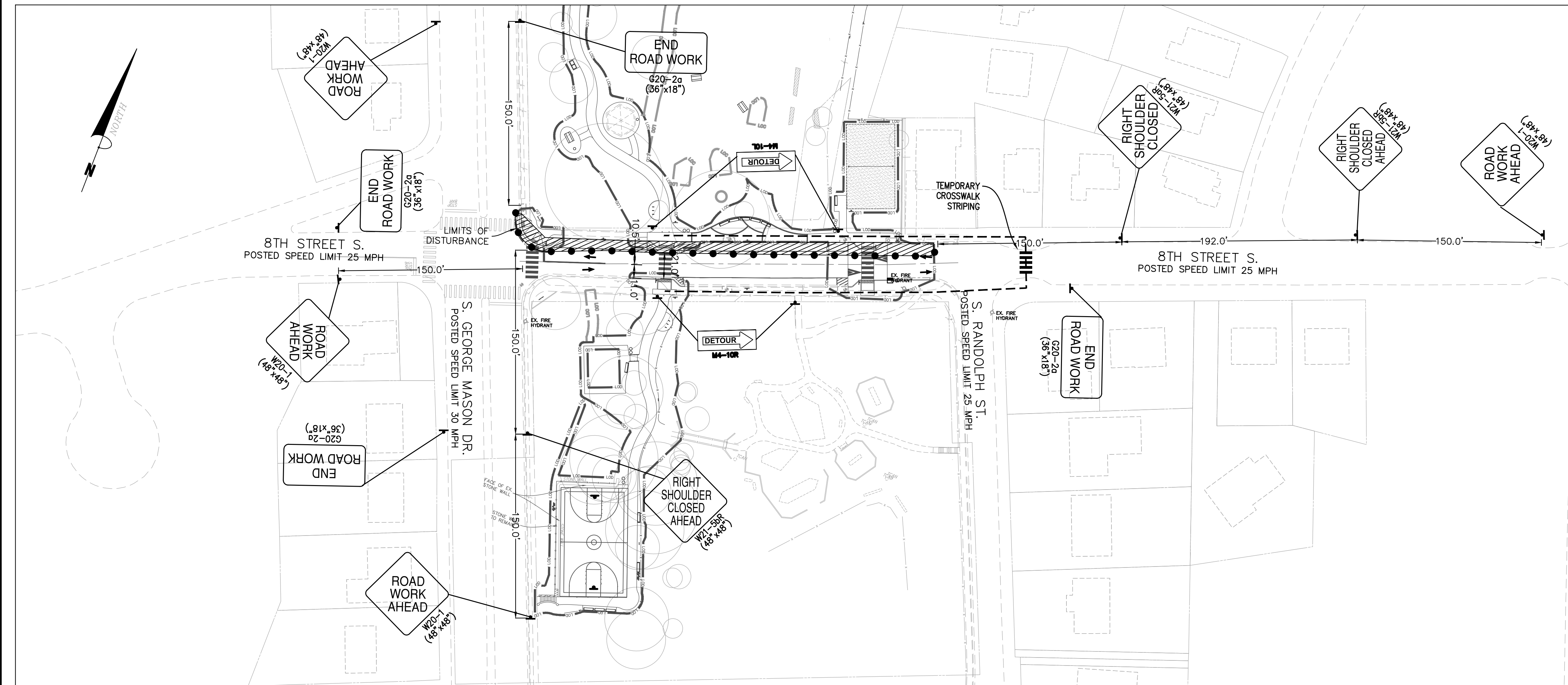
SHEET
WATER QUALITY IMPACT ASSESSMENT C16.30

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES
 WATER QUALITY IMPACT ASSESSMENT
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: 1"=50' Number: 27.1 of 68



PHASE I



PHASE II

SPEED (MPH)	MIN. SIGN SPACING (FT)
25 MPH	150'
35 MPH	300'
40 MPH	350'

STANDARD NOTES

- PARKING SHALL BE RESTRICTED 72 HOURS IN ADVANCE UNLESS THERE IS AN EMERGENCY.
- SIGNS SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF WORK AND REMOVED IMMEDIATELY AFTER COMPLETION OF ACTIVITIES.
- SIGNS NO LONGER REQUIRED SHALL BE REMOVED.
- SIGNS SHALL BE MOUNTED ON SPRING LOADED STANDS.
- THE SPACING OF TRAFFIC CONES SHALL BE 10 FEET.
- ON ONE-WAY STREETS, OPPOSING SIGNAGE IS NOT REQUIRED. SIGNS SHALL BE INSTALLED ON BOTH SIDES OF ROADWAY APPROACHING WORK ZONE.
- BUS ROUTE TRAVEL LANES SHALL BE A MINIMUM OF 11 FEET IN WIDTH. OTHERWISE LANES SHALL BE MIN. 10 FEET.
- SIGNS MUST BE FHWA APPROVED/NCARP-350 RATED.
- ONE LANE IN EACH DIRECTION SHALL BE MARKED WITH CONES TO ALLOW TRAFFIC TO CONTINUE TRAVELING THROUGH 8TH STREET.
- RIGHT-OF-WAY WORK HOURS: MONDAY-FRIDAY 9AM-4PM

- PHASE I NOTES:
- CURB AND GUTTER AND CG-12 RAMP ON THE SOUTH SIDE OF 8TH STREET SOUTH SHALL BE INSTALLED DURING PHASE II CONSTRUCTION.
 - ONE 12FT LANE IN EACH DIRECTION SHALL BE MARKED WITH CONES TO ALLOW TRAFFIC TO CONTINUE TRAVELING THROUGH 8TH STREET.
 - EXPECTED DURATION OF 1 WEEK

PHASE II NOTES:

- CURB AND GUTTER AND CG-12 RAMP ON THE NORTH SIDE OF 8TH STREET SOUTH SHALL BE INSTALLED DURING PHASE II CONSTRUCTION.
- ONE 10FT LANE IN EACH DIRECTION SHALL BE MARKED WITH CONES TO ALLOW TRAFFIC TO CONTINUE TRAVELING THROUGH 8TH STREET.
- EXPECTED DURATION OF 1 WEEK

MAINTENANCE OF TRAFFIC NOTES:

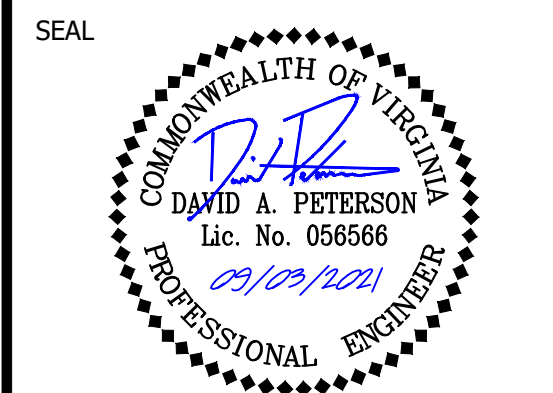
- THE DEVELOPER SHALL IMPLEMENT EACH APPROVED MOT. EXCEPTIONS MAY BE MADE DURING AN EMERGENCY AS DEFINED BELOW, DURING ACTUAL DEMOLITION WHEN INSPECTION SERVICES DIVISION HAS DETERMINED THAT PEDESTRIAN ACCESS ADJACENT TO THE SITE SHOULD BE LIMITED FOR SAFETY REASONS, AND FOR SUCH LIMITED PERIODS AS ARE UNAVOIDABLE FOR UTILITY UPGRADES. "EMERGENCY" STREET CLOSURES MAY INCLUDE, BUT NOT BE LIMITED TO, THOSE RELATING TO RUPTURE OR POTENTIAL RUPTURE OF A WATER OR GAS MAIN, UNSECURED BUILDING FACADE, OR SIMILAR UNFORESEEABLE PUBLIC DANGER. "EMERGENCY" STREET CLOSURES SHALL NOT INCLUDE CLOSURES FOR SETTING UP OR DISMANTLING OF A CRANE, EXTERIOR BUILDING CONSTRUCTION, MATERIALS DELIVERIES, UTILITIES WORK, OR SIMILAR SITUATIONS.

- MOT HAUL ROUTING FOR ALL PHASES OF CONSTRUCTION ACTIVITY SHALL ACCESS THE SITE VIA SOUTH GEORGE MASON DRIVE, DIRECTLY ADJACENT TO THE SITE, WHICH IS AN URBAN MINOR ARTERIAL PER ARLINGTON COUNTY 2005 FUNCTIONAL CLASSIFICATION.



DEPARTMENT OF PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 414
 ARLINGTON, VA 22201
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 FAX: 703.228.3328

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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS DATE

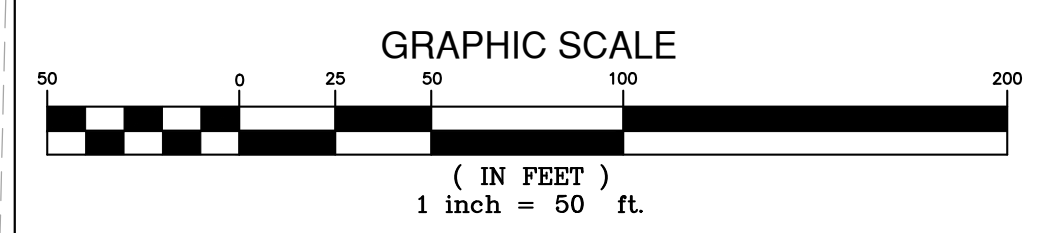
Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CLL
 DRAWN: CLL
 CHECKED: DAP
 MISS UTILITY TRANSMITTAL #: N/A
 FILENAME: 140049-D-CP-001-MOT.DWG
 PATH: P:\140049 - ALCOVA HEIGHTS PARK\140049-01-001 (ENG) - ALCOVA HEIGHTS PARK\ENGINEERING\ENGINEERING PLANS\CEP
 PLOTTED: September 20, 2021
 PLOTTED BY: VHOLTZMAN

MAINTENANCE OF TRAFFIC PLAN C17.00

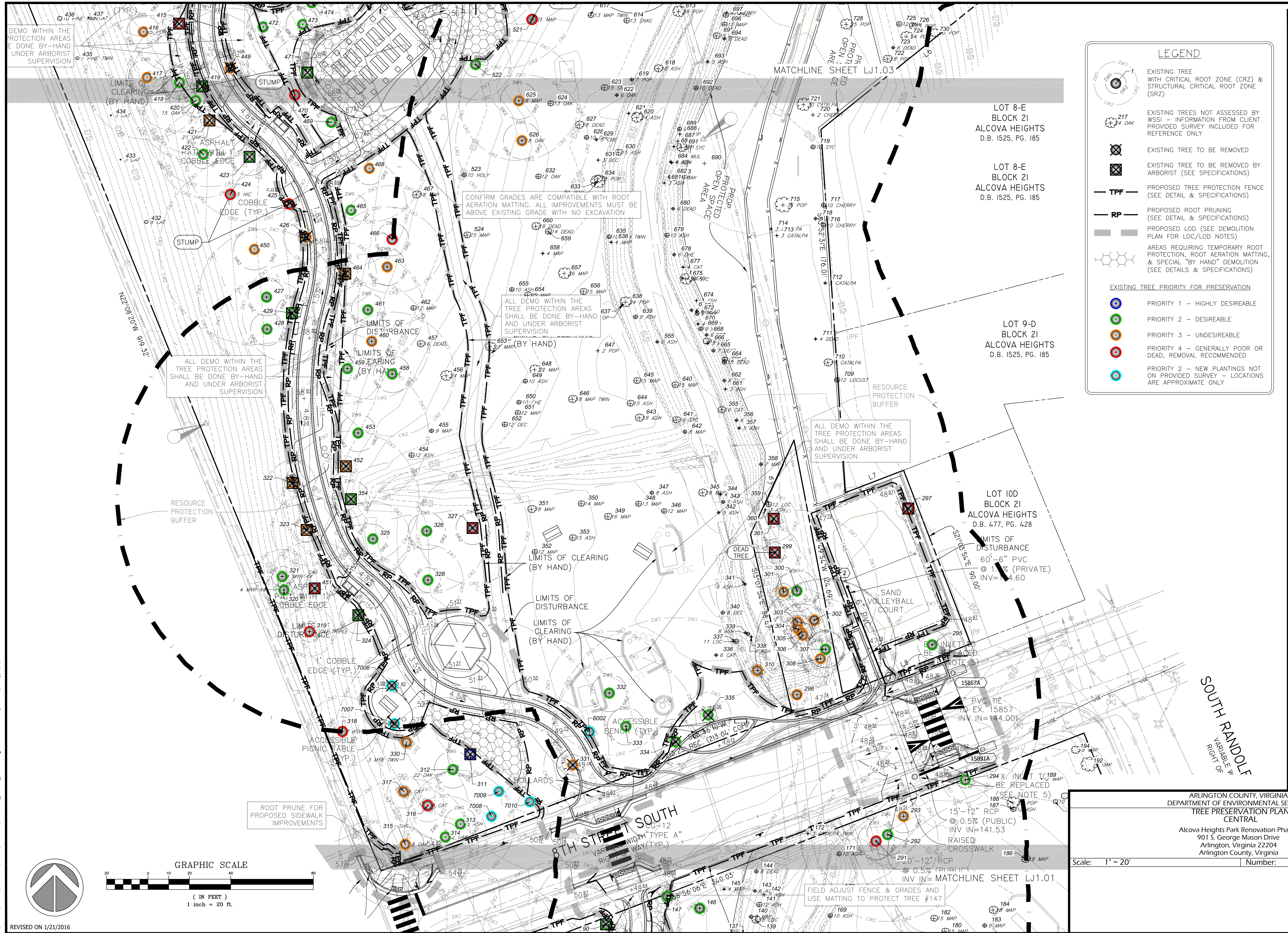
- LEGEND:
- PEDESTRIAN PATH DETOUR
 - TRAFFIC DRUMS/CONES
 - WORK SITE
 - SIGN DIRECTION OF TRAFFIC



ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

MAINTENANCE OF TRAFFIC PLAN
 Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: 1" = 50' Number: 27A of 68



LEGEND

- EXISTING TREE WITH CRITICAL ROOT ZONE (CRZ) & STRUCTURAL CRITICAL ROOT ZONE (SRZ)
- EXISTING TREES NOT ASSESSED BY WSSI - INFORMATION FROM CLIENT PROVIDED SURVEY INCLUDED FOR REFERENCE ONLY
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED BY ARBORIST (SEE SPECIFICATIONS)
- PROPOSED TREE PROTECTION FENCE (SEE DETAIL & SPECIFICATIONS)
- PROPOSED ROOT PRUNING (SEE DETAIL & SPECIFICATIONS)
- PROPOSED LOD (SEE DEMOLITION PLAN FOR LOC/LOD NOTES)
- AREAS REQUIRING TEMPORARY ROOT PROTECTION, ROOT AERATION MATTING, & SPECIAL "BY HAND" DEMOLITION (SEE DETAILS & SPECIFICATIONS)

EXISTING TREE PRIORITY FOR PRESERVATION

- PRIORITY 1 - HIGHLY DESIRABLE
- PRIORITY 2 - DESIRABLE
- PRIORITY 3 - UNDESIRABLE
- PRIORITY 4 - GENERALLY POOR OR DEAD, REMOVAL RECOMMENDED
- PRIORITY 2 - NEW PLANTINGS NOT ON PROVIDED SURVEY - LOCATIONS ARE APPROXIMATE ONLY



APPROVALS _____ DATE _____

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS _____ DATE _____

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME: 30542.01_ALCOVA_TREES.DWG
PATH: \\L:\300005\30500\30542.01\CADD\05-ENVR

PLOTTED: JULY 1 2021
PLOTTED BY: HULSEC

SHEET
TREE PRESERVATION PLAN CENTRAL

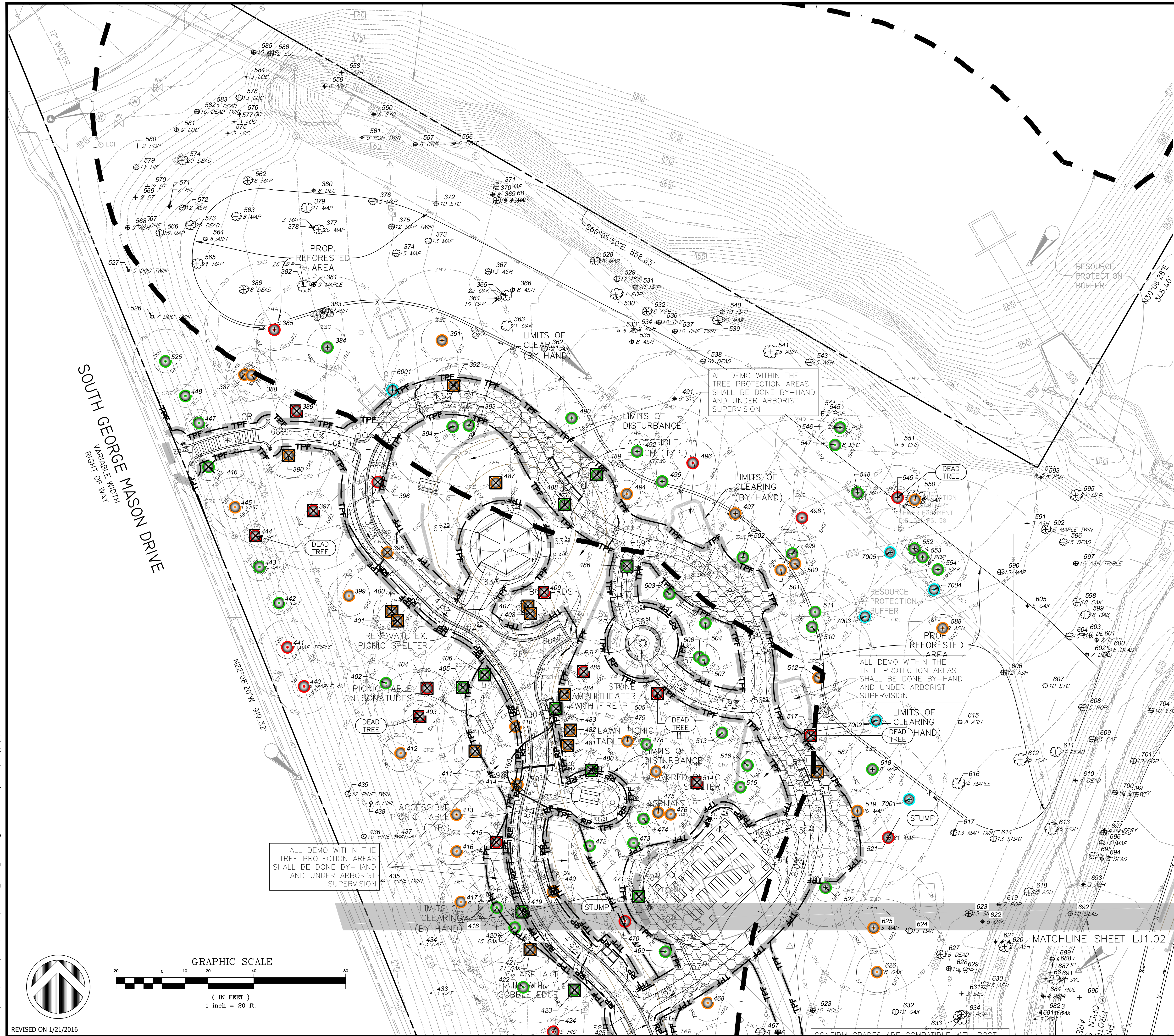
LJ1.02

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION PLAN CENTRAL

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 20' Number: 29 of 68

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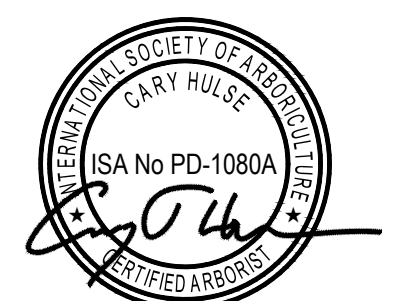


LEGEND

- EXISTING TREE WITH CRITICAL ROOT ZONE (CRZ) & STRUCTURAL CRITICAL ROOT ZONE (SRZ)
- EXISTING TREES NOT ASSESSED BY WSSI - INFORMATION FROM CLIENT PROVIDED SURVEY INCLUDED FOR REFERENCE ONLY
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO BE REMOVED BY ARBORIST (SEE SPECIFICATIONS)
- PROPOSED TREE PROTECTION FENCE (SEE DETAIL & SPECIFICATIONS)
- PROPOSED ROOT PRUNING (SEE DETAIL & SPECIFICATIONS)
- PROPOSED LOT (SEE DEMOLITION PLAN FOR LOC/LOD NOTES)
- AREAS REQUIRING TEMPORARY ROOT PROTECTION, ROOT AERATION MATTING, & SPECIAL "BY HAND" DEMOLITION (SEE DETAILS & SPECIFICATIONS)

EXISTING TREE PRIORITY FOR PRESERVATION

- PRIORITY 1 - HIGHLY DESIRABLE
- PRIORITY 2 - DESIRABLE
- PRIORITY 3 - UNDESIRABLE
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- PRIORITY 2 - NEW PLANTINGS NOT ON PROVIDED SURVEY - LOCATIONS ARE APPROXIMATE ONLY



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

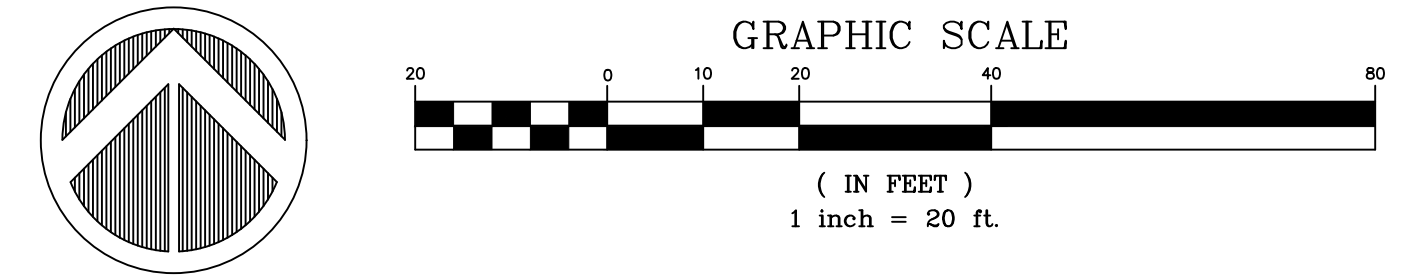
Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: 30542.01_ALCOVA_TREES.DWG
PATH: L:\300005\30500\30542.01\CADD\05-ENVR

PLOTTED: JULY 1 2021
PLOTTED BY: HULSEC
SHEET
TREE PRESERVATION PLAN NORTH
LJ1.03

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION PLAN NORTH
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: 1" = 20'
Number: 30 of 68



L:\300005\30500\30542.01\CADD\05-ENVR\30542.01_Alcova_Trees.dwg 1.03 Plotted By: Hulsec, Cary, 7/1/2021 7:31 PM
REVISED ON 1/21/2016
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Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.

Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.

TREE REMOVAL & WILDLIFE SNAGS:

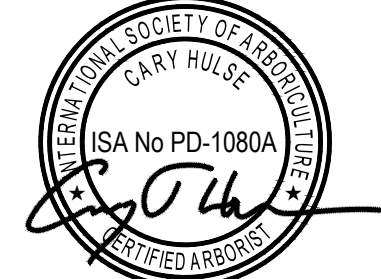
- 1. TREES RECOMMENDED FOR REMOVAL IN UNMANAGED AREAS AND/OR ALONG THE CREEK, MAY, AT THE DISCRETION OF THE ARLINGTON COUNTY ARBORIST, BE LEFT AS A WILDLIFE SNAG.
2. TREES LEFT AS WILDLIFE SNAGS SHALL BE TOPPED BY A QUALIFIED ARBORIST, LEAVING A TALL STUMP 10-20 FEET IN HEIGHT...



DEPARTMENT OF PARKS & RECREATION
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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME: 30542.01_ALCOVA_TREES.DWG
PATH: \\300005\30500\30542.01\CADD\05-ENVR

PLOTTED: JULY 1 2021
PLOTTED BY: HULSEC

SHEET TREE PRESERVATION SCHEDULE (1 OF 4)

LJ2.01

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION SCHEDULE (1 of 4)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: As Noted Number: 31 of 68

Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.

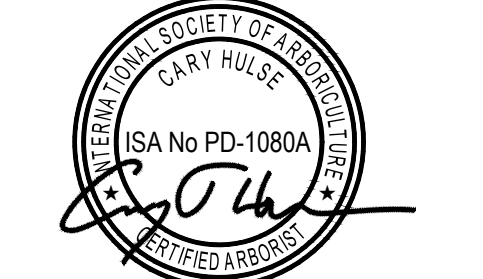
Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.



DEPARTMENT OF PARKS & RECREATION FACILITIES & ENGINEERING DIVISION ENGINEERING BUREAU 2100 CLARENDON BOULEVARD, SUITE 414 ARLINGTON, VA 22201 PHONE: 703.228.4747 FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME: 30542.01_ALCOVA_TREES.DWG
PATH: \\300005\30500\30542.01\CADD\05-ENVR\30542.01

PLOTTED: JULY 1 2021
PLOTTED BY: HULSEC

SHEET

TREE PRESERVATION SCHEDULE (3 OF 4)

LJ2.03

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION SCHEDULE (3 of 4)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As Noted Number: 33 of 68

Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.

Table with columns: Tree #, DBH, Common Name, Botanical Name, Condition Rating, Condition Railing, Approx. Canopy Radius (FT), Number of Stems, SCRZ, CRZ, Priority (1-4), Removal, Impact Comments, Additional Notes, Condition Notes. Includes a 'Tree Protection Action Key' legend.

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DEPARTMENT OF PARKS & RECREATION FACILITIES & ENGINEERING DIVISION ENGINEERING BUREAU 2100 CLARENDON BOULEVARD, SUITE 414 ARLINGTON, VA 22201 PHONE: 703.228.4747 FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: CH DRAWN: CH CHECKED: DM, CK MISS UTILITY TRANSMITTAL #: N/A

FILENAME: 30542.01_ALCOVA_TREES.DWG PATH: L:\300005\30500\30542.01\CADD\05-ENR

PLOTTED: JULY 1 2021 PLOTTED BY: HULSEC

SHEET TREE PRESERVATION SCHEDULE (4 OF 4)

LJ2.04

ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES TREE PRESERVATION SCHEDULE (4 of 4) Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia Scale: As Noted Number: 34 of 68

Tree #	DBH (inches)	Species	In RPA (Y/N)	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacements Required
32	6	ZZ Unknown dead tree	Yes	Yes	0%	0%	0.00	0
33	7	ZZ Unknown dead tree	Yes	Yes	0%	0%	0.00	0
34	32	Platanus occidentalis	Yes	No	73%	58%	13.47	0
35	0	NO TREE	No	No	0%	0%	0.00	0
36	9	Ulmus americana	Yes	No	70%	53%	3.29	0
37	10	Juglans nigra	Yes	No	70%	68%	4.70	0
38	3	Ulmus americana	Yes	No	70%	53%	1.10	0
39	17	Acer rubrum	Yes	No	68%	70%	7.86	0
40	29	Liriodendron tulipifera	Yes	No	43%	70%	8.70	0
41	21	Acer rubrum	Yes	No	43%	70%	6.30	0
42	24	Liriodendron tulipifera	Yes	Yes	55%	70%	9.30	2
43	9	Acer rubrum	Yes	No	30%	70%	1.91	0
44	26	Acer rubrum	Yes	Yes	0%	70%	0.00	0
45	11	Nyssa sylvatica	Yes	No	70%	80%	6.13	0
46	8	Nyssa sylvatica	Yes	No	39%	80%	2.51	0
47	9	Nyssa sylvatica	Yes	No	70%	80%	5.01	0
48	6	Ligustrum japonicum	Yes	Yes	70%	30%	1.27	1
49	9	Ulmus americana	Yes	No	61%	53%	2.87	0
50	23	Acer rubrum	Yes	No	57%	70%	9.20	0
51	5	Prunus serotina	Yes	Yes	25%	55%	0.69	1
52	9	Fraxinus spp.	Yes	Yes	0%	25%	0.00	0
53	11	Liriodendron tulipifera	Yes	No	70%	70%	5.36	0
54	8	Prunus serotina	Yes	No	55%	55%	2.44	0
55	14	Diospyros virginiana	Yes	No	71%	70%	7.00	0
56	27	Acer rubrum	Yes	No	63%	70%	11.81	0
57	11	Acer rubrum	Yes	No	55%	70%	4.26	0
58	18	Liriodendron tulipifera	Yes	No	66%	70%	8.33	0
58A	14	Acer rubrum	Yes	No	54%	70%	5.25	0
59	15	Liriodendron tulipifera	Yes	No	70%	70%	7.31	0
60	26	Liriodendron tulipifera	Yes	No	79%	70%	14.30	0
61	8	Diospyros virginiana	Yes	No	68%	70%	3.80	0
62	5	Fagus grandifolia	Yes	No	82%	80%	3.29	0
63	2	Platanus occidentalis	Yes	No	43%	58%	0.00	0
64	9	Catalpa speciosa	Yes	No	68%	45%	2.68	0
69	19	Liriodendron tulipifera	Yes	No	72%	70%	9.98	0
70	14	Liriodendron tulipifera	Yes	No	45%	70%	4.38	0
71	23	Platanus occidentalis	Yes	No	71%	58%	9.45	0
72	2	Liriodendron tulipifera	Yes	No	73%	70%	0.00	0
74	2	Platanus occidentalis	Yes	No	73%	58%	0.00	0
75	2	Liriodendron tulipifera	Yes	No	73%	70%	0.00	0
76	12	Lagerstroemia indica	Yes	No	73%	78%	6.81	0
77	12	Lagerstroemia indica	Yes	No	73%	78%	6.81	0
78	9	Lagerstroemia indica	No	No	70%	78%	4.86	0
79	15	Acer rubrum	Yes	No	52%	70%	5.41	0
80	23	Carya glabra	Yes	No	69%	75%	11.86	0
81	11	Diospyros virginiana	Yes	No	63%	70%	4.81	0
83	2	Ulmus americana	No	No	71%	53%	0.00	0
84	17	Platanus occidentalis	No	No	72%	58%	7.05	0
85	16	Liriodendron tulipifera	No	No	72%	70%	8.05	0
86	6	Ilex opaca	Yes	No	70%	73%	3.06	0
87	11	Carya tomentosa	No	No	83%	75%	6.83	0
88	19	Ailanthus altissima	No	Yes	56%	43%	4.54	1
89	26	Quercus alba	Yes	No	70%	88%	15.84	0

Tree #	DBH (inches)	Species	In RPA (Y/N)	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacements Required
295	13	Liriodendron tulipifera	Yes	No	80%	70%	7.31	0
296	0	NO TREE	No	No	0%	0%	0.00	0
297	4	Catalpa speciosa	Yes	Yes	64%	45%	1.16	1
298	3	Catalpa speciosa	Yes	No	68%	45%	0.92	0
299	8	Morus alba	Yes	Yes	0%	45%	0.00	0
300	26	Pinus strobus	Yes	No	70%	55%	10.05	0
301	7	Robinia pseudoacacia	Yes	No	59%	55%	2.27	0
302	2	Robinia pseudoacacia	Yes	No	55%	55%	0.00	0
303	5	Ulmus pumila	Yes	No	66%	35%	1.16	0
304	13	Ulmus pumila	Yes	No	57%	35%	2.60	0
305	9	Ulmus pumila	Yes	No	64%	35%	2.03	0
306	10	Ulmus pumila	Yes	No	64%	35%	2.25	0
307	23	Platanus occidentalis	Yes	No	63%	58%	8.27	0
308	19	Acer rubrum	Yes	No	55%	70%	7.36	0
310	4	Ulmus americana	Yes	No	68%	53%	1.43	0
311	45	Quercus alba	No	Yes	64%	88%	25.31	6
312	23	Quercus alba	No	No	66%	88%	13.21	0
313	17	Carya tomentosa	No	No	70%	75%	8.96	0
314	13	Quercus alba	No	No	69%	88%	7.82	0
315	21	Quercus alba	No	No	58%	88%	10.62	0
316	5	Cercis canadensis	No	No	39%	73%	1.42	0
317	5	Cercis canadensis	No	No	53%	73%	1.93	0
318	12	Prunus serrulata	Yes	No	33%	56%	2.17	0
319	8	Cercis canadensis	Yes	No	41%	73%	2.36	0
320	6	Lagerstroemia indica	Yes	No	72%	78%	3.34	0
321	9	Lagerstroemia indica	Yes	No	72%	78%	5.01	0
322	7	Cercis canadensis	Yes	Yes	59%	73%	2.99	1
323	11	Acer rubrum	Yes	Yes	63%	70%	4.81	1
324	20	Acer rubrum	Yes	Yes	66%	70%	9.25	2
325	12	Acer rubrum	Yes	No	70%	70%	5.85	0
326	20	Acer rubrum	Yes	No	68%	70%	9.50	0
327	18	Acer rubrum	Yes	Yes	61%	70%	7.65	2
328	11	Diospyros virginiana	Yes	No	68%	70%	5.23	0
329	0	NO TREE	No	No	0%	0%	0.00	0
330	4	Lagerstroemia indica	No	No	67%	78%	2.08	0
331	9	Diospyros virginiana	Yes	Yes	70%	70%	3.83	1
332	20	Quercus alba	Yes	No	64%	88%	11.25	0
333	23	Quercus phellos	Yes	No	66%	75%	11.40	0
334	40	Quercus alba	Yes	Yes	50%	88%	17.50	4
335	7	Cercis canadensis	Yes	Yes	68%	73%	3.44	1
354	22	Platanus occidentalis	Yes	Yes	77%	58%	9.71	2
361	7	Robinia pseudoacacia	Yes	Yes	25%	55%	0.96	1
384	21	Nyssa sylvatica	Yes	No	68%	80%	11.40	0
385	20	Acer rubrum	Yes	No	38%	70%	5.25	0
387	8	Acer rubrum	No	No	59%	70%	3.30	0
388	7	Acer rubrum	No	No	54%	70%	2.63	0
389	19	Acer rubrum	No	Yes	23%	70%	3.09	1
390	28	Nyssa sylvatica	No	Yes	59%	80%	13.20	3
391	21	Quercus alba	Yes	No	63%	88%	11.48	0
392	20	Quercus alba	Yes	Yes	61%	88%	10.63	3
393	18	Quercus alba	Yes	No	68%	88%	10.69	0
394	20	Quercus alba	Yes	No	63%	88%	10.94	0
395	0	NO TREE	No	No	0%	0%	0.00	0

Tree #	DBH (inches)	Species	In RPA (Y/N)	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacements Required
461	18	Acer rubrum	Yes	No	68%	70%	8.55	0
463	19	Acer rubrum	Yes	No	57%	70%	7.60	0
464	10	Nyssa sylvatica	Yes	Yes	54%	80%	4.29	1
465	18	Acer rubrum	No	No	64%	70%	8.10	0
466	17	Acer rubrum	No	No	48%	70%	5.74	0
468	17	Acer rubrum	No	No	54%	70%	6.38	0
469	13	Acer rubrum	No	No	63%	70%	5.69	0
470	0	ZZ Unknown stump	No	No	0%	0%	0.00	0
471	12	Nyssa sylvatica	No	Yes	64%	80%	6.17	2
472	17	Liquidambar styraciflua	No	No	64%	65%	7.10	0
473	17	Liquidambar styraciflua	No	No	70%	65%	7.70	0
474	12	Nyssa sylvatica	No	No	66%	80%	6.34	0
475	9	Nyssa sylvatica	No	No	59%	80%	4.24	0
476	12	Nyssa sylvatica	No	No	61%	80%	5.83	0
477	10	Nyssa sylvatica	No	No	59%	80%	4.71	0
478	10	Nyssa sylvatica	No	No	66%	80%	5.29	0
479	19	Acer rubrum	No	No	57%	70%	7.60	0
480	17	Nyssa sylvatica	No	Yes	66%	80%	8.99	2
481	8	Nyssa sylvatica	No	Yes	64%	80%	4.11	1
482	27	Acer rubrum	No	Yes	48%	70%	9.11	2
483	12	Nyssa sylvatica	No	Yes	68%	80%	6.51	2
484	24	Acer rubrum	No	Yes	57%	70%	9.80	2
485	18	Acer rubrum	No	Yes	46%	70%	5.85	2
486	11	Acer rubrum	No	Yes	68%	70%	5.23	2
487	20	Quercus alba	Yes	Yes	55%	88%	9.69	2
488	34	Quercus alba	Yes	Yes	61%	88%	18.06	4
489	17	Quercus alba	Yes	Yes	64%	88%	9.56	2
490	12	Nyssa sylvatica	Yes	No	68%	80%	6.51	0
492	16	Quercus alba	Yes	No	71%	88%	10.00	0
493	0	NO TREE	No	No	0%	0%	0.00	0
494	10	Acer rubrum	Yes	No	50%	70%	3.50	0
495	22	Liriodendron tulipifera	Yes	No	64%	70%	9.90	0
496	33	Acer rubrum	Yes	No	48%	70%	11.14	0
497	5	Acer rubrum	Yes	No	63%	70%	2.19	0
498	28	Acer rubrum	Yes	No	64%	70%	10.50	0
499	25	Liriodendron tulipifera	Yes	No	73%	70%	12.81	0
500	9	Nyssa sylvatica	Yes	No	61%	80%	4.37	0
501	8	Nyssa sylvatica	Yes	No	63%	80%	4.00	0
502	20	Nyssa spp.	Yes	No	75%	80%	12.00	0
503	11	Acer rubrum	No	No	70%	70%	5.36	0
504	14	Acer rubrum	No	No	64%	70%	6.30	0
505	11	Fraxinus pennsylvanica	No	Yes	0%	25%	0.00	0
506	13	Nyssa sylvatica	No	No	70%	80%	7.24	0
507	12	Nyssa sylvatica	No	No	68%	80%	6.51	0
508	0	NO TREE	No	No	0%	0%	0.00	0
509	0	NO TREE	No	Yes	0%	0%	0.00	0
510	10	Nyssa sylvatica	Yes	No	68%	80%	5.43	0
511	12	Nyssa sylvatica	Yes	No	68%	80%	6.51	0
512	18	Acer rubrum	No	No	59%	70%	7.43	0
513	9	Nyssa sylvatica	No	No	71%	80%	5.14	0
514	18	Acer rubrum	No	Yes	48%	70%	6.08	2
515	14	Diospyros virginiana	No	No	68%	70%	6.65	0
516	11	Nyssa sylvatica	No	No	68%	80%	5.97	0

Tree #	DBH (inches)	Species	In RPA (Y/N)	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacements Required
90	24	Quercus alba	Yes	Yes	70%	88%	14.63	3
91	0	NO TREE	No	No	0%	0%	0.00	0
92	14	Carya glabra	Yes	Yes	57%	75%	6.00	2
93	10	Carya tomentosa	Yes	Yes	75%	70%	4.55	1
94	23	Carya glabra	Yes	Yes	68%	70%	11.40	3
95	8	Diospyros virginiana	Yes	Yes	59%	70%	3.30	1
96	10	Carya tomentosa	Yes	Yes	71%	75%	5.36	1
97	29	Prunus serotina	Yes	Yes	52%	55%	8.26	2

TREE PRESERVATION SPECIFICATIONS AND NARRATIVE

1. **GENERAL**
 - 1.1. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND ARLINGTON COUNTY.
 - 1.2. SUBSTITUTIONS OR ALTERNATIVE METHODS OR MATERIALS SHALL BE REVIEWED AND APPROVED BY ARLINGTON COUNTY.
 - 1.3. ALL TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION. TREE PROTECTION MEASURES MAY ONLY BE REMOVED WITH ARLINGTON COUNTY APPROVAL.
 - 1.4. REFER TO THE TREE PROTECTION ACTION KEY (TPAK) FOR SPECIFIC RECOMMENDATIONS FOR EACH TREE.
 - 1.5. REFER TO LANDSCAPE PLAN FOR MATERIALS AND ADDITIONAL INFORMATION.
2. **REMOVAL BY ARBORIST**
 - 2.1. TREES DESIGNATED AS "REMOVAL BY ARBORIST" SHALL BE REMOVED BY A QUALIFIED ARBORIST "BY HAND", TO MINIMIZE POTENTIAL FOR DAMAGE TO REMAINING TREES AND ROOTS.
 - 2.2. CREWS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
 - 2.3. TRUCKS AND MECHANIZED EQUIPMENT SHALL NOT ENTER THE FENCED TREE PROTECTION AREAS.
 - 2.4. STUMPS SHALL BE LEFT IN PLACE OR GROUND OUT AT THE OWNERS DISCRETION. STUMPS IN TURF/LANDSCAPE AREAS OR WITHIN ROOT AERATION MATTING AREAS SHALL BE GROUND.
 - 2.5. STUMP GRINDING SHALL BE WITH SMALL MACHINES SPECIFICALLY DESIGNED FOR THAT PURPOSE. NO STUMPS SHALL BE EXCAVATED EXCEPT AS DESCRIBED HEREIN. STUMPS SHALL BE GROUND NOT MORE THAN 8" BELOW GRADE AND CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO ROOTS OF RETAINED TREES.
3. **TREE PROTECTION FENCE**
 - 3.1. TYPICALLY, INSTALL AFTER ROOT PRUNING AND PRIOR TO CLEARING & GRADING.
 - 3.2. FENCE SHALL BE 6' HIGH CHAIN LINK FENCE FABRIC MOUNTED ON 8', 1.5" GALVANIZED STEEL PIPE LINE POSTS. CORNER POSTS SHALL BE 2". FENCE SHALL BE ATTACHED TO POSTS USING ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.
 - 3.3. TREE PROTECTION AREA SIGNS SHALL BE AFFIXED TO ALL TREE PROTECTION FENCE AT 30' SPACING AVERAGE. SIGNS SHALL BE BILINGUAL (ENGLISH AND SPANISH). SIGNS SHALL NOT BE AFFIXED DIRECTLY TO TREES. SEE DETAIL.
 - 3.4. SILT FENCE SHALL BE COORDINATED FOR INSTALLATION TO ENHANCE PROTECTION AND AVOID UNNECESSARY ROOT CUTS BY SILT FENCE INSTALLATION.
 - 3.5. FENCE MAY BE REMOVED ONLY AFTER ALL CONSTRUCTION AND FINAL LANDSCAPING IS COMPLETE AND WITH ARLINGTON COUNTY APPROVAL.
4. **ROOT PRUNE**
 - 4.1. THE EXACT LOCATION AND DEPTH WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. SPECIFIC EQUIPMENT & METHODS WILL BE DETERMINED BY ARLINGTON COUNTY BASED UPON DEPTH & TREE IMPACT. (SEE DETAIL)
 - 4.2. HAND PRUNE ROOTS OVER 1" DIAMETER WITHIN CRZS OF SIGNIFICANT TREES. STEEP SLOPES, DEEP EXCAVATIONS AND PAVEMENT/CURB REMOVAL WILL BE REVIEWED WHEN OPEN FOR HAND ROOT PRUNING DURING CONSTRUCTION.
 - 4.3. COORDINATE WITH SILT FENCE INSTALLATION TO MINIMIZE UNNECESSARY ROOT DAMAGE.
 - 4.4. ROOT PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST.
5. **WOOD CHIP MULCH**
 - 5.1. INSTALL MULCH FOR DESIGNATED SIGNIFICANT TREES. MULCH AREA SHALL BE ONE OF THE FOLLOWING, AT THE DISCRETION OF THE CONTRACT ARBORIST AND OWNER:
 - 5.1.1. INSTALL MULCH BED RINGS. MULCH SHOULD COVER AT LEAST THE ENTIRE STRUCTURAL ROOT ZONE. LARGER MULCH BEDS ARE PREFERRED.
 - 5.1.2. PROVIDE CONTINUOUS MULCH STRIP 10' TO 15' WIDE ALONG LOD WITHIN PRESERVED CRZ AREAS.
 - 5.2. MULCH SHALL BE INSTALLED TO A DEPTH OF 4".
 - 5.3. MULCH SHALL BE DOUBLE GROUND SHREDDED HARDWOOD, AGED FOR AT LEAST 6 MONTHS FROM AN APPROVED SOURCE. INSUFFICIENTLY OR IMPROPERLY AGED MULCH CONTAINING HIGH BACTERIAL COUNTS OR HIGH LEVELS OF BARK OR OTHER MATERIALS RESISTANT TO DECOMPOSITION SHALL NOT BE USED. MULCH SHALL NOT CONTACT TRUNK OF TREES.
 - 5.4. EDGING IS NEITHER NECESSARY NOR DESIRABLE FOR THIS OPERATION.
6. **CONSTRUCTION MONITORING/INSPECTIONS**
 - 6.1. A CERTIFIED ARBORIST SHALL MAKE REGULAR MONTHLY INSPECTIONS DURING ACTIVE CONSTRUCTION AND DEMOLITION AND PROVIDE REPORTS TO ARLINGTON COUNTY. REPORTS SHALL DOCUMENT CONDITION OF TREE PROTECTION DEVICES AND PROVIDE RECOMMENDATIONS FOR MAINTENANCE AND/OR ADDITIONAL CARE.
7. **MISCELLANEOUS TREE PROTECTION REQUIREMENTS**
 - 7.1. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100' OF TREE PROTECTION AREAS.
 - 7.2. ALL WORK IN OR NEAR TREE PROTECTION AREAS SHALL BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO TREES, SHRUBS, GROUND COVER, SOIL AND ROOT SYSTEMS.
 - 7.3. MECHANIZED EQUIPMENT SHALL NOT BE PERMITTED TO ENTER ANY TREE PROTECTION AREAS.
8. **CANOPY PRUNING & SUPPORT CABLES**
 - 8.1. CANOPY PRUNING SHALL BE CLEANING PRUNING AND/OR RESTORATION PRUNING AND SHALL BE IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES.
 - 8.2. PRUNING SHALL REMOVE ONLY DEAD, DYING, DAMAGED OR BROKEN BRANCHES GREATER THAN 1" IN DIAMETER. PRUNING OF SMALL TREES MAY INCLUDE REMOVAL OF LIMBS TO IMPROVE STRUCTURE.
 - 8.3. FOLIAGE REMOVAL SHALL NOT BE MORE THAN 25% OF THE TOTAL LIVE CANOPY VOLUME OF ANY TREE IN ANY ONE SEASON. PRUNING SHALL NOT REMOVE INTERIOR BRANCHING EXCEPT AS OTHERWISE STATED.
 - 8.4. PRUNING FOR SPECIFIC CLEARANCE (FOR CONSTRUCTION ACCESS OR PROPOSED IMPROVEMENTS) SHALL BE REVIEWED AND APPROVED BY THE OWNER AND ARLINGTON COUNTY.
 - 8.5. SUPPORT CABLES SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES AS APPROVED BY PROJECT OFFICER AND URBAN FORESTER.
9. **CONSTRUCTION STRATEGIES FOR TREE PROTECTION**
 - 9.1. CONSTRUCTION STAGING, STOCKPILING EQUIPMENT STORAGE, ETC. SHALL BE LIMITED TO AREAS OF EXISTING PAVEMENT AND AREAS WITHIN THE LOD EXCEPT AS OTHERWISE NOTED.
 - 9.2. CONSTRUCTION EQUIPMENT ACCESS BETWEEN VARIOUS WORK AREAS SHALL REMAIN ON EXISTING PAVEMENT/IMPROVED SURFACES TO THE GREATEST EXTENT POSSIBLE. WHERE THIS IS NOT POSSIBLE AND WITHIN THE CRITICAL ROOT ZONE (CRZ) OF ANY TREE TO REMAIN, ACCESS SHALL BE MADE ON ROOT PROTECTION MATTING (RPM)(SEE DETAIL) OR APPROVED ALTERNATIVE. CONTRACTOR TO DETERMINE ACCESS NEEDS AND COORDINATE RPM INSTALLATION WITH THE CONTRACT ARBORIST AT THE PRE-CONSTRUCTION MEETING OR BEFORE.
 - 9.3. PROPOSED LANDSCAPE PLANTINGS OUTSIDE THE LOD SHALL BE INSTALLED BY HAND. MECHANIZED EQUIPMENT SHALL NOT BE USED OUTSIDE THE LOD OR OFF OF EXISTING PAVED AREAS TO EXCAVATE FOR PLANTINGS OR FOR STAGING PLANT MATERIAL.
 - 9.4. COORDINATE PLANTING LOCATIONS WITHIN CRZS WITH THE CONTRACT ARBORIST TO AVOID UNNECESSARY ROOT DAMAGE. PLANTING AREAS WITHIN CRZS SHOULD BE DUG BY HAND. ROOTS GREATER THAN 1.5" SHOULD NOT BE CUT.

10. SPECIAL DEMOLITION PROCEDURES

- 10.1. DEMOLITION OF WALKS AND CURBS WITHIN TREE PROTECTION AREAS (TPAS) SHALL BE PERFORMED BY THE CONTRACT ARBORIST OR DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
 - 10.2. MECHANIZED EQUIPMENT SHALL NOT ENTER THE TPAS.
 - 10.3. BACKFILL OF VOIDS FROM DEMOLITION WITHIN THE TPAS SHALL BE LOOSELY PLACED TOPSOIL. ONLY THE AMOUNT OF SOIL NECESSARY TO FILL THE VOID WITHOUT SPREADING OVER EXISTING ADJACENT GRADES SHALL BE ALLOWED.
 - 10.4. ROOTS ENCOUNTERED DURING DEMOLITION SHALL BE REVIEWED ON A CASE-BY-CASE BASIS BY THE CONTRACT ARBORIST. THE ARBORIST SHALL PROVIDE APPROPRIATE TREATMENT OR PRUNING METHODS AS NEEDED AND IN GENERAL CONFORMANCE WITH ACCEPTED INDUSTRY STANDARDS AND THIS SECT
11. **TREE CONDITION MONITORING INSPECTIONS**
- 11.1. CONTRACT ARBORIST SHALL PROVIDE MONITORING OF THE CONDITION OF RETAINED TREES IN TREE PROTECTION AREAS, AND TREATMENT OF DETRIMENTAL CONDITIONS (INSECTS, DISEASES, NUTRIENT DEFICIENCIES, SOIL MOISTURE, ETC.), AS THEY OCCUR, OR AS APPROPRIATE FOR EFFECTIVE MANAGEMENT.
 - 11.2. INSPECTIONS SHALL BE PERFORMED AT LEAST MONTHLY DURING THE GROWING SEASON, BEGINNING PRIOR TO CONSTRUCTION AND CONTINUING THROUGHOUT CONSTRUCTION AND FOR AT LEAST ONE YEAR SUBSEQUENT TO COMPLETION OF CONSTRUCTION ACTIVITIES.
 - 11.3. A WRITTEN SUMMARY REPORT INCLUDING SPECIFIC TREATMENTS MADE AND RECOMMENDATIONS FOR ADDITIONAL TREATMENTS SHALL BE PROVIDED TO THE OWNER AND PROJECT ARBORIST SUBSEQUENT TO EACH INSPECTION.
12. **ROOT PROTECTION MATTING**
- 12.1. TEMPORARY MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED SHORT TERM CONSTRUCTION TRAFFIC IMPACTS.
 - 12.2. TO PREPARE SITE, REMOVE ANY DEBRIS BY HAND AND SPREAD AN EVEN LAYER OF WOOD CHIP MULCH 4-6" THICK OVER THE ENTIRE AREA TO RECEIVE MATTING.
 - 12.3. MATTING SHALL BE INSTALLED IN A SINGLE LAYER ON MULCH.
 - 12.4. TOPSOIL SHALL NOT BE DISTURBED OR REMOVED. NO GRUBBING, GRADING, EXCAVATION OR EQUIPMENT TRAFFIC SHALL BE ALLOWED IN THE AREA TO RECEIVE RPM. EQUIPMENT MAY TRAVEL ON RPM AFTER IT IS INSTALLED, BUT SHOULD BE MINIMIZED. TRACKED EQUIPMENT SHOULD NOT TURN ON RPM TO AVOID DAMAGE.
 - 12.5. MATTING MATERIAL SHALL BE TENSAR ROADRAIN RD7 OR APPROVED EQUIVALENT.
 - 12.6. RPM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
 - 12.7. RPM SHALL NOT BE REMOVED BY SITE CONTRACTORS.
13. **ROOT AERATION MATTING**
- 13.1. PERMANENT MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED GRADE FILLS AND STRUCTURES.
 - 13.2. RAM INSTALLATION SHALL INCORPORATE GEOGRID LAYER BETWEEN RAM AND AGGREGATE FILL. REFER TO GEOGRID SECTION.
 - 13.3. AREAS TO RECEIVE RAM SHALL NOT BE COMPACTED, GRUBBED OR OTHERWISE DISTURBED.
 - 13.4. INSTALL A SINGLE LAYER OF MATTING ON EXISTING, UNDISTURBED GRADE. REMOVE DEBRIS BY HAND.
 - 13.5. TEMPORARY FENCING (ORANGE PLASTIC OR OTHER) MUST BE INSTALLED IN THE AREAS TO RECEIVE RAM IF FILL IS NOT TO BE PLACED IMMEDIATELY AT THE BEGINNING OF CONSTRUCTION.
 - 13.6. TOPSOIL SHALL NOT BE DISTURBED OR REMOVED. NO GRUBBING, GRADING, EXCAVATION OR EQUIPMENT TRAFFIC SHALL BE ALLOWED IN THE AREA TO RECEIVE RAM. EQUIPMENT MAY TRAVEL ON RAM AFTER IT IS INSTALLED AND FILL MATERIAL PLACED, BUT SHOULD BE MINIMIZED.
 - 13.7. MATTING MATERIAL SHALL BE TENSAR ROADRAIN RD7 OR APPROVED EQUIVALENT.
 - 13.8. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
 - 13.9. RAM IS PERMANENT AND SHALL NOT BE REMOVED BY SITE CONTRACTORS. FILL MATERIAL SHALL BE PLACED DIRECTLY ON RAM.
 - 13.10. FILTER FABRIC (SILT FENCE FABRIC) SHALL BE INSTALLED IN 2 LAYERS AS SHOWN IN THE DETAIL (NOT TRENCHED) TO PROTECT THE RAM CORE FROM CONTAMINATION. INSTALLATION OF SILT FENCE FOR EROSION CONTROL SHALL BE COORDINATED WITH THE ARBORIST AND MUST BE PERFORMED BY THE ARBORIST TO PREVENT DAMAGE TO TREE ROOTS FROM TRENCHING OPERATIONS. EROSION CONTROL SOCKS MAY BE USED IN LIEU OF SILT FABRIC.

ARLINGTON COUNTY STANDARD TREE PROTECTION NOTES

1. BEFORE ANY GRADING, DEMOLITION, OR OTHER DISTURBANCE, TREE PROTECTION NEEDS TO BE INSTALLED PER PLAN, AND INSPECTED BY AN ARLINGTON COUNTY PARKS AND RECREATION URBAN FORESTER. EROSION AND SEDIMENT CONTROLS ARE INSPECTED BY THE DEPARTMENT OF ENVIRONMENTAL SERVICES.
2. PLANTS SHALL BE FURNISHED AND INSTALLED AS INDICATED, INCLUDING ALL PLANTS, MATERIALS, AND EQUIPMENT.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS, WELL-DEVELOPED DENSELY FOLIATED BRANCHES, AND VIGOROUS ROOT SYSTEMS; AND BE FREE FROM DEFECTS AND INJURIES.
4. PLANTS SHALL BE PLANTED ON THE DAY OF DELIVERY IF/WHEN PRACTICAL. IN THE EVENT THAT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE-DAY PERIOD AFTER DELIVERY. ANY PLANTS NOT INSTALLED DURING THIS PERIOD SHALL BE REJECTED, UNLESS OWNER AND CONTRACTOR PROVIDE OTHERWISE BY WRITTEN AGREEMENT. ALL PLANTS KEPT ON SITE FOR ANY PERIOD OF TIME SHOULD BE WATERED AND CARED FOR USING ANSI A300 STANDARDS.
5. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES. PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY.
6. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOP SOIL THAT IS IN MUDDY OR FROZEN CONDITION. LAWNS, TREES AND SHRUBS SHALL BE INSTALLED BETWEEN 03/15 AND 06/15 OR BETWEEN 09/15 AND 12/01. IF A PROJECT COMPLETION IS OUTSIDE OF THIS PLANTING PERIOD, CONTACT THE ARLINGTON COUNTY URBAN FORESTER TO OBTAIN A DEFERRAL OR APPROVAL FOR PLANTING OUT OF SEASON.
7. NO PLANT, EXCEPT GROUND COVERS, SHALL BE PLANTED WITHIN TWO FEET OF A SIDEWALK.
8. TREES AND SHRUBS SHALL BE PLANTED IN HOLES TWO TO THREE TIMES AS WIDE AND TO THE DEPTH OF THE ROOT BALL.
9. PLANTS SHALL BE PLANTED IN IN-SITU SOIL THAT IS THOROUGHLY WATERED (PRIOR TO PLANING).
10. SET ALL PLANTS PLUMB AND STRAIGHT SET AT SUCH LEVEL THAT NORMAL OR NATURAL RELATIONSHIP BETWEEN THE PLANT AND THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE THE PLANT IN THE CENTER OF THE PIT.
11. INJURED ROOTS SHALL BE PRUNED TO CLEAN ENDS BEFORE PLANTING WITH CLEAN, SHARP TOOLS. THE LEADER OF TREES SHALL NOT BE CUT BACK.
12. PRESERVED AND PLANTED TREES MUST BE INSPECTED AND APPROVED BY A DEPARTMENT OF PARKS AND RECREATION URBAN FORESTER.
13. ALL DISTURBED AREAS SHALL BE TREATED WITH 4" TOP SOIL OR COMPOST AND SEEDED IN ACCORDANCE WITH PERMANENT STABILIZATION METHODS INDICATED ON SOIL EROSION AND SEDIMENT CONTROL SHEET AND/OR LANDSCAPE PLAN.

PRE-CONSTRUCTION MEETING:

1. PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO COMMENCEMENT OF DEMOLITION/CONSTRUCTION ACTIVITY. ARLINGTON COUNTY, OWNER, DESIGN TEAM MEMBERS (PROJECT ARBORIST, LANDSCAPE ARCHITECT, ENGINEER AND ARCHITECT), CONTRACT ARBORIST, SITE AND LANDSCAPE CONTRACTORS SHALL ATTEND.
2. CONTRACTOR SHALL CALL THE ARLINGTON COUNTY URBAN FORESTER AT 703-228-6557 AT LEAST 72 HOURS BEFORE THE START OF ANY LAND DISTURBANCE TO DISCUSS AND SCHEDULE INSPECTION OF TREE PROTECTION MEASURES.

TREE RISK NOTES:

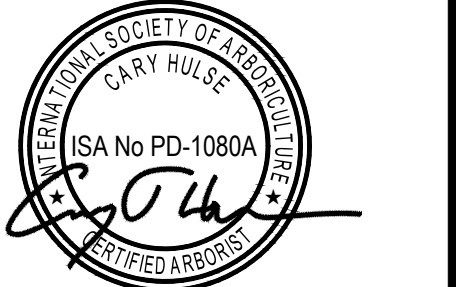
1. TREES RATED "POOR", "CRITICAL", OR "DEAD" THAT ARE NOT RECOMMENDED FOR REMOVAL DUE TO CONSTRUCTION IMPACT MAY WARRANT FURTHER EVALUATION AND/OR TREATMENT OR REMOVAL.
2. A TREE RISK ASSESSMENT SHOULD BE COMPLETED BY THE OWNER AFTER CONSTRUCTION IS COMPLETED.



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova
Heights Park
Renovation
Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
30542.01_ALCOVA_TREES.DWG
PATH: \\s300005\30500\30542.01\CADD\05-ENVR\30542.01

PLOTTED: AUGUST 20 2021
PLOTTED BY: HULSEC

SHEET
TREE PRESERVATION
NOTES & DETAILS
(1 OF 2)

LJ5.01

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION
NOTES & DETAILS (1 of 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As Noted Number: 36 of 68

BID SET: 21-DPR-ITB-291



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: CH
DRAWN: CH
CHECKED: DM, CK
MISS UTILITY TRANSMITTAL #: N/A

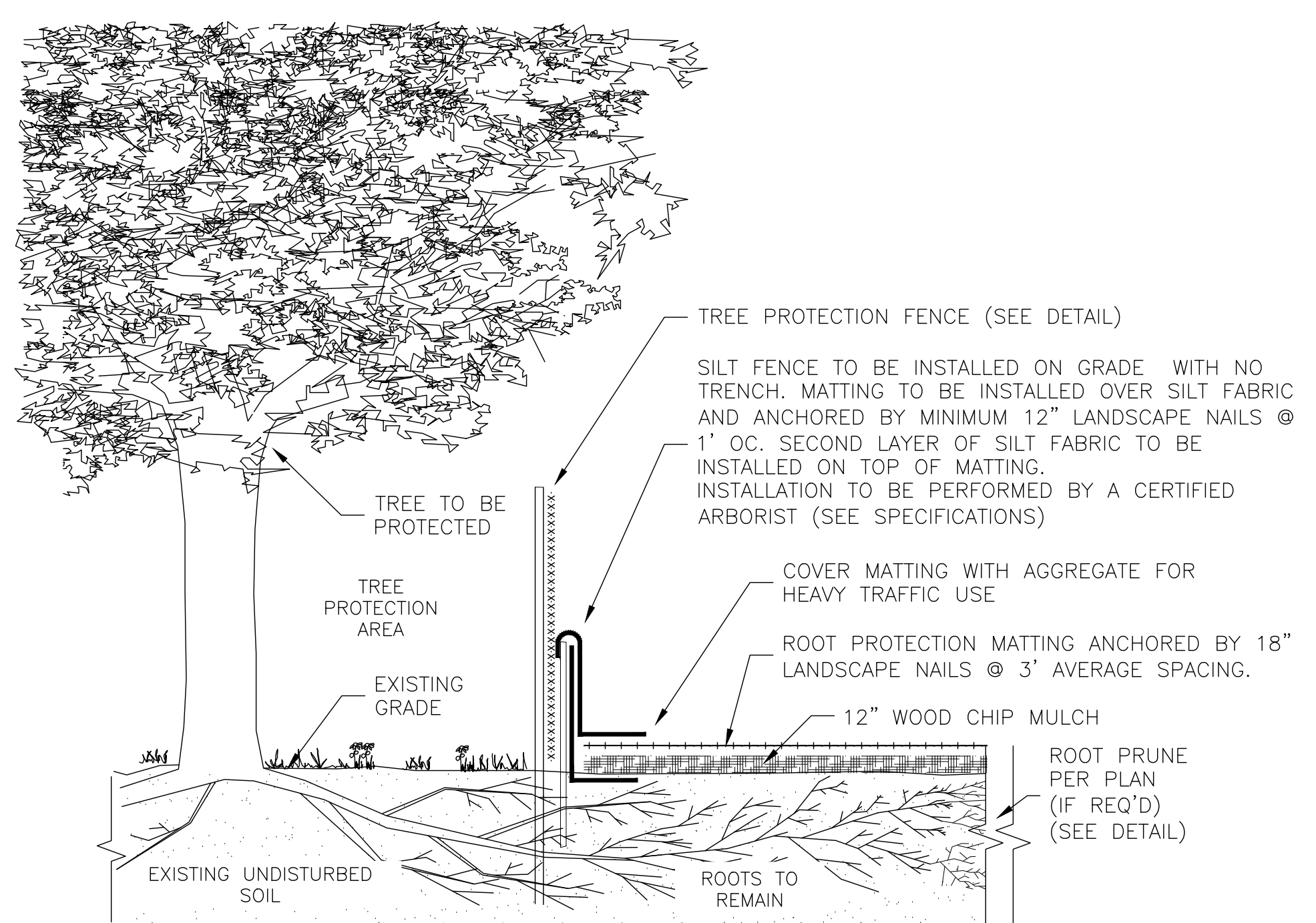
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PLOTTED: JULY 1 2021
PLOTTED BY: HULSEC

SHEET
TREE PRESERVATION NOTES & DETAILS (2 OF 2)
LJ5.02

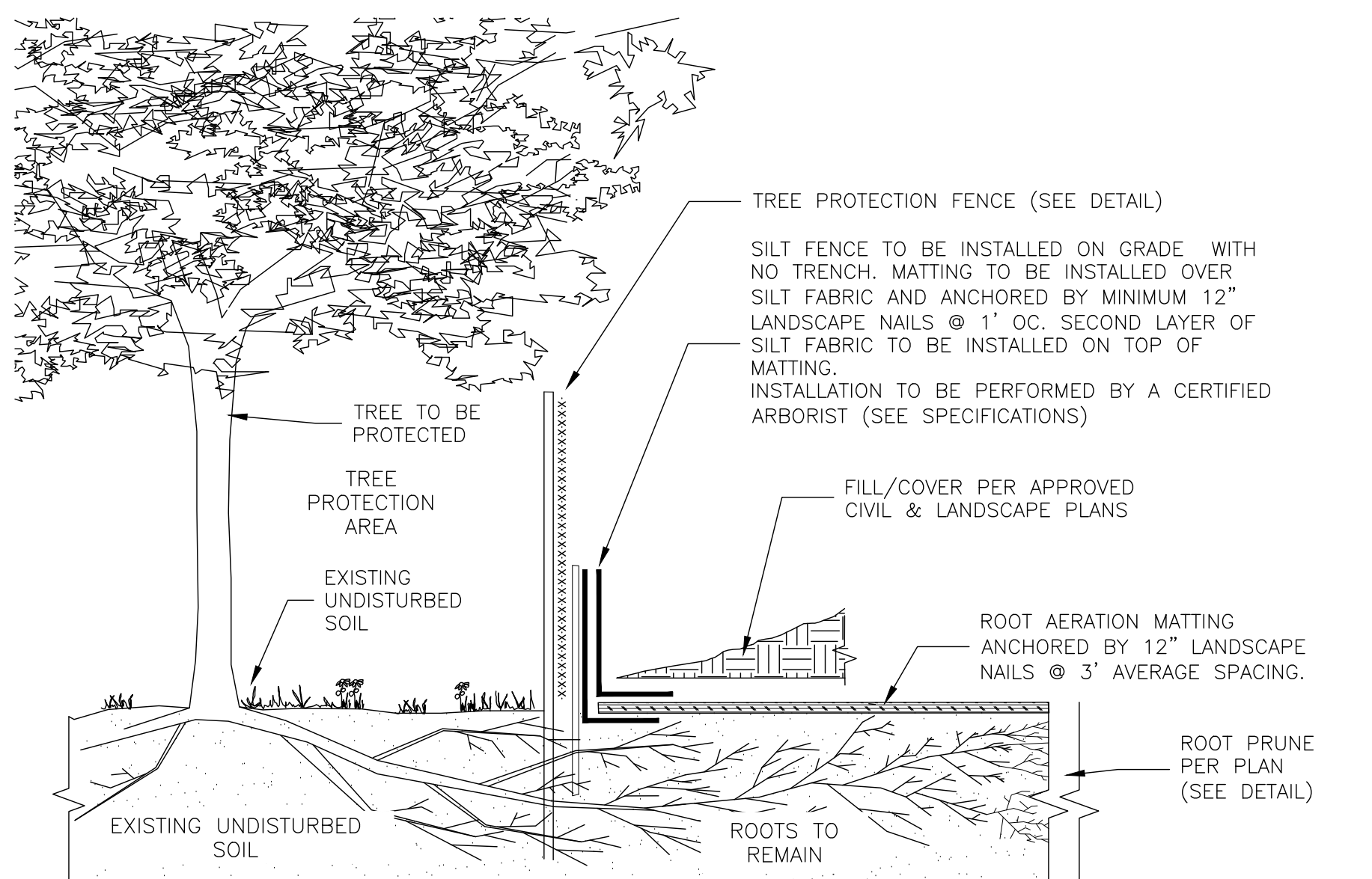
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
TREE PRESERVATION NOTES & DETAILS (2 OF 2)
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As Noted	Number: 37 of 68
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- NOTES:
- TO BE USED FOR TEMPORARY ACCESS INTO TREE PROTECTION AREAS. ARBORIST APPROVAL REQUIRED.
 - MATTING MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENSAR ROADRAIN RD7) OR APPROVED EQUIVALENT.
 - RPM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
 - TO BE USED FOR DESIGNATED TEMPORARY CONSTRUCTION ACCESS AND STOCKPILE AREAS.
 - MATTING SHALL BE PLACED ON 12" WOOD CHIP MULCH UNLESS OTHERWISE DIRECTED.
 - FOR HEAVY TRAFFIC AREAS, MATTING SHALL BE COVERED WITH 6-8" WELL GRADED CRUSHED AGGREGATE. ADDITIONAL LAYERS OF GEOTEXTILE, OR HARDENED SURFACE LAYER MAY BE NEEDED.

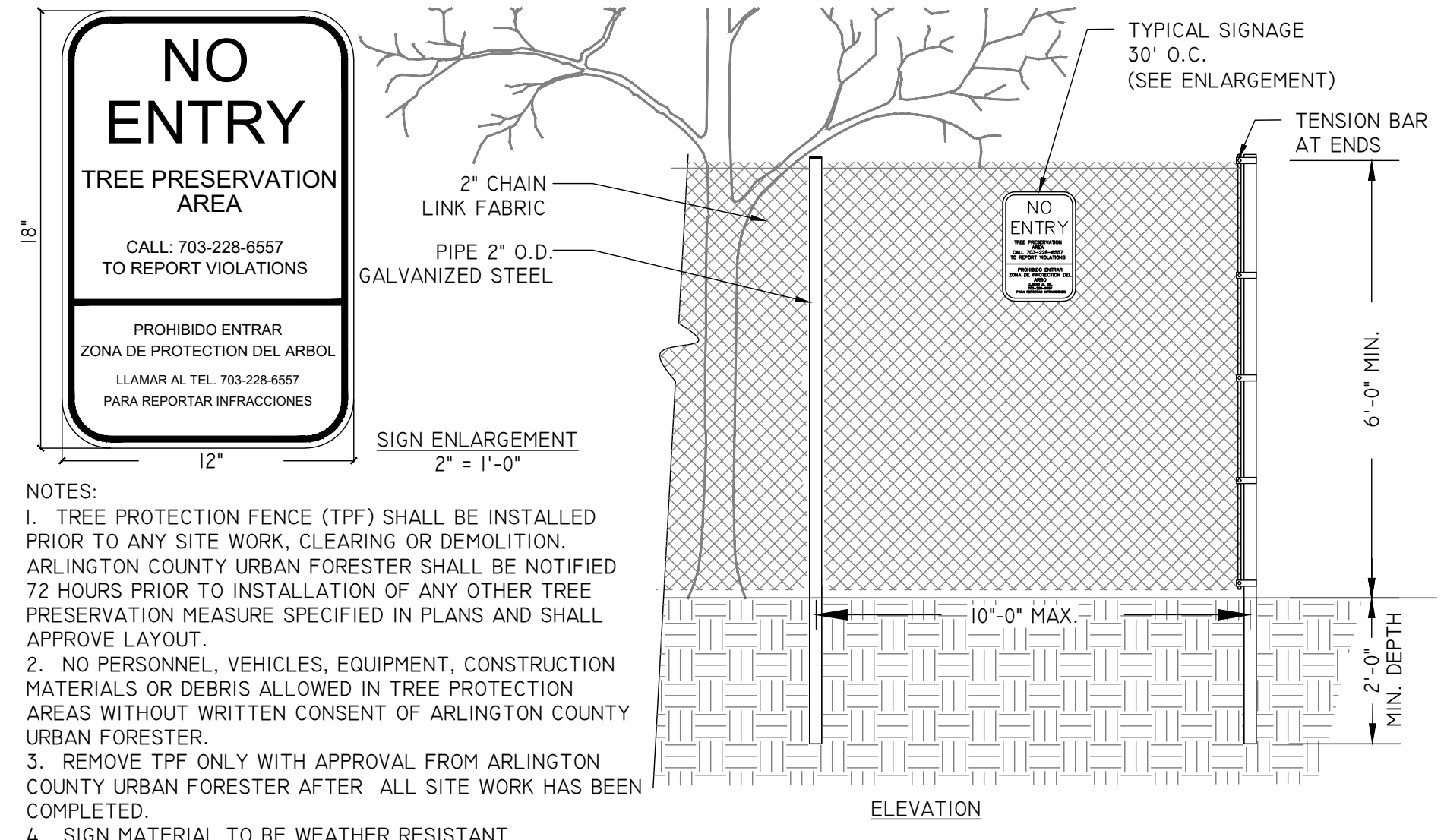
4 TEMPORARY ROOT PROTECTION MATTING (TYPICAL)
5.02 SCALE: NTS



- NOTES:
- MATTING MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENSAR ROADRAIN RD7) OR APPROVED EQUIVALENT.
 - RAM SHALL BE ANCHORED BY 12" LANDSCAPE NAILS @ 3' AVERAGE SPACING.
 - RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST EXPERIENCED WITH THESE SYSTEMS.
 - PROPOSED RAM IN STRUCTURAL SITUATIONS SHALL BE REVIEWED AND APPROVED BY THE PROJECT CIVIL ENGINEER. ADDITIONAL LAYERS OF MATERIALS SUCH AS GEOGRID MAY BE REQUIRED.
 - ALL SITE PREPARATION/GRADING TO BE DONE USING SSAT TO MINIMIZE ROOT DAMAGE.
 - DO NOT GRUB EXISTING SOIL.
 - ALL ADJACENT WORK SHALL BE SUPERVISED BY CERTIFIED ARBORIST.
 - RAM AREA SHALL BE FENCED TO PREVENT CONSTRUCTION TRAFFIC IMPACTING EXISTING SOILS AND ROOTS.
 - DO NOT OPERATE EQUIPMENT DIRECTLY ON RAM.

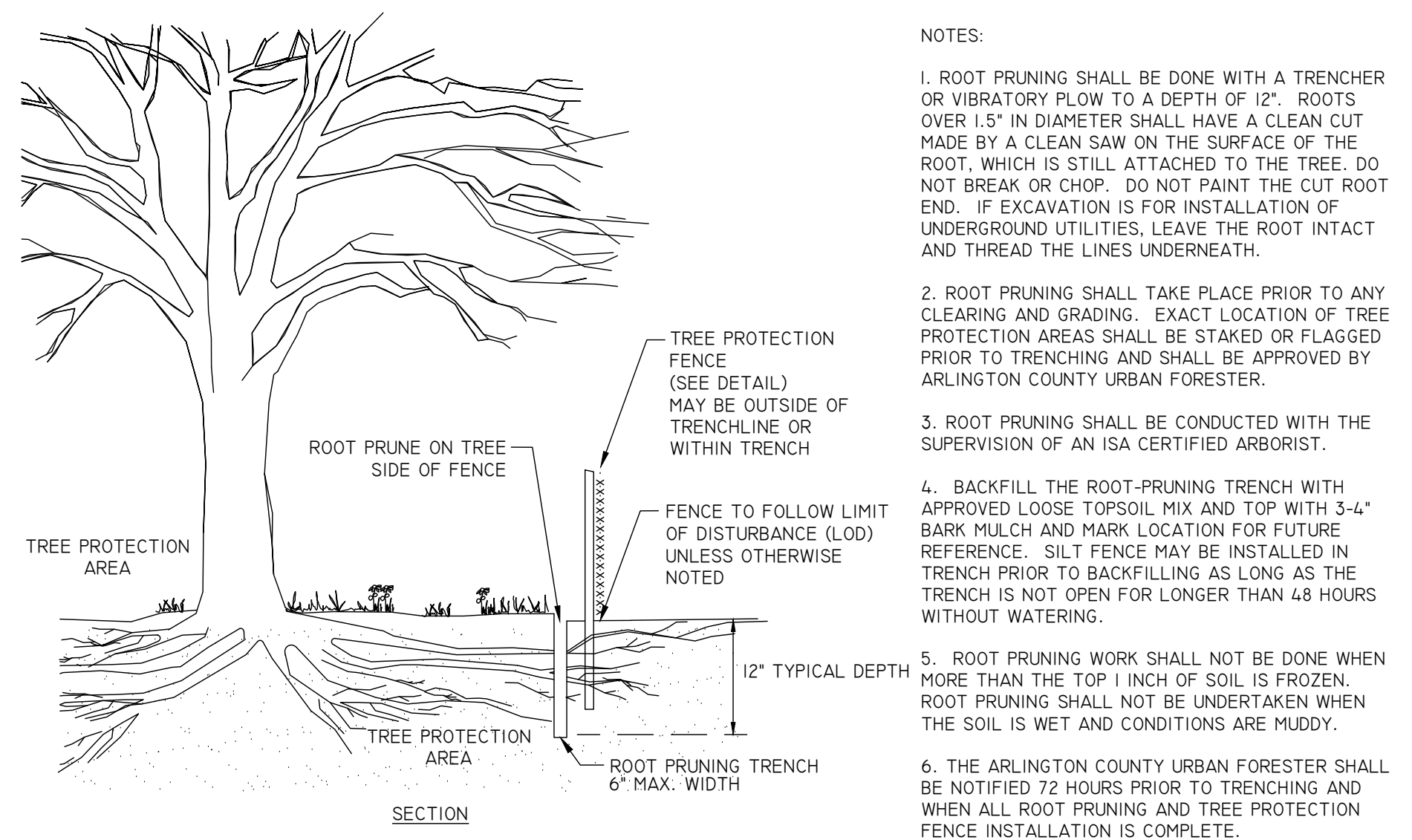
5 ROOT AERATION MATTING (TYP)**
5.02 SCALE: NTS

**REFER TO SHEET L1.00 FOR SPECIFIC DETAILS FOR HARDSCAPE. THIS DETAIL PROVIDED FOR TREE PROTECTION CONCEPT ONLY.



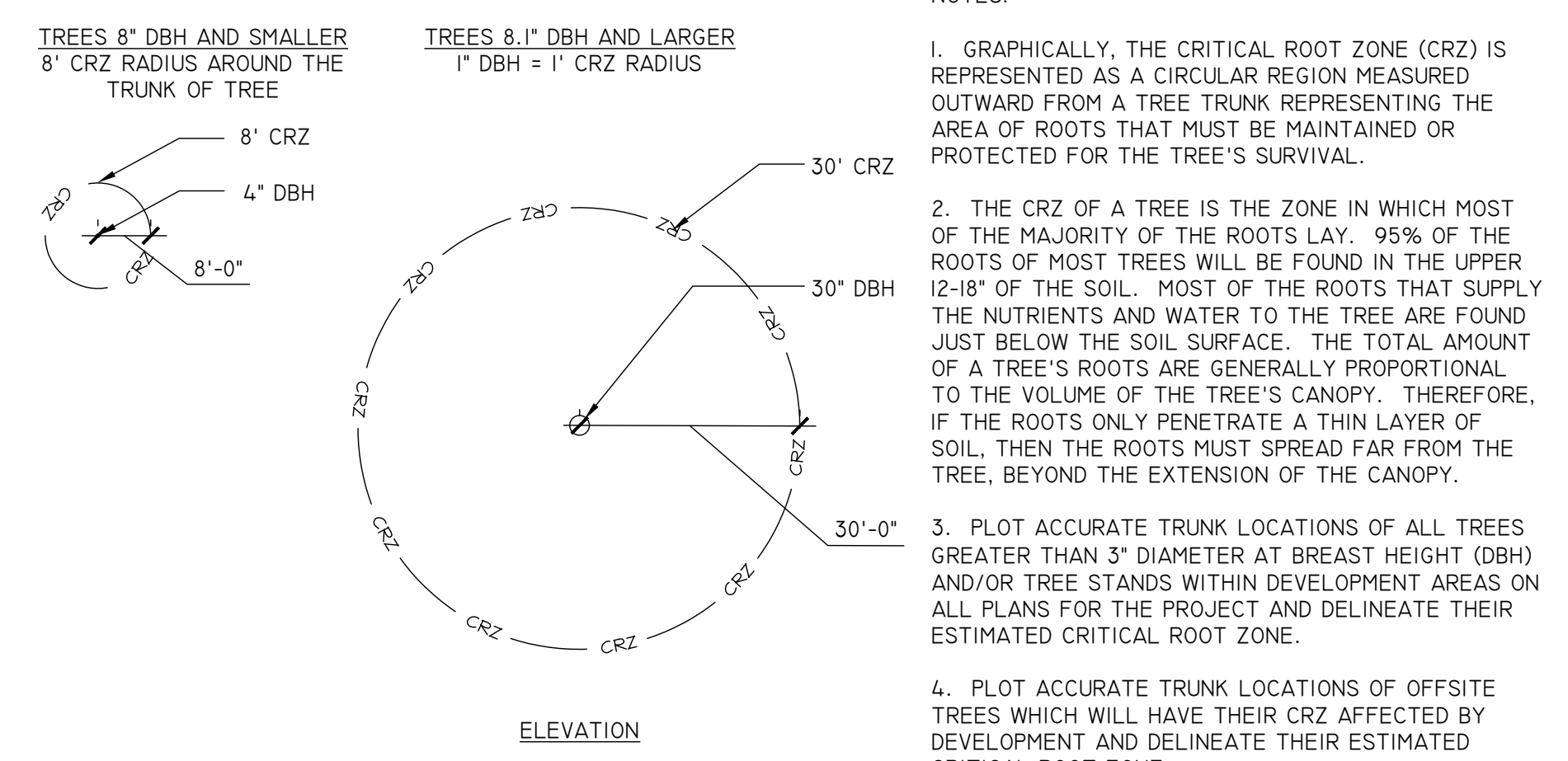
- NOTES:
- TREE PROTECTION FENCE (TPF) SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION. ARLINGTON COUNTY URBAN FORESTER SHALL BE NOTIFIED 72 HOURS PRIOR TO INSTALLATION OF ANY OTHER TREE PRESERVATION MEASURE SPECIFIED IN PLANS AND SHALL APPROVE LAYOUT.
 - NO PERSONNEL, VEHICLES, EQUIPMENT, CONSTRUCTION MATERIALS OR DEBRIS ALLOWED IN TREE PROTECTION AREAS WITHOUT WRITTEN CONSENT OF ARLINGTON COUNTY URBAN FORESTER.
 - REMOVE TPF ONLY WITH APPROVAL FROM ARLINGTON COUNTY URBAN FORESTER AFTER ALL SITE WORK HAS BEEN COMPLETED.
 - SIGN MATERIAL TO BE WEATHER RESISTANT.

1 6' CHAIN LINK TREE PROTECTION FENCE
5.02 311300.1 (2016) (02231.1)
1/2" = 1'-0"
ARLINGTON COUNTY VIRGINIA DPR



- NOTES:
- ROOT PRUNING SHALL BE DONE WITH A TRENCHER OR VIBRATORY PLOW TO A DEPTH OF 12". ROOTS OVER 1.5" IN DIAMETER SHALL HAVE A CLEAN CUT MADE BY A CLEAN SAW ON THE SURFACE OF THE ROOT, WHICH IS STILL ATTACHED TO THE TREE. DO NOT BREAK OR CHOP. DO NOT PAINT THE CUT ROOT END. IF EXCAVATION IS FOR INSTALLATION OF UNDERGROUND UTILITIES, LEAVE THE ROOT INTACT AND THREAD THE LINES UNDERNEATH.
 - ROOT PRUNING SHALL TAKE PLACE PRIOR TO ANY CLEARING AND GRADING. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING AND SHALL BE APPROVED BY ARLINGTON COUNTY URBAN FORESTER.
 - ROOT PRUNING SHALL BE CONDUCTED WITH THE SUPERVISION OF AN ISA CERTIFIED ARBORIST.
 - BACKFILL THE ROOT-PRUNING TRENCH WITH APPROVED LOOSE TOPSOIL MIX AND TOP WITH 3-4" BARK MULCH AND MARK LOCATION FOR FUTURE REFERENCE. SILT FENCE MAY BE INSTALLED IN TRENCH PRIOR TO BACKFILLING AS LONG AS THE TRENCH IS NOT OPEN FOR LONGER THAN 48 HOURS WITHOUT WATERING.
 - ROOT PRUNING WORK SHALL NOT BE DONE WHEN MORE THAN THE TOP 1 INCH OF SOIL IS FROZEN. ROOT PRUNING SHALL NOT BE UNDERTAKEN WHEN THE SOIL IS WET AND CONDITIONS ARE MUDDY.
 - THE ARLINGTON COUNTY URBAN FORESTER SHALL BE NOTIFIED 72 HOURS PRIOR TO TRENCHING AND WHEN ALL ROOT PRUNING AND TREE PROTECTION FENCE INSTALLATION IS COMPLETE.

2 ROOT PRUNING
5.02 311300.5 (2020)
N.T.S.
ARLINGTON COUNTY VIRGINIA DPR



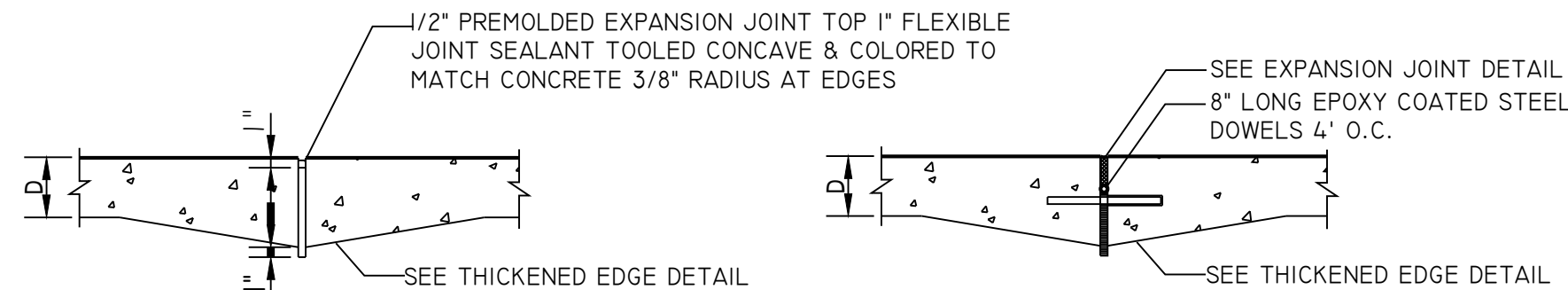
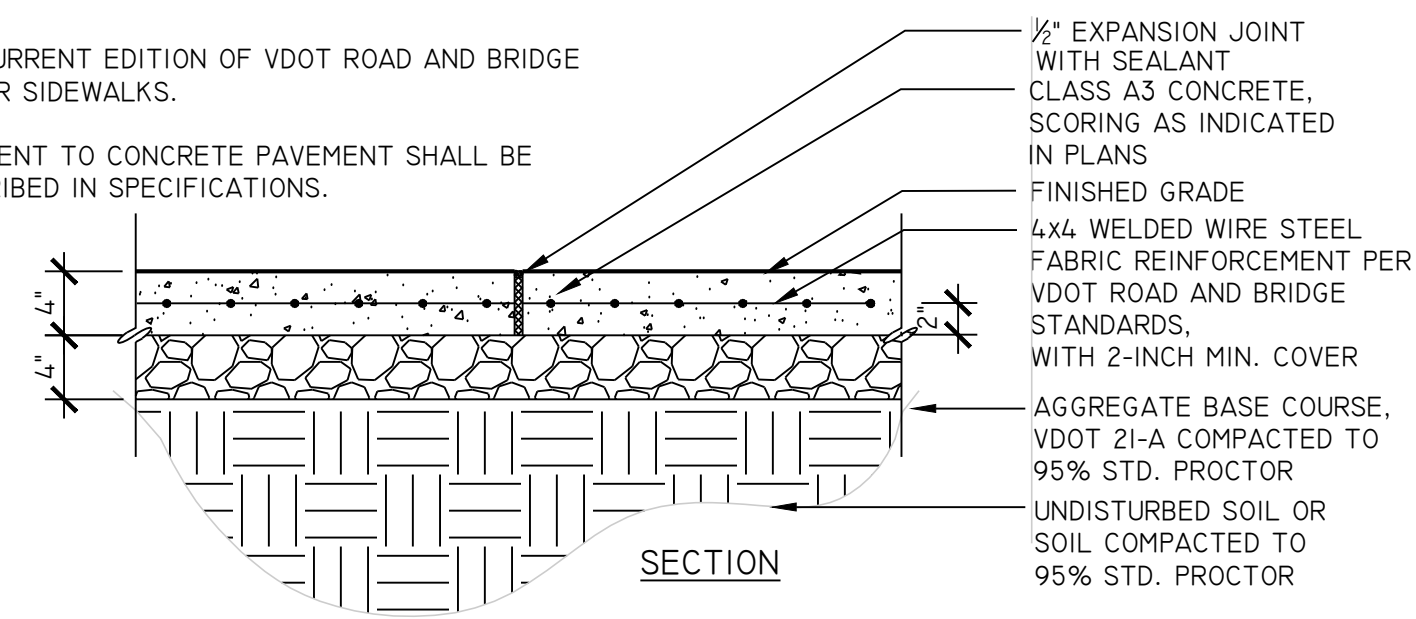
- NOTES:
- GRAPHICALLY, THE CRITICAL ROOT ZONE (CRZ) IS REPRESENTED AS A CIRCULAR REGION MEASURED OUTWARD FROM A TREE TRUNK REPRESENTING THE AREA OF ROOTS THAT MUST BE MAINTAINED OR PROTECTED FOR THE TREE'S SURVIVAL.
 - THE CRZ OF A TREE IS THE ZONE IN WHICH MOST OF THE MAJORITY OF THE ROOTS LAY. 95% OF THE ROOTS OF MOST TREES WILL BE FOUND IN THE UPPER 12-18" OF THE SOIL. MOST OF THE ROOTS THAT SUPPLY THE NUTRIENTS AND WATER TO THE TREE ARE FOUND JUST BELOW THE SOIL SURFACE. THE TOTAL AMOUNT OF A TREE'S ROOTS ARE GENERALLY PROPORTIONAL TO THE VOLUME OF THE TREE'S CANOPY. THEREFORE, IF THE ROOTS ONLY PENETRATE A THIN LAYER OF SOIL, THEN THE ROOTS MUST SPREAD FAR FROM THE TREE, BEYOND THE EXTENSION OF THE CANOPY.
 - PLOT ACCURATE TRUNK LOCATIONS OF ALL TREES GREATER THAN 3" DIAMETER AT BREAST HEIGHT (DBH) AND/OR TREE STANDS WITHIN DEVELOPMENT AREAS ON ALL PLANS FOR THE PROJECT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.
 - PLOT ACCURATE TRUNK LOCATIONS OF OFFSITE TREES WHICH WILL HAVE THEIR CRZ AFFECTED BY DEVELOPMENT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.

3 TREE PROTECTION DETAIL FOR DETERMINING CRITICAL ROOT ZONE
5.02 311300.3 (2019)
N.T.S.
ARLINGTON COUNTY VIRGINIA DPR

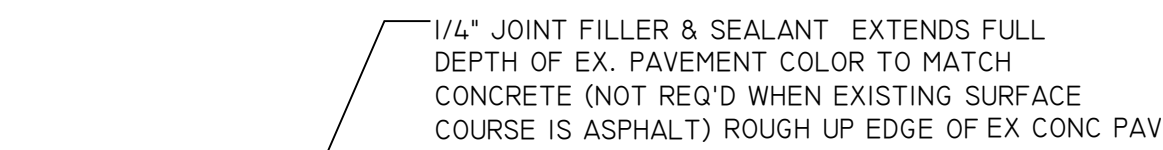
3 TREE PROTECTION DETAIL FOR DETERMINING CRITICAL ROOT ZONE
5.02 311300.3 (2019)
N.T.S.
ARLINGTON COUNTY VIRGINIA DPR

NOTES:

- THIS DETAIL IS INTENDED FOR NON-RIGHT-OF-WAY APPLICATIONS ONLY. ALL CONCRETE PAVEMENT WITHIN COUNTY RIGHT-OF-WAY SHALL BE CONSTRUCTED PER ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES (DES) STANDARDS.
- JOINTS: PROVIDE EXPANSION JOINTS EVERY 20' O.C. UNLESS OTHERWISE INDICATED IN PLANS AND AROUND HARD OBJECTS SUCH AS HYDRANTS, MANHOLE COVERS, EXISTING PAVEMENTS, ETC. PROVIDE HAND-TOOLED CONTROL JOINTS EVERY 5' O.C. OR AS SHOWN ON THE PLANS. CONTROL (SCORE) JOINTS SHALL BE CUT TO 1/2 DEPTH OF TOTAL CONCRETE THICKNESS.
- EXPANSION JOINTS SHALL BE DOWELED TO PREVENT FUTURE DIFFERENTIAL SETTLEMENT AND SEALED WITH SEALANT. COLOR TO MATCH COLOR OF CONCRETE.
- FINISH IN ACCORDANCE WITH CURRENT EDITION OF VDOT ROAD AND BRIDGE SPECIFICATIONS SECTION 404.7 FOR SIDEWALKS.
- DISTURBED LAWN AREAS ADJACENT TO CONCRETE PAVEMENT SHALL BE BACKFILLED AND SEEDED AS DESCRIBED IN SPECIFICATIONS.

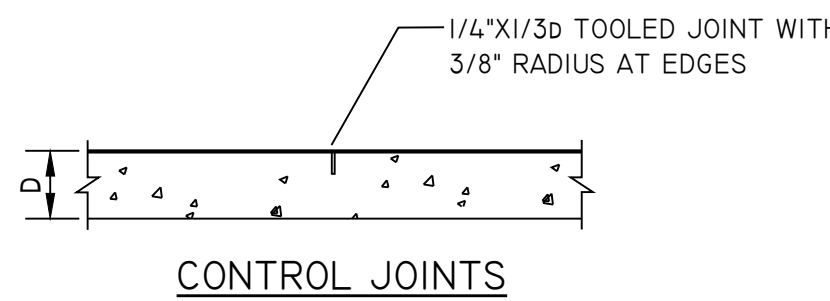


EXPANSION JOINTS WITH DOWEL

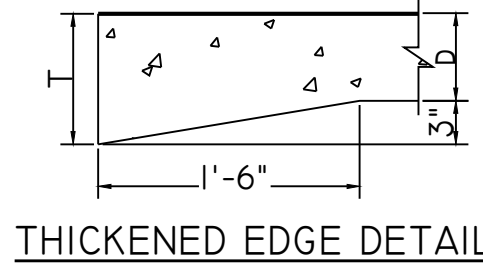


NEW TO OLD JOINTS

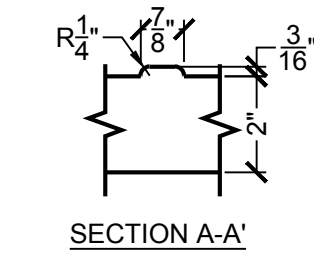
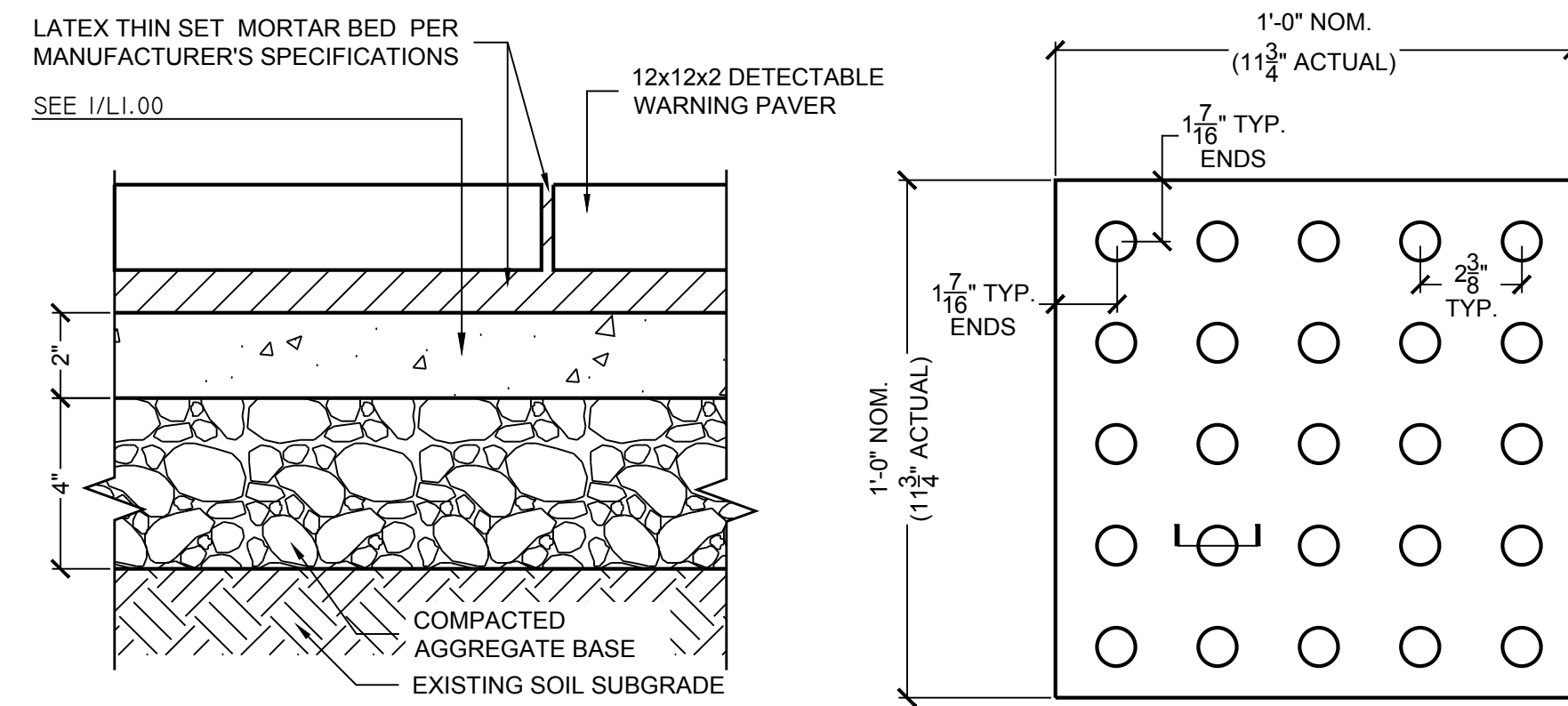
- NOTES:**
- TRANSVERSE JOINT SPACE SHALL NOT EXCEED SPACING INDICATED IN PLANS. THE AREA OF THE PAVEMENT PANEL SHALL NOT EXCEED 225 SQUARE FEET.
 - JOINT OFFSETS AT RADIUS POINTS SHOULD BE AT LEAST 1'-6" LONG.
 - JOINT INTERSECTION ANGLES OF LESS THAN 60 DEGREES SHALL NOT BE USED.
 - WHEN A JOINT IS CLOSER THAN 1'-0" TO A CASTING, THEN A MINOR ADJUSTMENT IN THE JOINT LOCATION SHOULD BE MADE BY SKEWING OR SHIFTING THE JOINT ALIGNMENT TO MEET THE CASTING AT 90° OR NORMAL TO THE CASTING.



CONTROL JOINTS



THICKENED EDGE DETAIL



SECTION A-A'

- NOTES:**
- DETECTABLE WARNING PAVERS TO BE MANUFACTURED BY HANOVER ARCHITECTURAL PRODUCTS OR APPROVED EQUAL.
 - COLOR: RED-15; VERIFY WITH ARLINGTON COUNTY LANDSCAPE ARCHITECT
 - CONTRACTOR TO INSTALL PAVERS PER MANUFACTURER'S SPECIFICATIONS.
 - RAMP SHALL CONFORM TO VDOT DETAILS 203.05 AND 203.06.

1 CONCRETE PAVING (PEDESTRIAN) (P1)

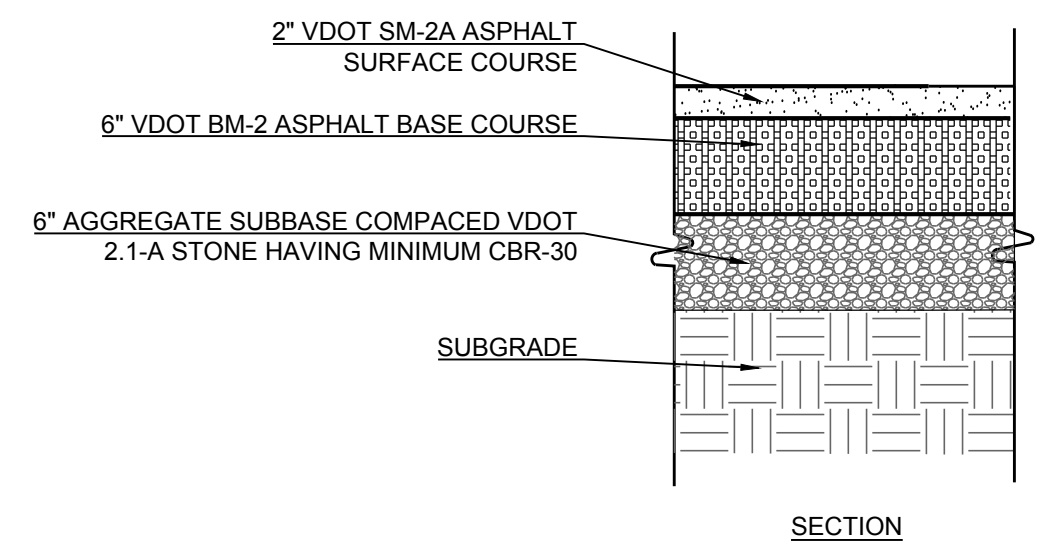
1"=1'-0"

2 CONCRETE PAVEMENT JOINTS

1"=1'-0"

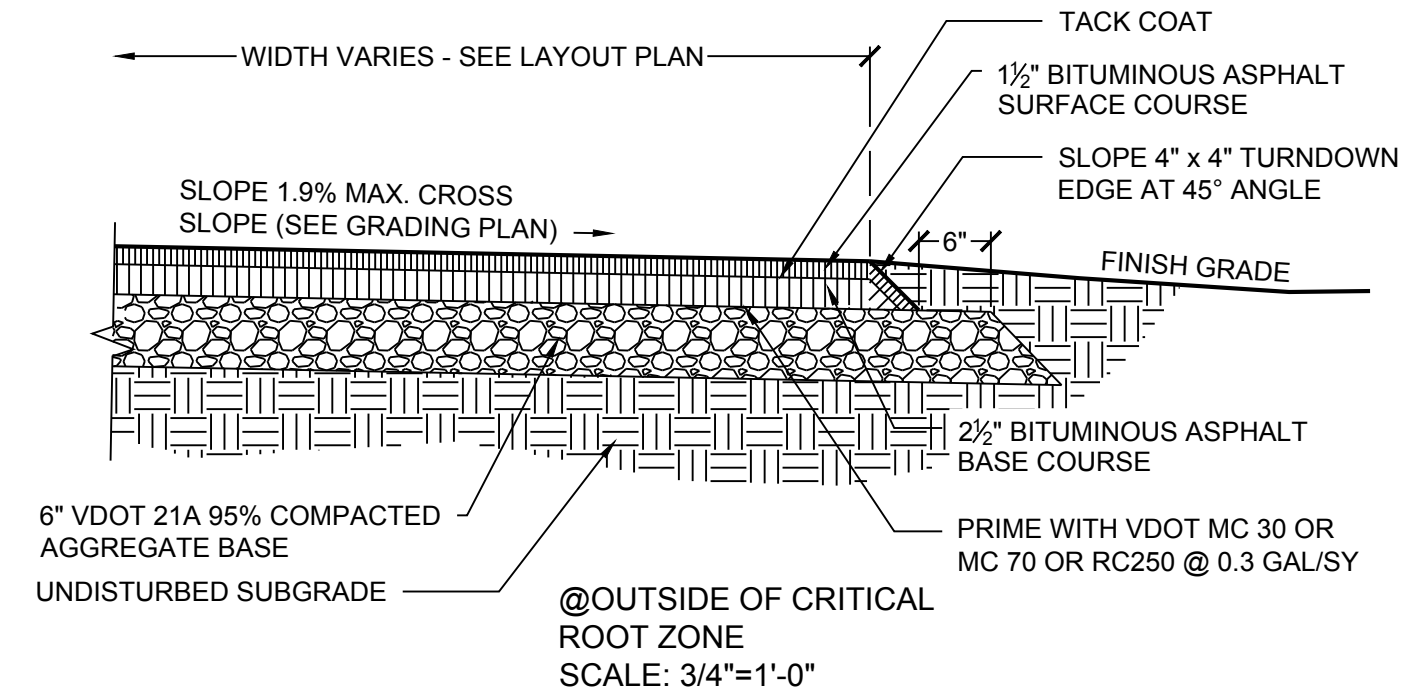
3 DETECTABLE WARNING PAVERS (P8)

3"=1'-0"



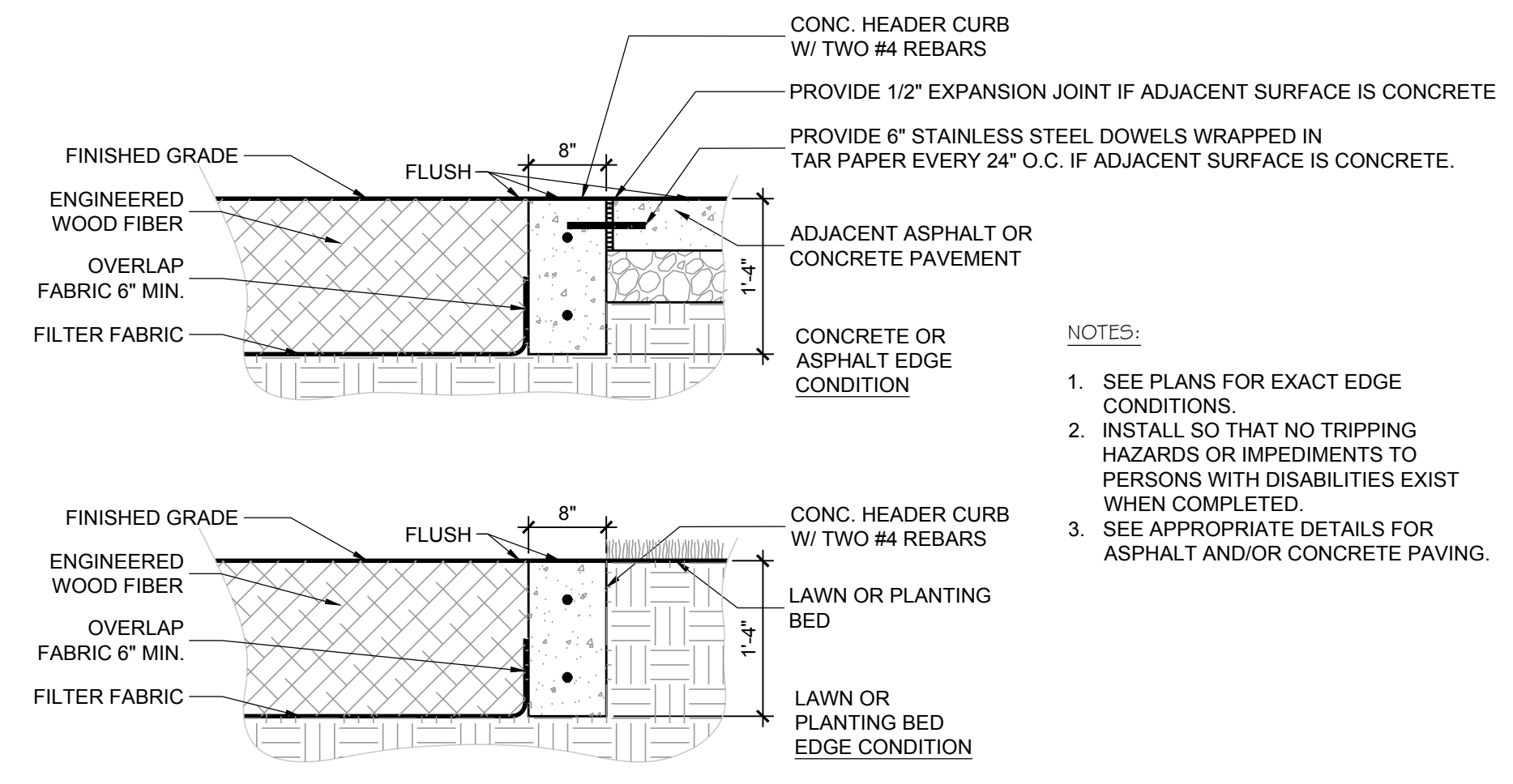
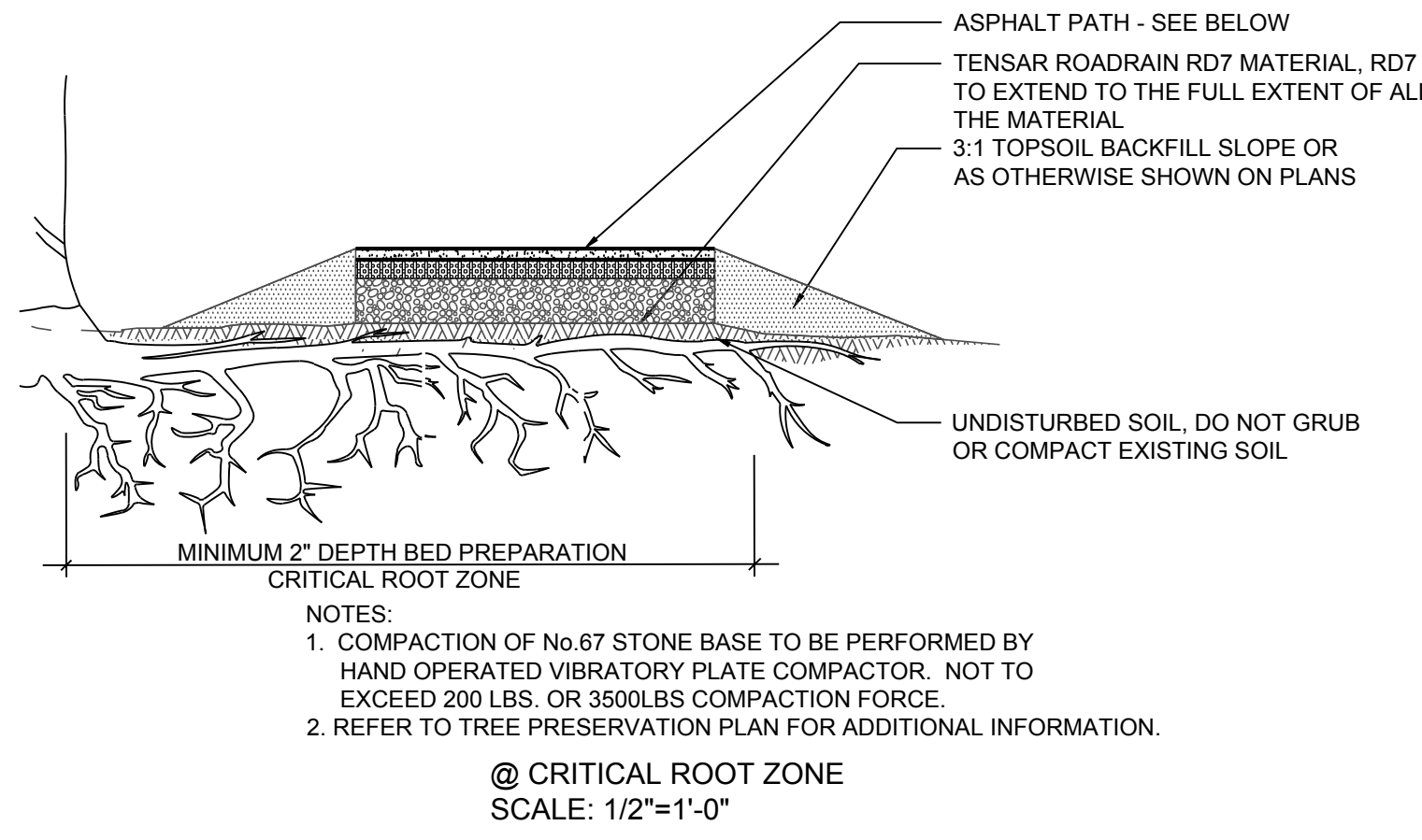
4 VEHICULAR ASPHALT PAVING (P2)

1"=1'-0"



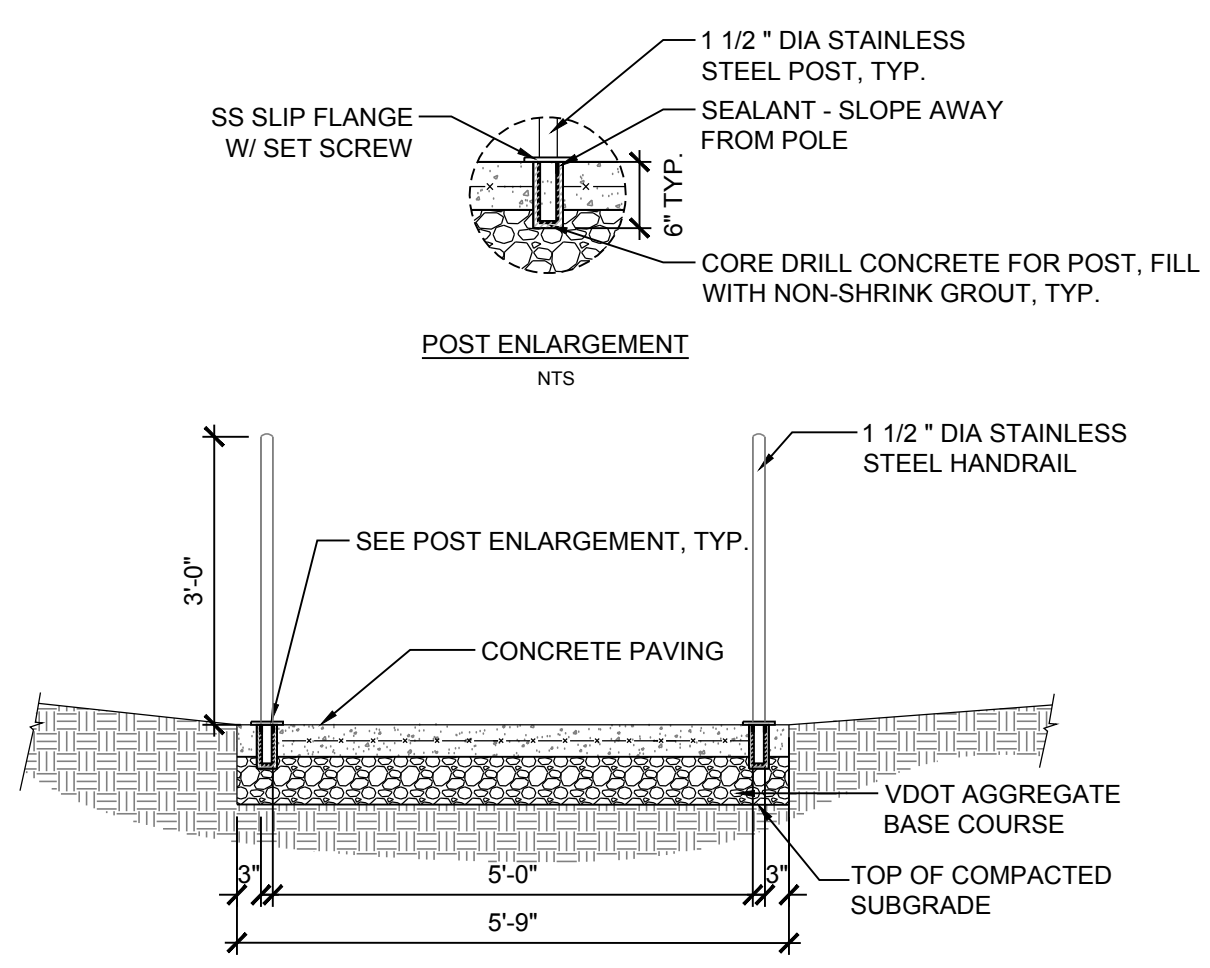
5 ASPHALT PAVING (PEDESTRIAN) (P4)

AS SHOWN



6 8" HEADER CURB

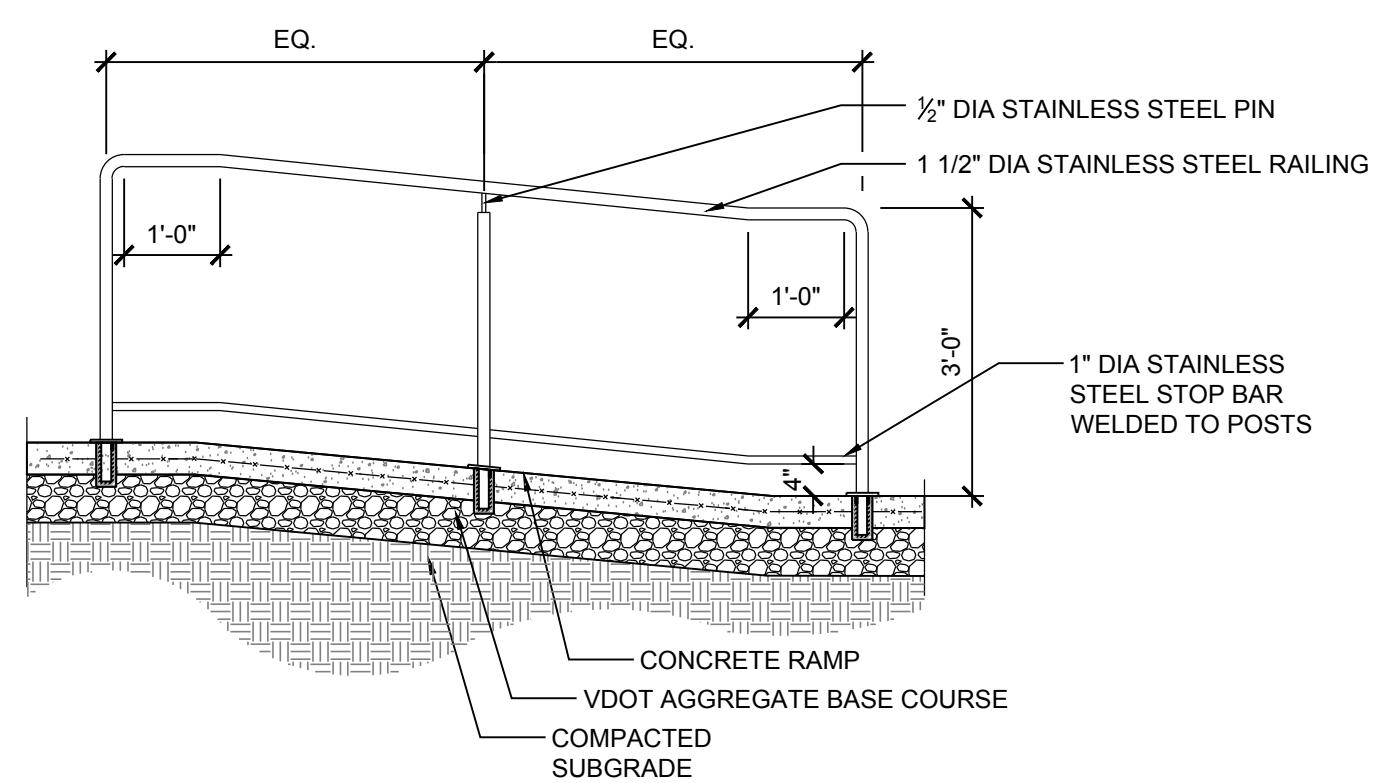
NTS



- NOTE:**
- SEE CIVIL DOCUMENTS FOR GRADING AND SPOT ELEVATIONS.
 - FIELD VERIFY ALL DIMENSIONS.
 - RAMP SLOPE TO NOT EXCEED 8.33% AND TO BE ADA COMPLIANT.
 - ALL GUARDRAIL AND HANDRAILS - SPACING AND ANCHORING TO COMPLY WITH IBC & ALL OTHER LOCAL CODES & LOADING REQUIREMENTS.
 - GRIND SMOOTH ALL WELDS.

7 HANDRAIL @ RAMP

1"=2'-0"



APPROVALS **DATE**

DESIGN TEAM ENGINEER SUPERVISOR _____

CONSTRUCTION MANAGEMENT SUPERVISOR _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L1.00 HARDSCAPE DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05_100_CD

PLOTTED: SEPTEMBER 16 2021
PLOTTED BY: MFILIPPONE

SHEET
HARDSCAPE DETAILS
L1.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 38 of 68



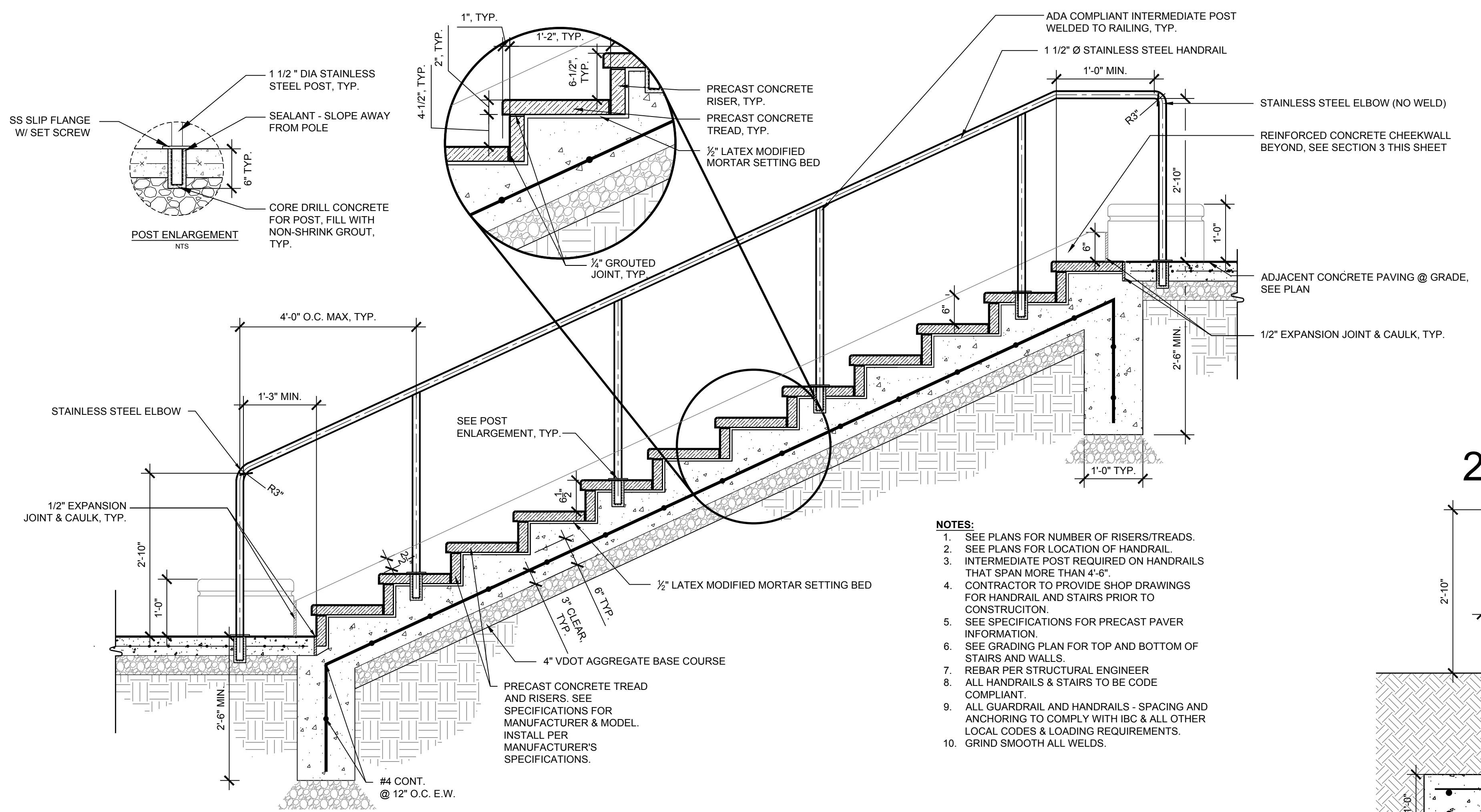
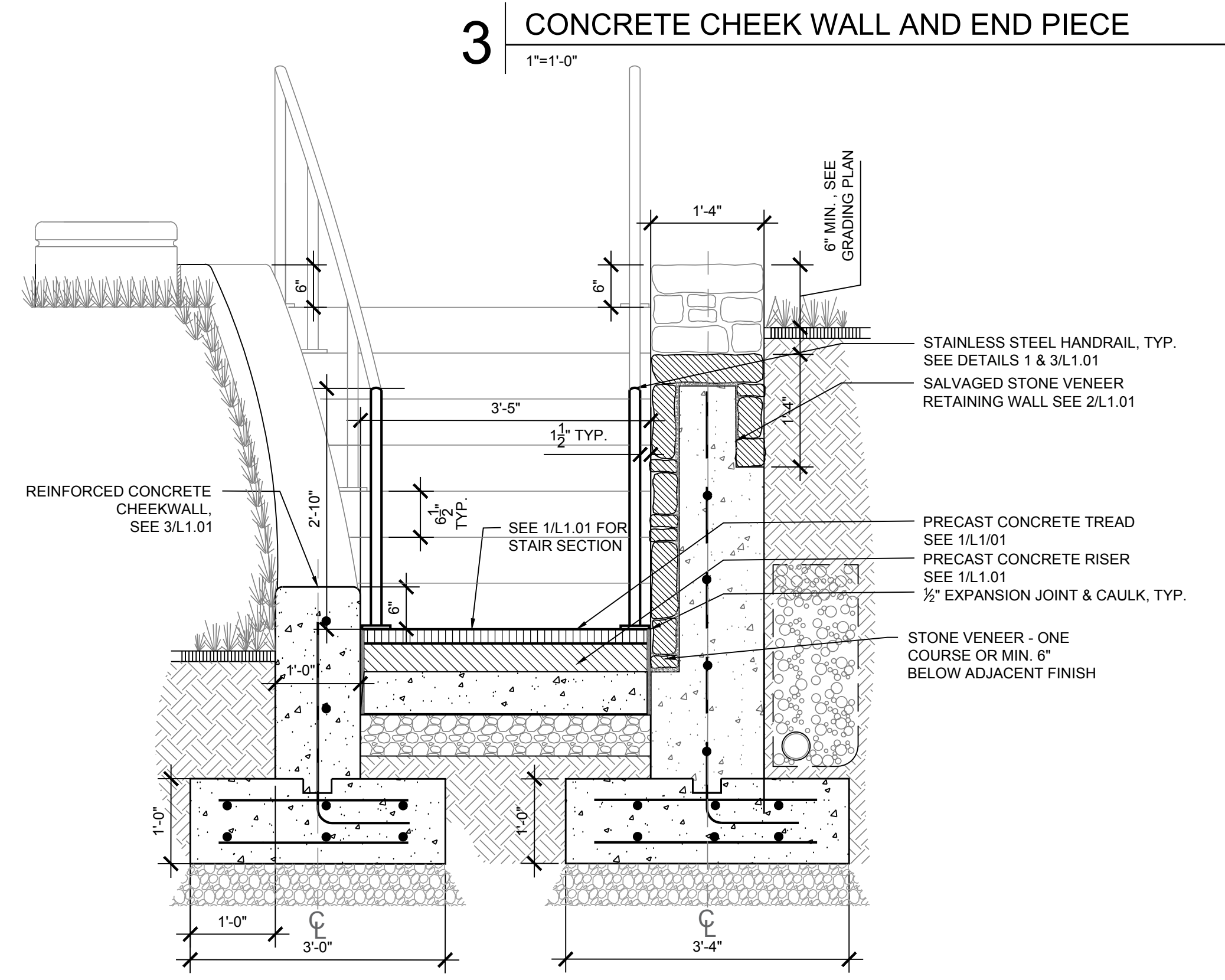
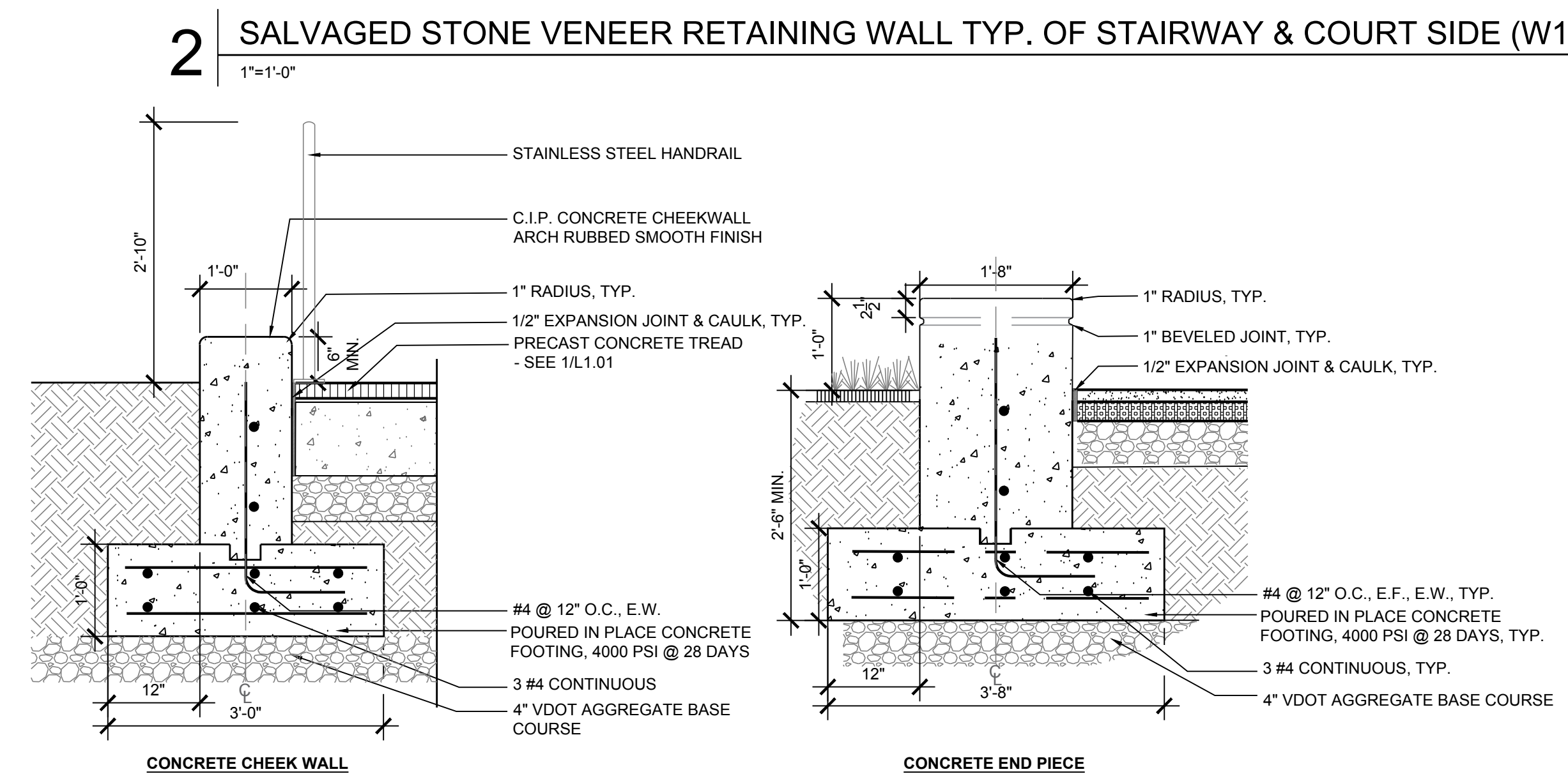
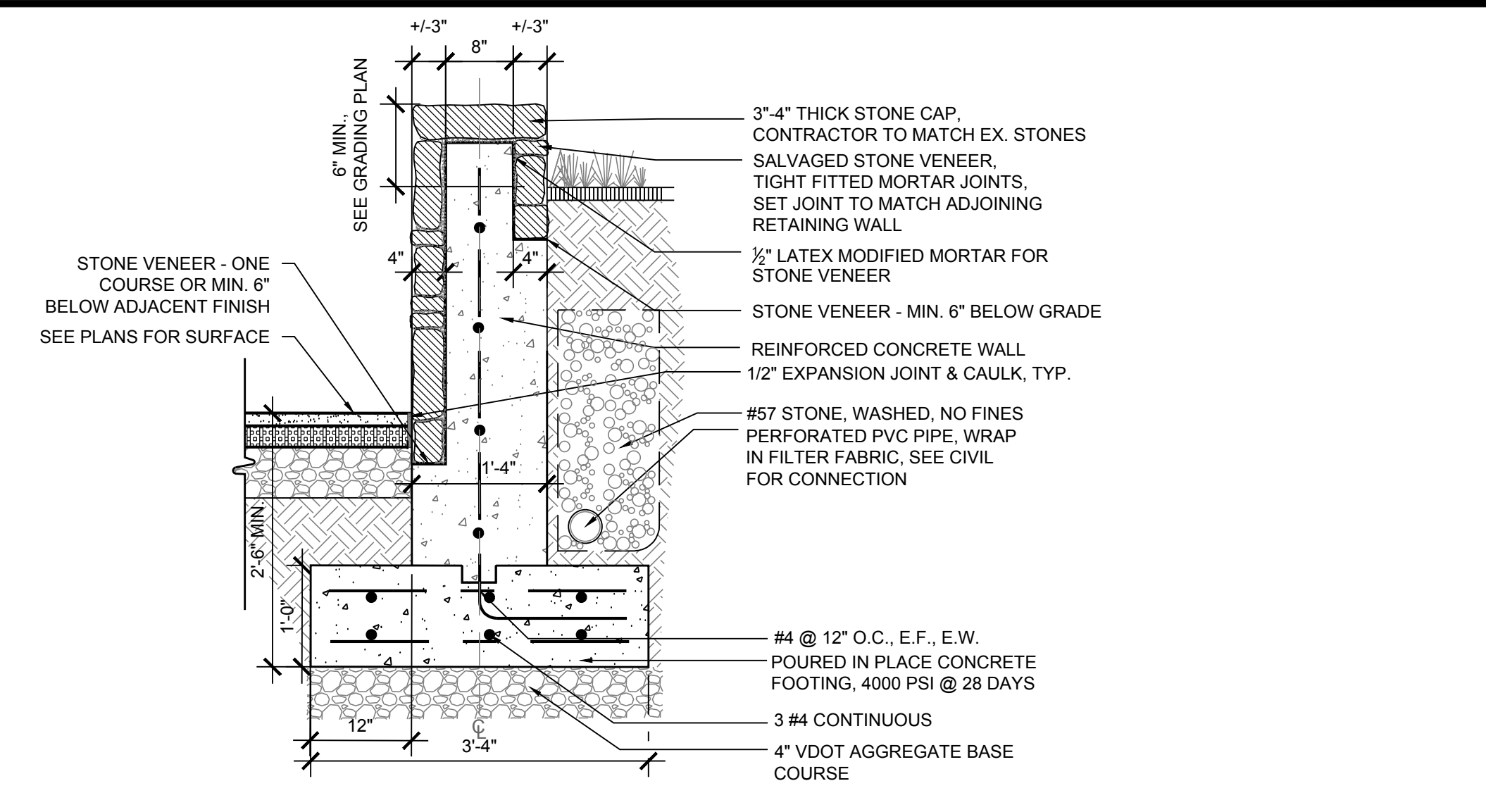
APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

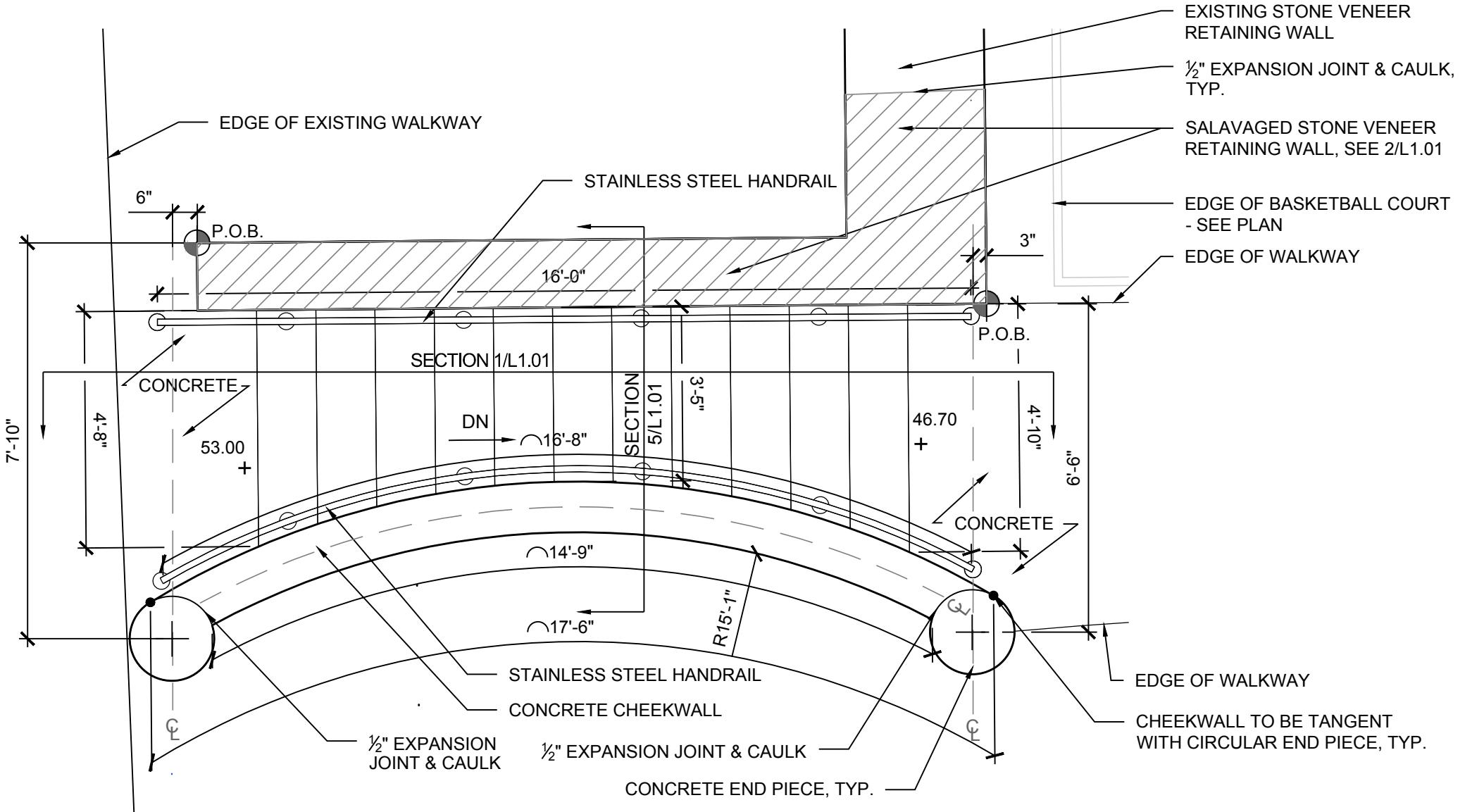
DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: L1.01 HARDSCAPE DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\RA\05 100 CD
PLOTTED: SEPTEMBER 22 2021
PLOTTED BY: MFLIPPONE

SHEET
HARDSCAPE DETAILS
L1.01

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: As shown Number: 39 of 68



- NOTES:**
- SEE PLANS FOR NUMBER OF RISERS/TREADS.
 - SEE PLANS FOR LOCATION OF HANDRAIL.
 - INTERMEDIATE POST REQUIRED ON HANDRAILS THAT SPAN MORE THAN 4'-6".
 - CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR HANDRAIL AND STAIRS PRIOR TO CONSTRUCTION.
 - SEE SPECIFICATIONS FOR PRECAST PAVER INFORMATION.
 - SEE GRADING PLAN FOR TOP AND BOTTOM OF STAIRS AND WALLS.
 - REBAR PER STRUCTURAL ENGINEER
 - ALL HANDRAILS & STAIRS TO BE CODE COMPLIANT.
 - ALL GUARDRAIL AND HANDRAILS - SPACING AND ANCHORING TO COMPLY WITH IBC & ALL OTHER LOCAL CODES & LOADING REQUIREMENTS.
 - GRIND SMOOTH ALL WELDS.





APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

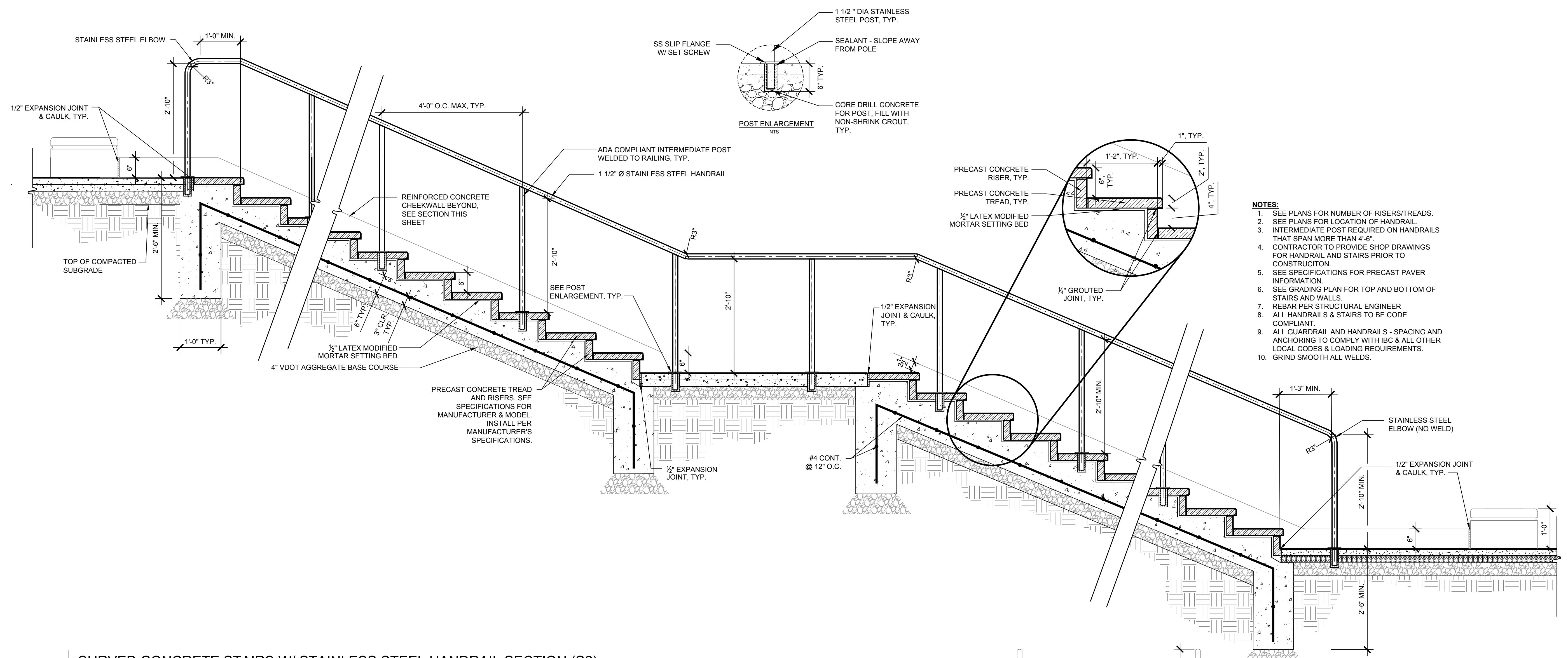
DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: L1.01A HARDSCAPE DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD
PLOTTED: SEPTEMBER 22 2021
PLOTTED BY: MFLIPPONE

SHEET
HARDSCAPE DETAILS
L1.01A

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

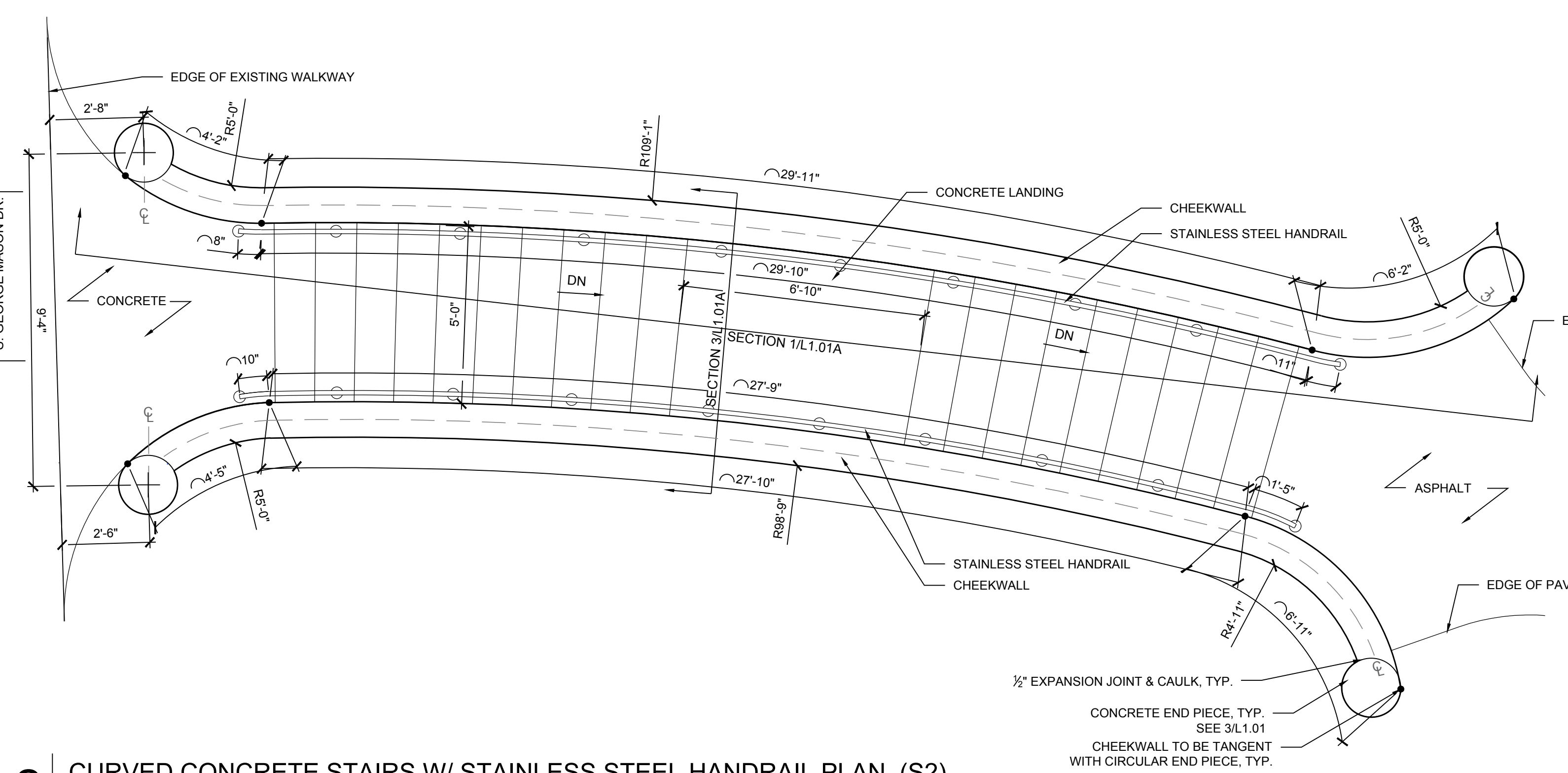
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 39A of 68

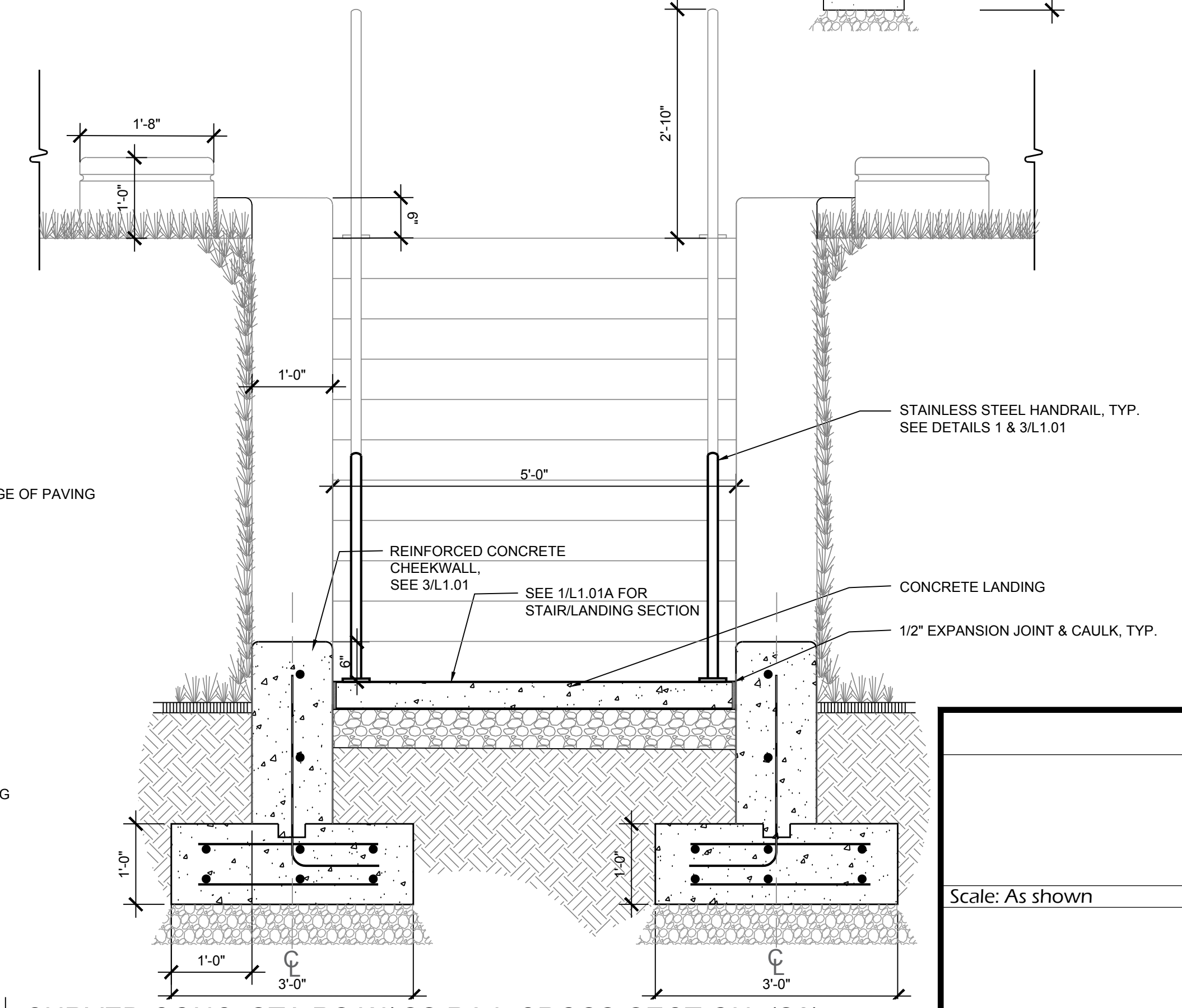


- NOTES:**
- SEE PLANS FOR NUMBER OF RISERS/TREADS.
 - SEE PLANS FOR LOCATION OF HANDRAIL.
 - INTERMEDIATE POST REQUIRED ON HANDRAILS THAT SPAN MORE THAN 4'-6".
 - CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR HANDRAIL AND STAIRS PRIOR TO CONSTRUCTION.
 - SEE SPECIFICATIONS FOR PRECAST PAVEMENT INFORMATION.
 - SEE GRADING PLAN FOR TOP AND BOTTOM OF STAIRS AND WALLS.
 - REBAR PER STRUCTURAL ENGINEER.
 - ALL HANDRAILS & STAIRS TO BE CODE COMPLIANT.
 - ALL GUARDRAIL AND HANDRAILS - SPACING AND ANCHORING TO COMPLY WITH IBC & ALL OTHER LOCAL CODES & LOADING REQUIREMENTS.
 - GRIND SMOOTH ALL WELDS.

1 CURVED CONCRETE STAIRS W/ STAINLESS STEEL HANDRAIL SECTION (S2)
3/4"=1'-0"



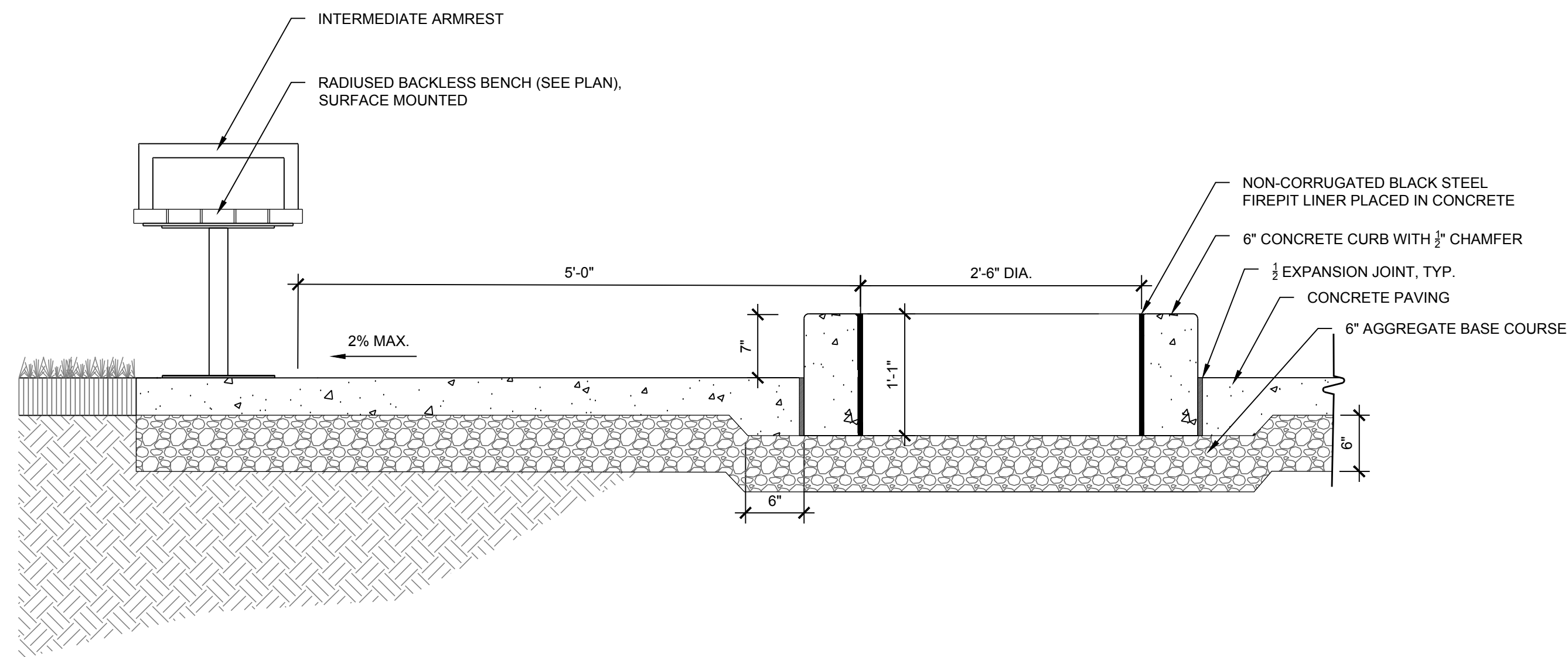
2 CURVED CONCRETE STAIRS W/ STAINLESS STEEL HANDRAIL PLAN (S2)
3/8"=1'-0"
REVISED ON 1/21/2016



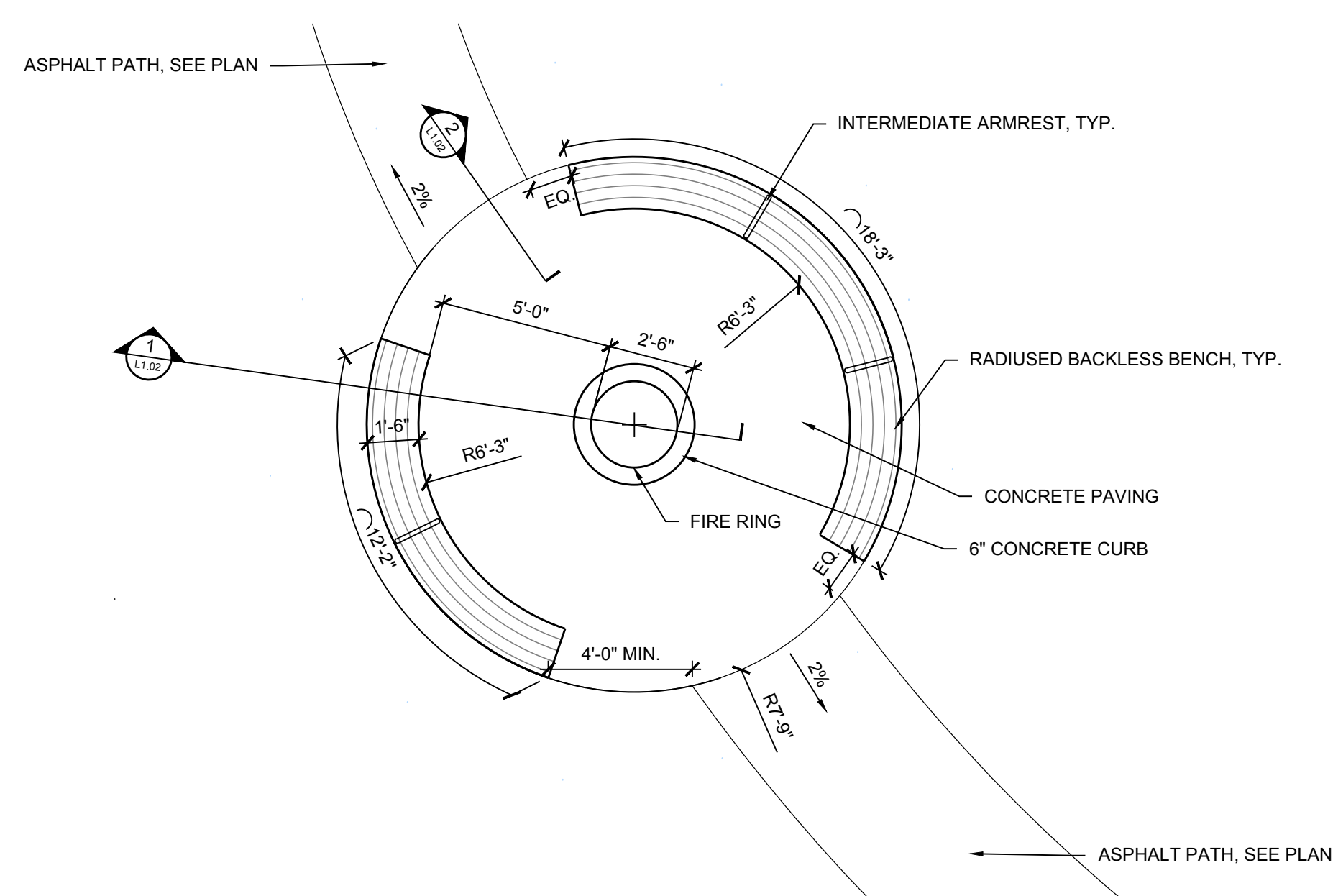
3 CURVED CONC. STAIRS W/ SS RAIL CROSS-SECTION (S2)
3/8"=1'-0"



SITECRAFT
P: 800.937.0203
W: WWW.SITE-CRAFT.COM
Y SERIES BACKLESS BENCH
MODEL: YF
MATERIALS/FINISH: POWDER-COATED STEEL
FRAME AND SQUARE LEG WITH LEFT-TO-RIGHT IPE
SLATS
INSTALLATION: SURFACE MOUNT PER
MANUFACTURER'S RECOMMENDATIONS
RADIUSED BENCH INTERMEDIATE ARMREST:
MATERIALS/FINISH: POWDER-COATED STEEL
INSTALLATION: SURFACE MOUNT PER
MANUFACTURER'S RECOMMENDATIONS



SECTION
SCALE: 1"=1'-0"



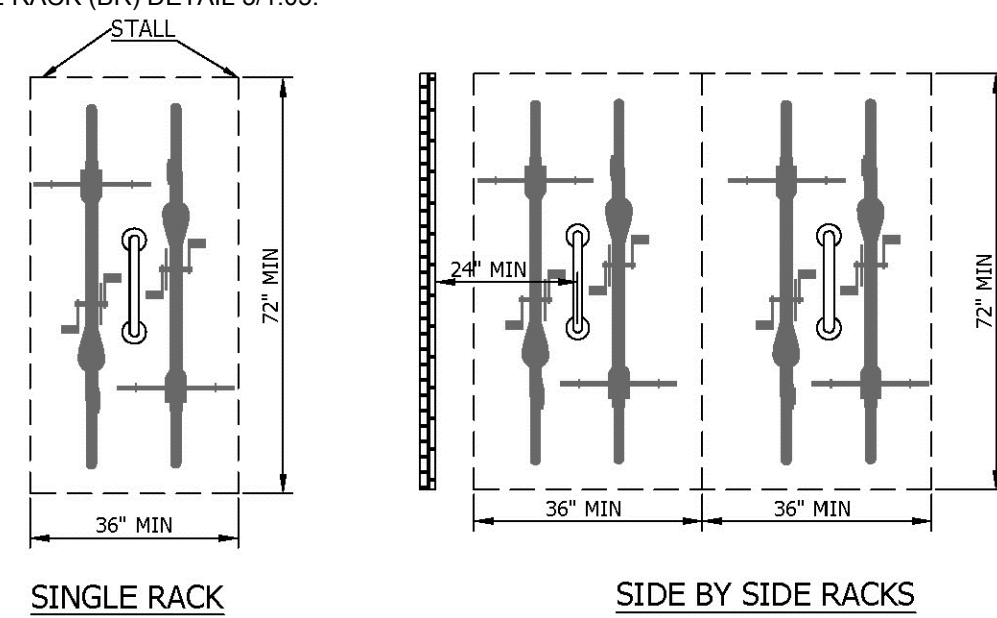
PLAN
SCALE: 1/4"=1'-0"

1 FIRE PIT AMPHITHEATER (FP)

AS SHOWN

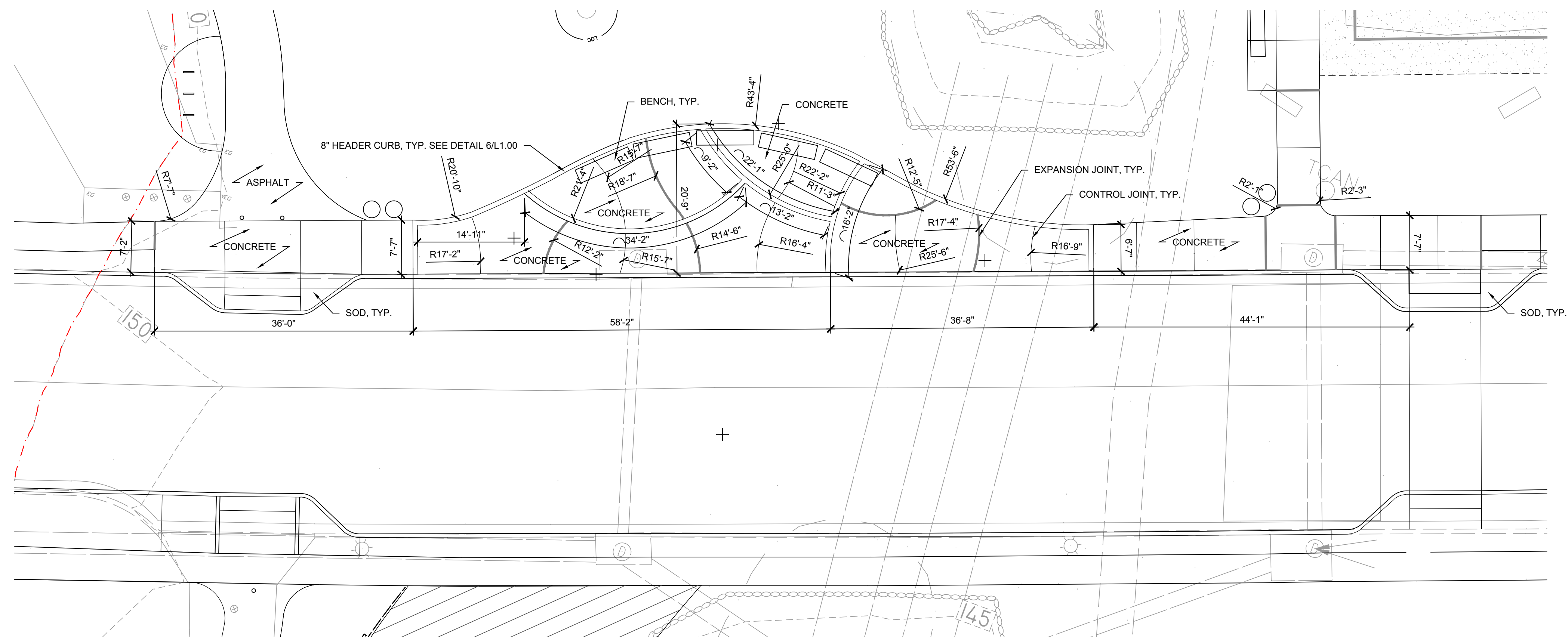
NOTES:

- FOR LAYOUT PURPOSES, EACH BICYCLE RACK SHALL BE CENTERED IN A "STALL" OF MINIMUM DIMENSION 36" X 72".
- IF MULTIPLE RACKS ARE ANGLED OR SKEWED, CENTER-TO-CENTER SEPARATION BETWEEN PARALLEL RACKS MUST BE INCREASED TO MAINTAIN THE MINIMUM 36" X 72" CLEAR "STALL" AREA AT EACH RACK.
- MINIMUM 24" CLEARANCE IS NEEDED FROM WALL OR OTHER OBSTRUCTIONS. SEE BIKE RACK (BR) DETAIL 3/1.05.



2 BICYCLE RACK LAYOUT

NTS

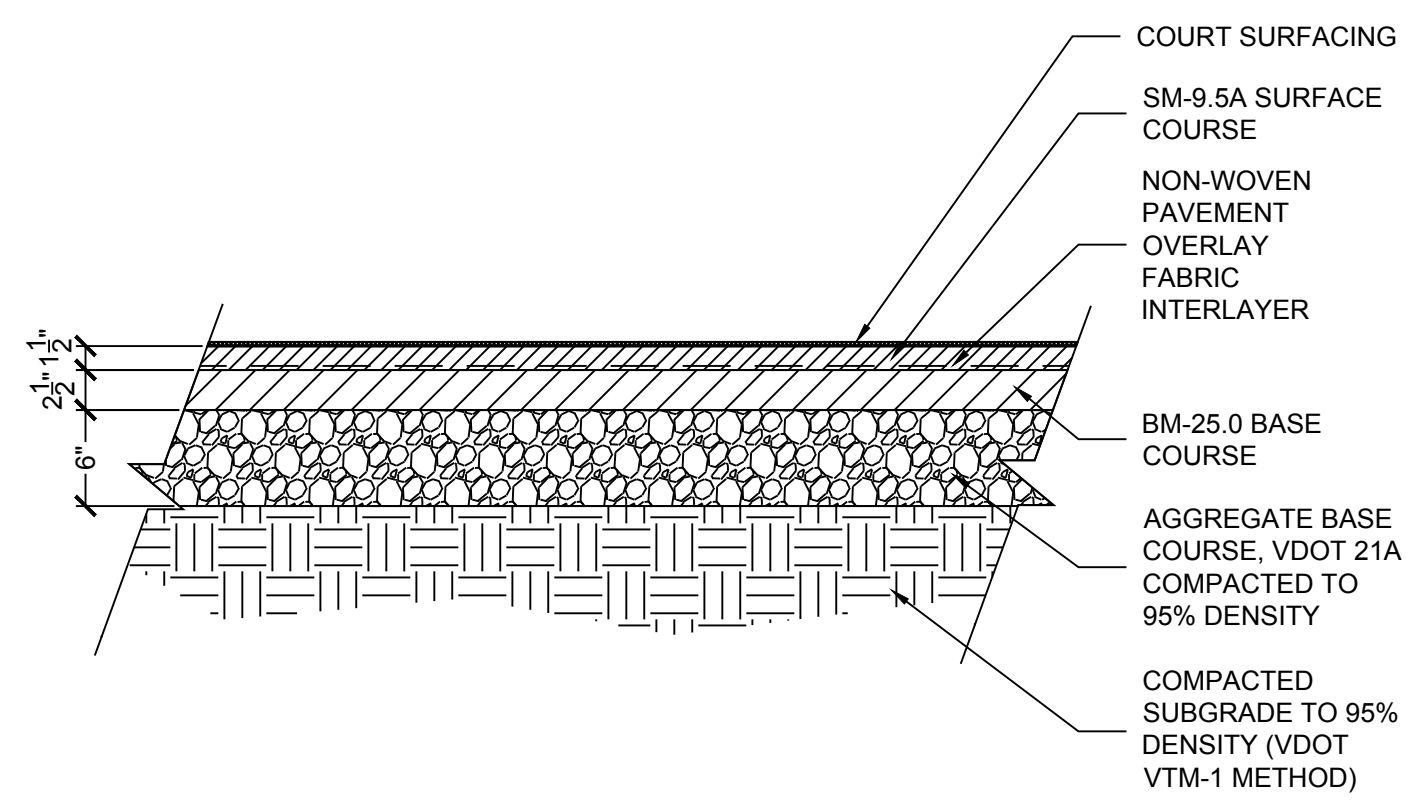


3 ENHANCED SIDEWALK ENLARGEMENT PLAN

1"=10'-0"



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

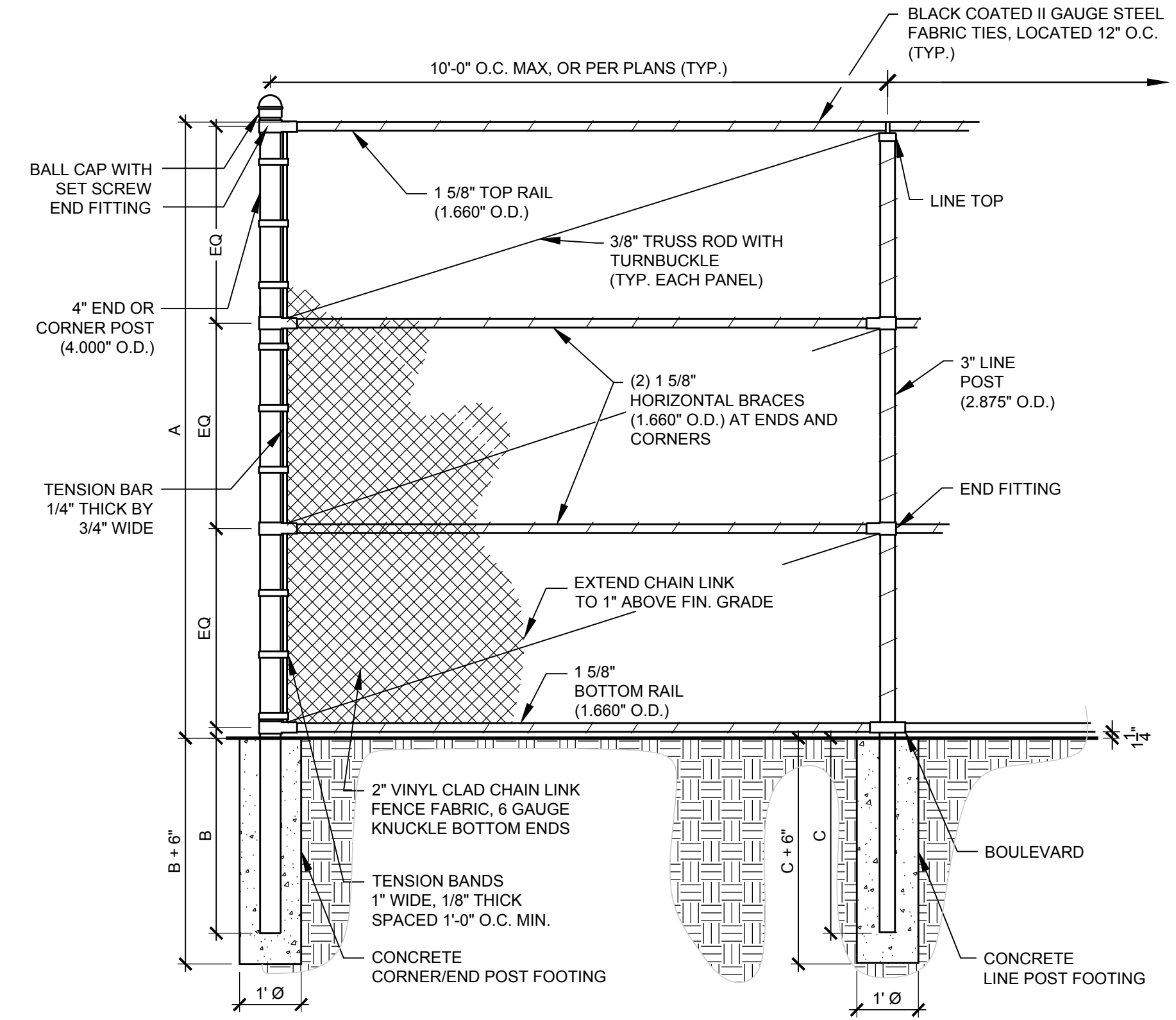


- NOTES:
- COURT SURFACING TO BE COLORPLUS (TM) SYSTEM BY SPORTMASTER® SPORT SURFACES
 - CONTRACTOR TO PROVIDE FULL RANGE OF MANUFACTURER'S COLORS FOR SELECTION AND APPROVAL BEFORE CONSTRUCTION



ITEM: BASKETBALL GOAL
MODEL NO.: SKU: BA873-BK OR APPROVED EQUAL
MANUFACTURER: BISON INC. OR APPROVED EQUAL
INSTALL PER MANUFACTURER'S INSTRUCTIONS AND
RECOMMENDATIONS.
COLORS TO BE SELECTED BY LANDSCAPE
ARCHITECT FROM MANUFACTURER'S FULL RANGE.

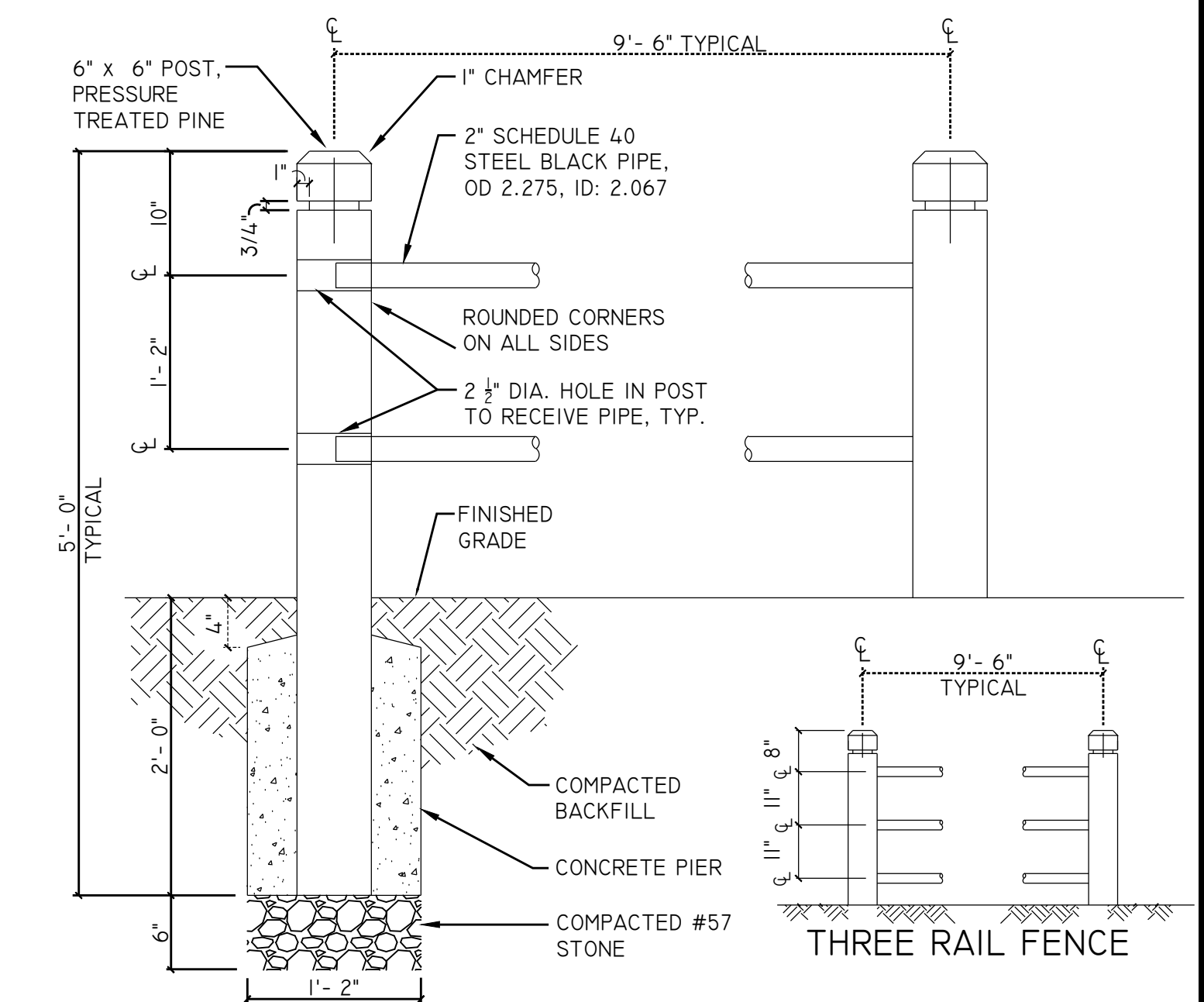
PHONE: (800) 638-0698
ADDRESS: 603 L STREET
LINCOLN, NE 68508
WEBSITE: WWW.BISONINC.COM



DIMENSIONS:

A	B	C
10'-0"	3'-2"	3'-2"
12'-0"	4'-2"	3'-2"

- NOTES:
- ALL MATERIALS SHALL BE VINYL CLAD GALVANIZED STEEL, PIPES SHALL BE SS-40.
 - VINYL COATING SHALL BE COLORED BLACK UNLESS OTHERWISE INDICATED ON PLANS.
 - SLOPE TOP OF FOOTINGS TO DRAIN.

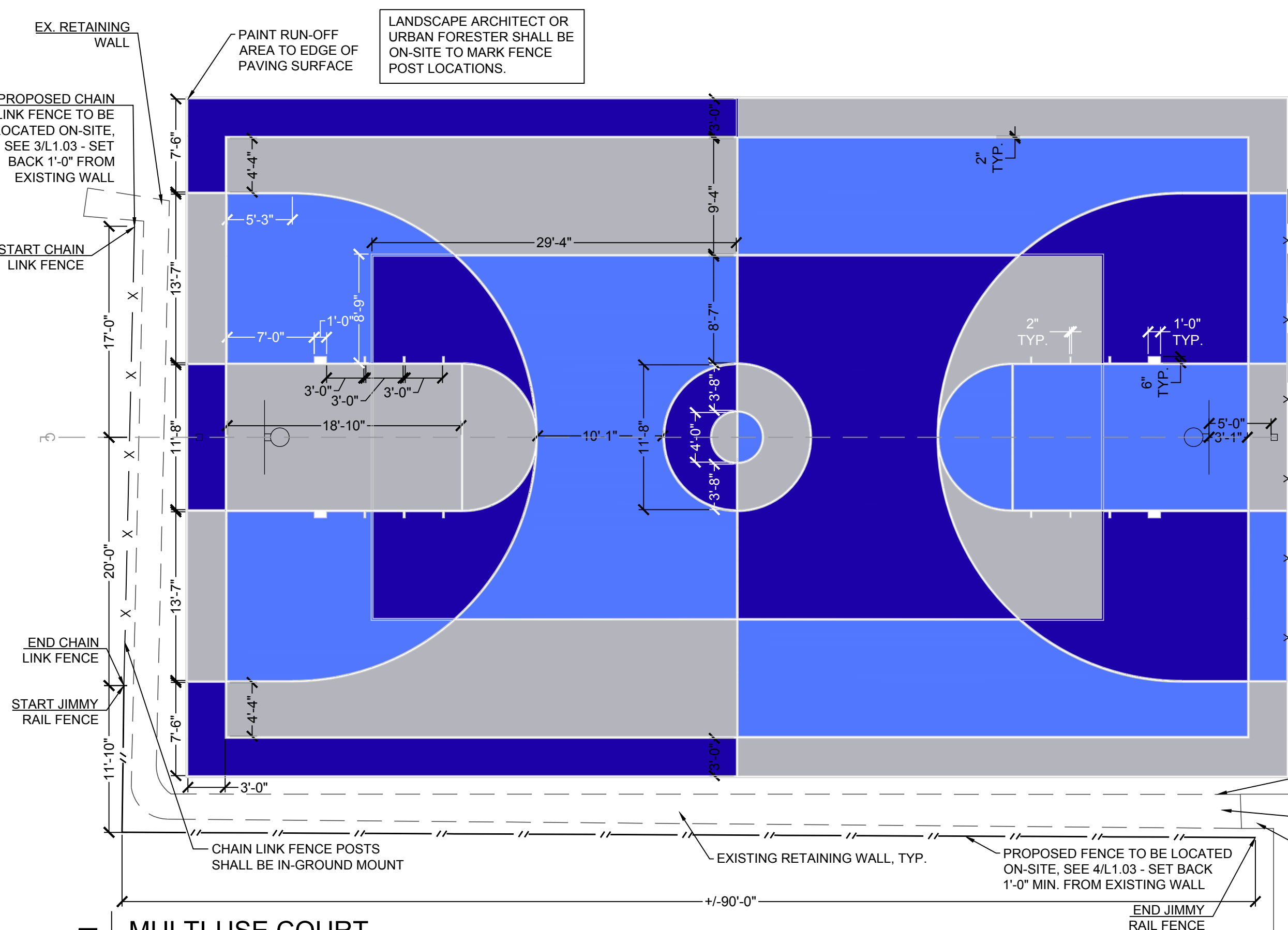


1 MULTI-USE COURT SURFACE
1/8"=1'-0"

2 BASKETBALL GOAL
NOT TO SCALE

3 FENCE SECTION @ MULTI-USE COURT (NORTH & SOUTH SIDES)
1/2"=1'-0"

4 FENCE SECTION @ EX. RETAINING WALL (WEST & NORTH SIDE)
3/8"=1'-0"



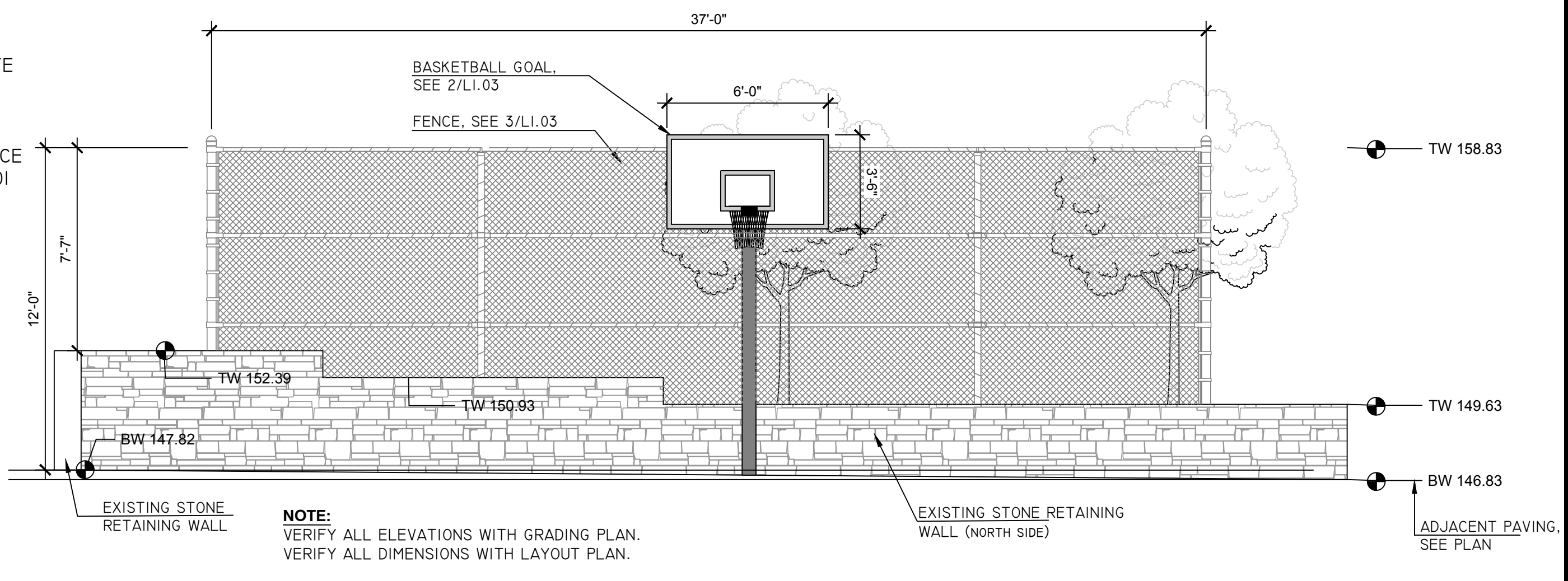
LEGEND

- COLOR 1 - BLUE
- COLOR 2 - US BLUE
- COLOR 3 - LIGHT GRAY

NOTES:

- ALL STRIPES TO BE WHITE
- STRIPES TO BE 2" WIDE WHITE COLOR UNLESS OTHERWISE NOTED
- MULTI-USE COURT SURFACE TO FOLLOW DETAIL 1/L1.01

5 MULTI-USE COURT
1/8"=1'-0"



6 FENCE ELEVATION @ EXISTING RETAINING WALL (NORTH SIDE)
1/4"=1'-0"

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L1.03 SPORT COURT DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD

PLOTTED: SEPTEMBER 16 2021
PLOTTED BY: MFILIPPONE

SHEET
MULTI-USE COURT DETAILS
L1.03

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

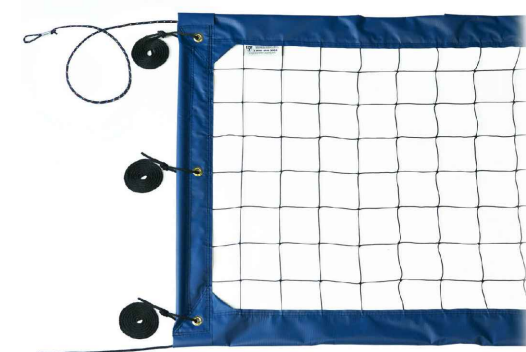
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 41 of 68



BOUNDARY LINES:

1. BOUNDARY LINES SHALL BE 'FOUR INCH PREMIUM BOUNDARY LINES' BY VOLLEYBALL USA, www.volleyballusa.com (800-494-3933) OR APPROVED EQUAL.
2. SEE PLANS FOR EXACT INSTALLATION CONDITIONS.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.



SAND VOLLEYBALL NET:

1. SAND VOLLEYBALL NET SHALL BE 'ML4: 4' PRO BEACH NET' BY VOLLEYBALL USA, www.volleyballusa.com (800-494-3933) OR APPROVED EQUAL.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

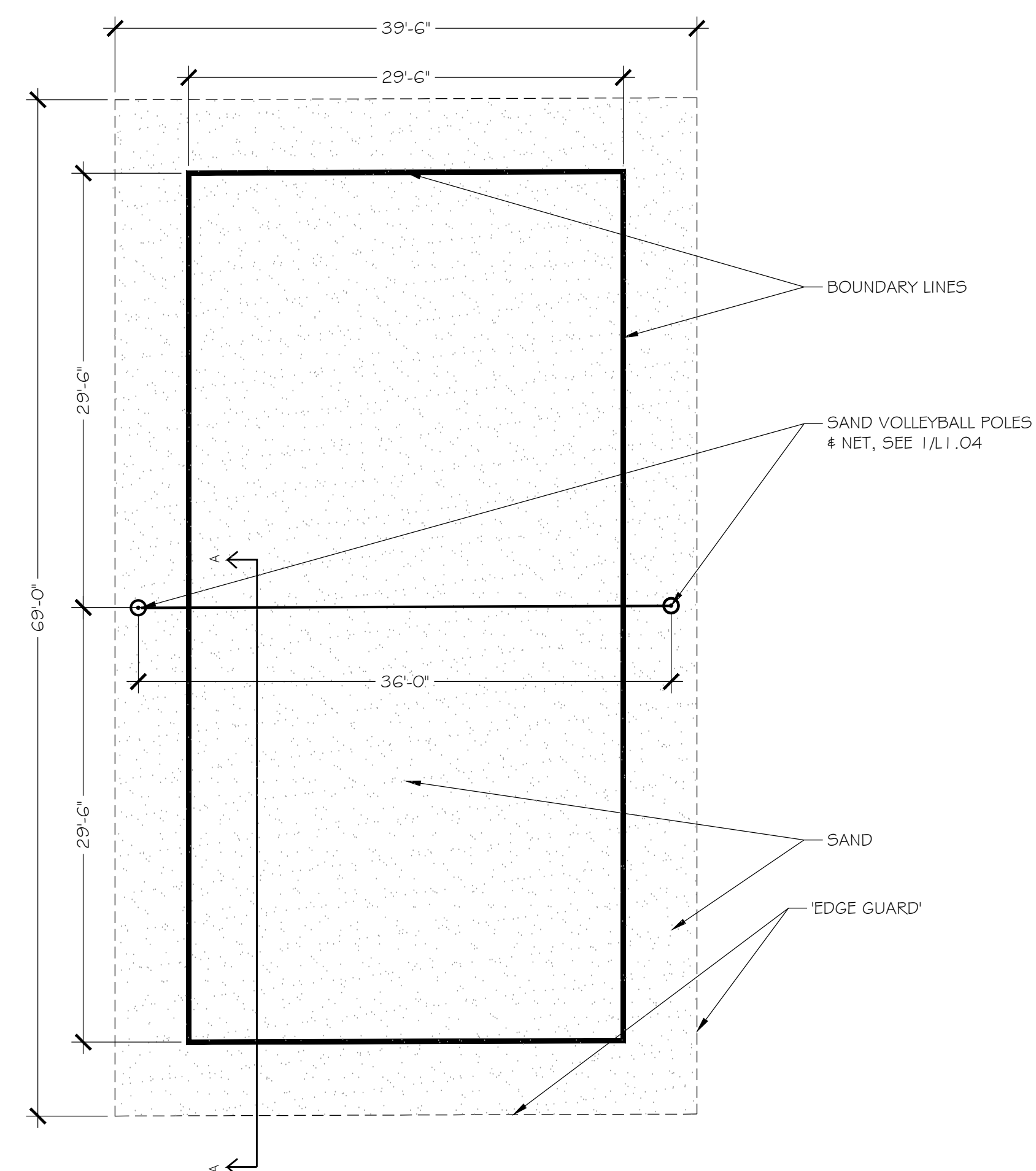
SAND:

1. SAND SHALL BE 'QUALITY BEACH SAND' BY VOLLEYBALL USA, www.volleyballusa.com (800-494-3933) OR APPROVED EQUAL.
2. SEE PLANS FOR EXACT INSTALLATION CONDITIONS.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
4. COLOR: DETERMINED BY LOCATION THE SAND IS PRODUCED AT.



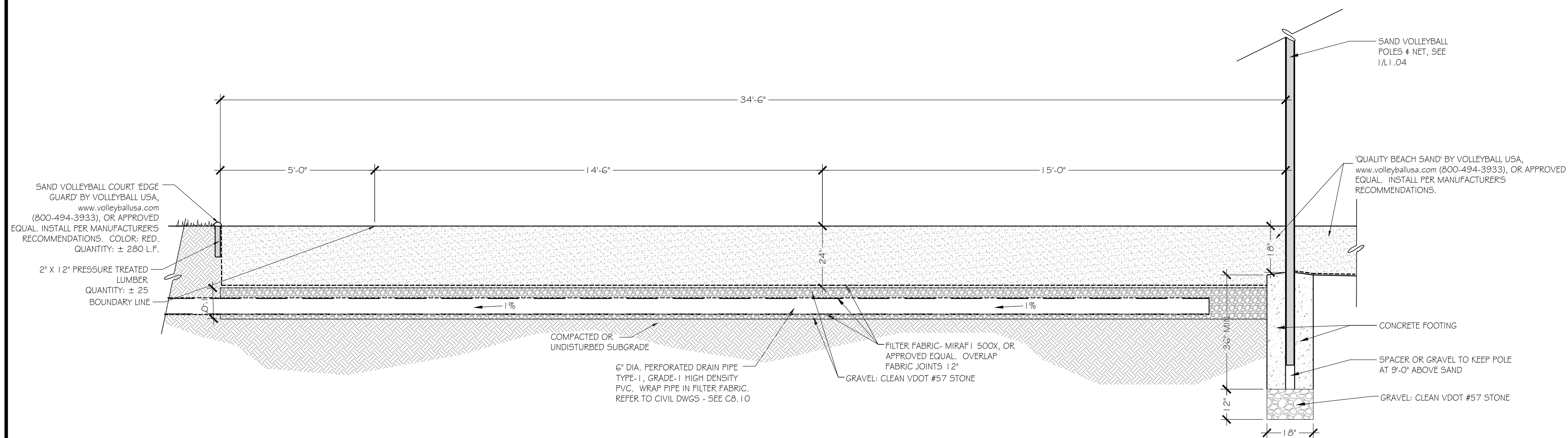
SAND VOLLEYBALL POLES:

1. SAND VOLLEYBALL POLES SHALL BE 'MONSON SLIDER POLES' BY VOLLEYBALL USA, www.volleyballusa.com (800-494-3933) OR APPROVED EQUAL.
2. SEE PLANS FOR EXACT INSTALLATION CONDITIONS.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.



1 SAND VOLLEY BALL COURT EQUIPMENT
NTS

2 SAND VOLLEY BALL COURT LAYOUT PLAN
1/8"=1'-0"



3 SAND VOLLEY BALL COURT SECTION (A-A')
1/2"=1'-0"

SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK

MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L1.04 VOLLEYBALL COURT DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD

PLOTTED: SEPTEMBER 3 2021
PLOTTED BY: MFILIPPONE

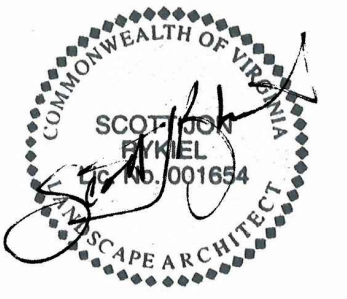
SHEET
VOLLEYBALL COURT DETAILS

L1.04

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 42 of 68



Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L1.05 FURNISHING DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD

PLOTTED: SEPTEMBER 7 2021
PLOTTED BY: MFLIPPONE

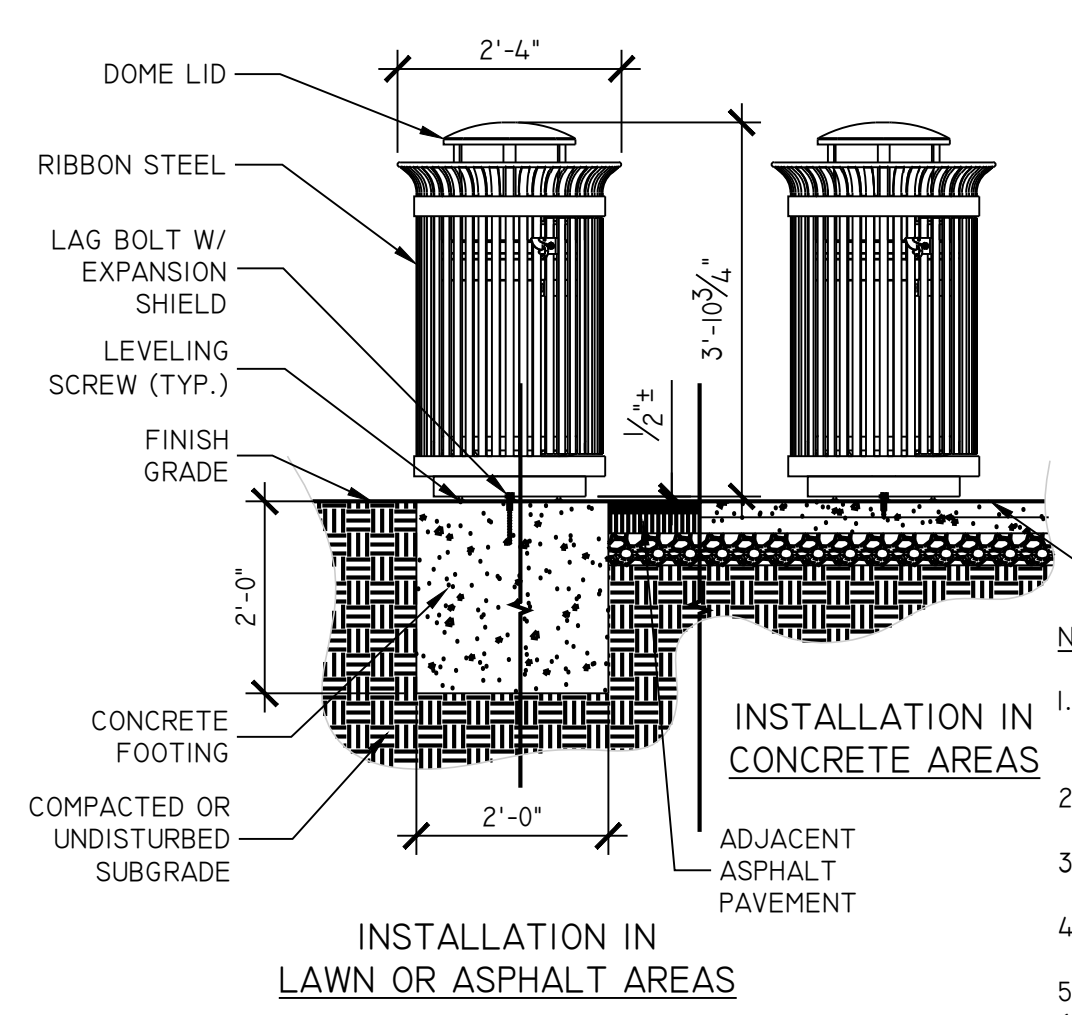
SHEET
FURNISHING DETAILS

L1.05

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

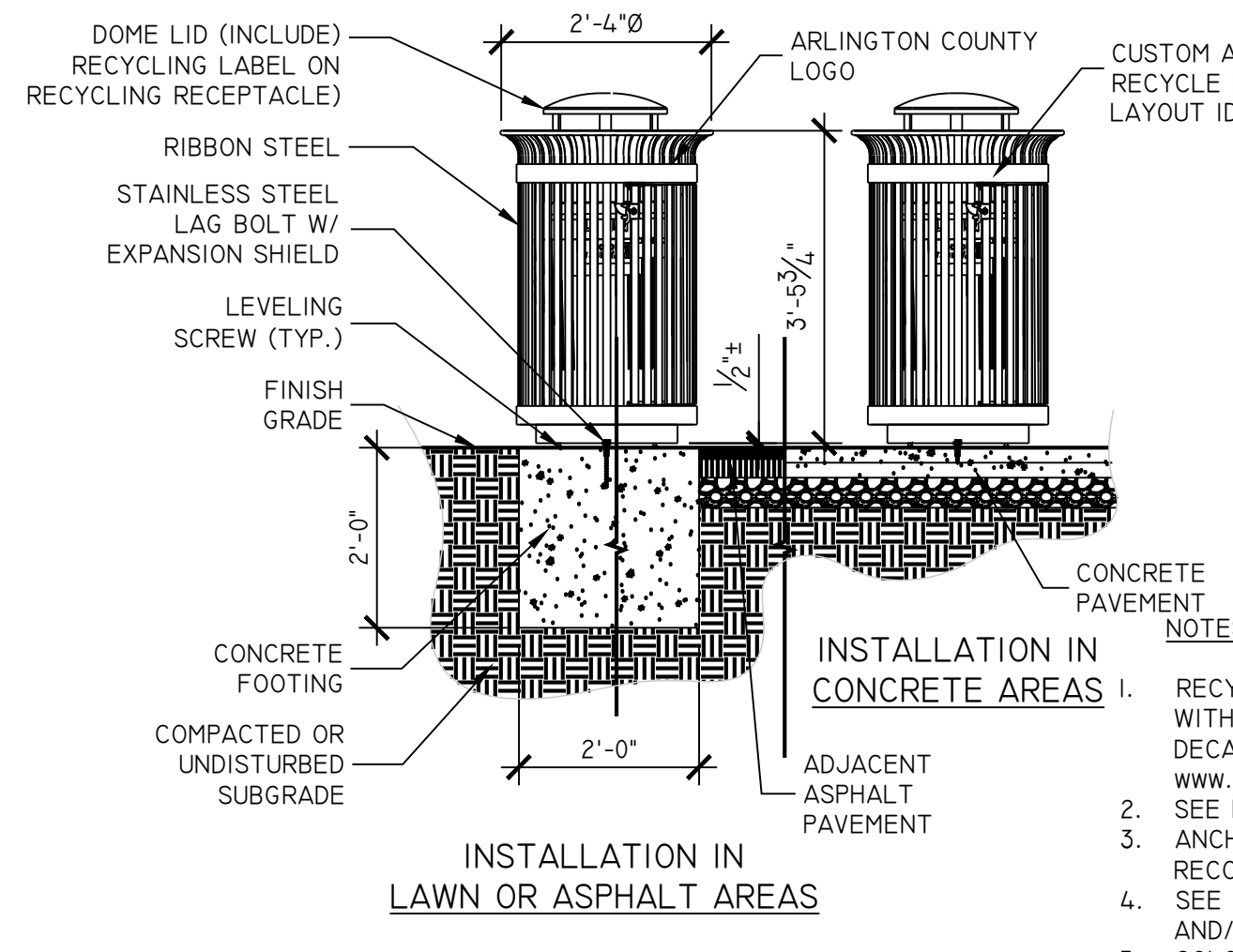
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 43 of 68



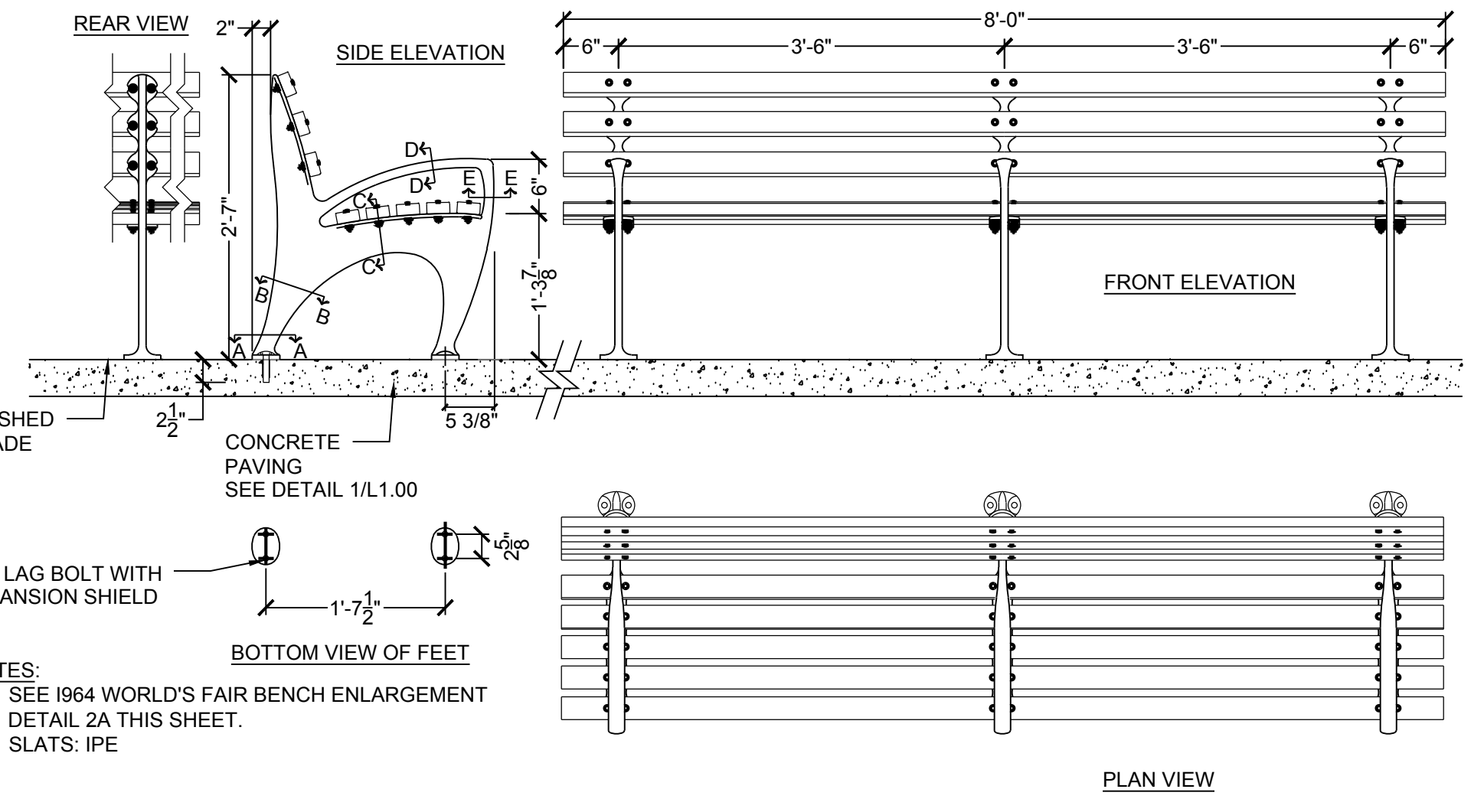
NOTES:

- TRASH RECEPTACLE SHALL BE MODEL SD-42 WITH DOME LID AND SIDE DOOR BY VICTOR STANLEY, INC. WWW.VICTORSTANLEY.COM OR APPROVED EQUAL.
- SEE PLANS FOR EXACT INSTALLATION CONDITIONS.
- ANCHOR TO GROUND PER MANUFACTURER'S RECOMMENDATIONS.
- SEE APPROPRIATE DETAILS FOR CONCRETE PAVING AND/OR ASPHALT PAVING.
- COLOR SHALL BE PER SPECIFICATIONS.
- LATCHING SIDE DOOR TO BE LOCATED TO FRONT OF BIN SO THAT THE DOOR OPENS ALL THE WAY.



NOTES:

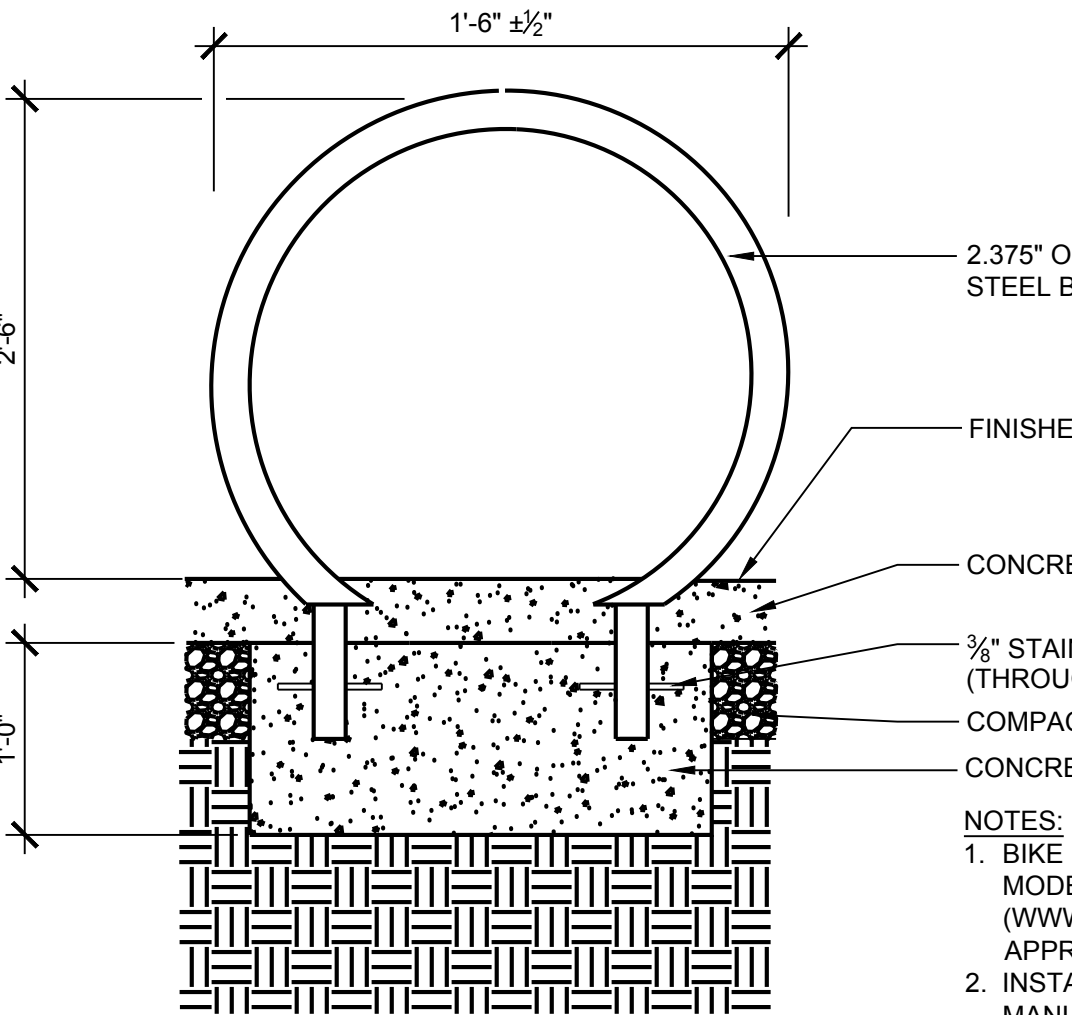
- RECYCLING RECEPTACLE SHALL BE MODEL SD-42 WITH RECYCLE PACKAGE WITH DOME LID AND DECALS AND SIDE DOOR BY VICTOR STANLEY, INC. WWW.VICTORSTANLEY.COM OR APPROVED EQUAL.
- SEE PLANS FOR EXACT INSTALLATION CONDITIONS.
- ANCHOR TO GROUND PER MANUFACTURER'S RECOMMENDATIONS.
- SEE APPROPRIATE DETAILS FOR CONCRETE PAVING AND/OR ASPHALT PAVING.
- COLOR SHALL BE PER SPECIFICATIONS.
- LATCHING SIDE DOOR TO BE LOCATED TO FRONT OF BIN SO THAT THE DOOR OPENS ALL THE WAY.



NOTES:

- SEE 1964 WORLD'S FAIR BENCH ENLARGEMENT DETAIL 2A THIS SHEET.
- SLATS: IPE

1 TRASH & RECYCLING RECEPTACLES
1/2"=1'-0"



NOTES:

- BIKE RACK TO BE VICTOR STANLEY MODEL BRHS-101 (WWW.VICTORSTANLEY.COM) OR APPROVED EQUAL.
- INSTALL BIKE RACKS ACCORDING TO MANUFACTURER SPECIFICATIONS. COLOR TO BE PER THE SPECIFICATIONS.
- HOT-DIPPED GALVANIZED TREATMENT UNDER THE POWDER COATING.
- SEE PLAN FOR LOCATIONS.
- ORIENTATION TO BE VERIFIED BY DPR PRIOR TO INSTALLATION.
- SEE BICYCLE RACK LAYOUT 2L1.02.

3 BIKE RACK (BR)
1"=1'-0"



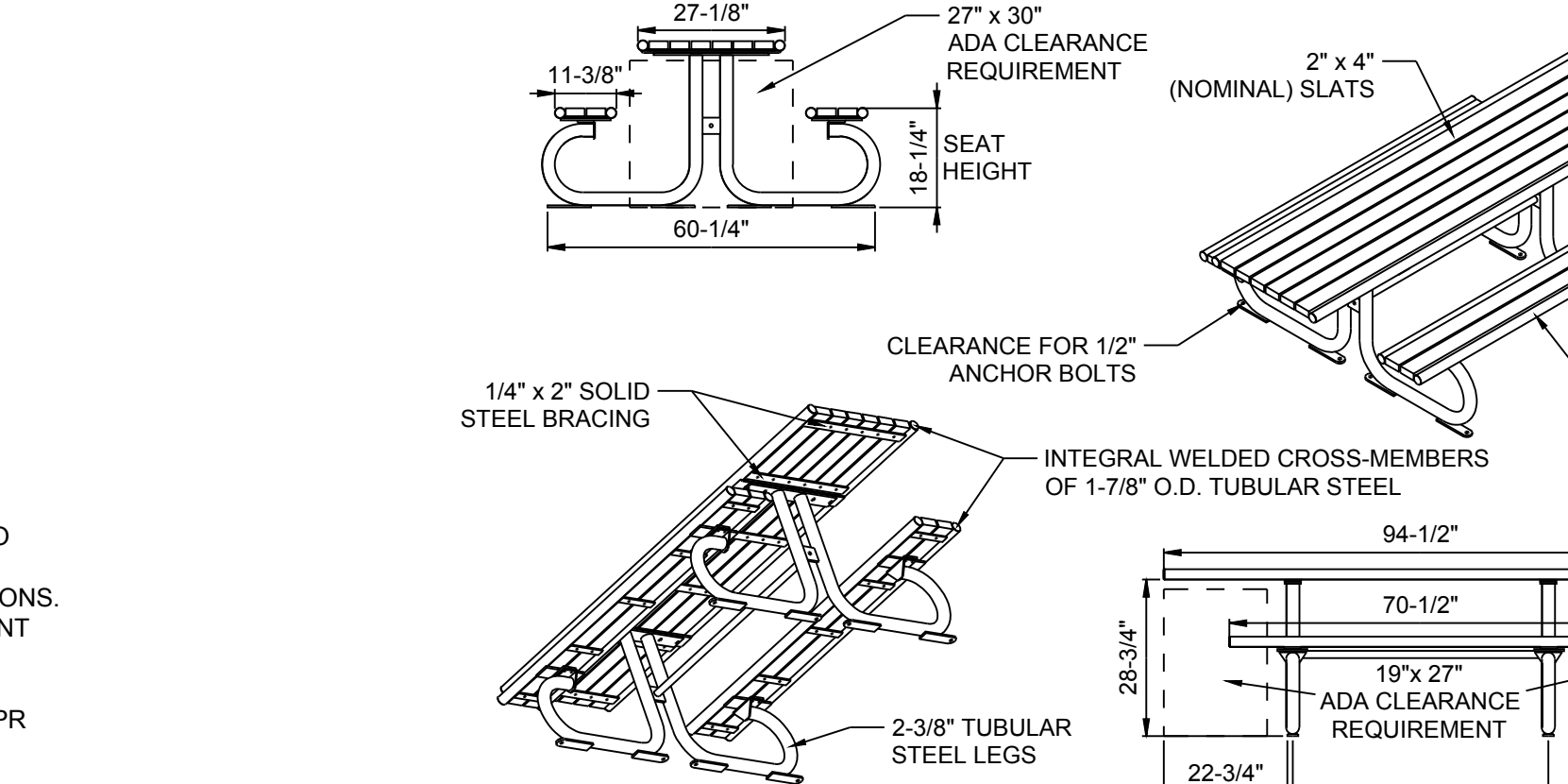
SURFACE MOUNT PER MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS

ITEM: CHARCOAL GRILL
G1: ASW-20 B18 (3) OR APPROVED EQUAL.
G2: ASW-24 B18 (2 @ NEW SHELTER) & ASW-24 B18 (1 @ EXISTING SHELTERS) OR APPROVED EQUAL.
MANUFACTURER: RJ THOMAS MANUFACTURING CO.
ADDRESS: 5648 U.S. HWY 59
CHEROKEE, IA 51012
WEBSITE: www.pilotrock.com
SURFACE MOUNT PER MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
COLORS TO BE SELECTED BY LANDSCAPE ARCHITECT FROM MANUFACTURER'S FULL RANGE.

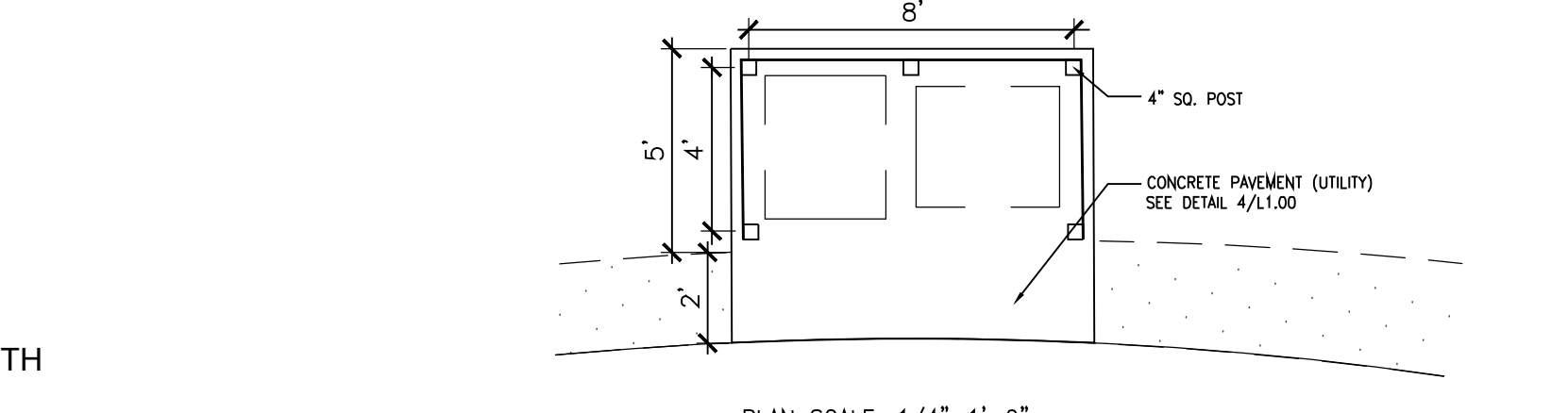
6 GRILL (G1 & G2)
NOT TO SCALE
REVISED ON 1/21/2016

NOTES:

- PICNIC TABLE SHALL BE MODEL NUMBER CM-565 (SURFACE MOUNT) BY VICTOR-STANLEY, INC. PHONE: (800) 368-2573, (301) 855-8300. SLATS: IPE. FRAME: BLACK OR APPROVED EQUAL.
- CONTRACTOR SHALL VERIFY DIMENSIONS OF TABLE AND LEGS PRIOR TO CONSTRUCTION.
- ONE (1) AT EACH CONCRETE PAD, TWO (2) AT PICNIC SHELTER, AND ONE (1) IN EACH OF THE SMALL EXISTING SHELTERS. SIX (6) TOTAL.

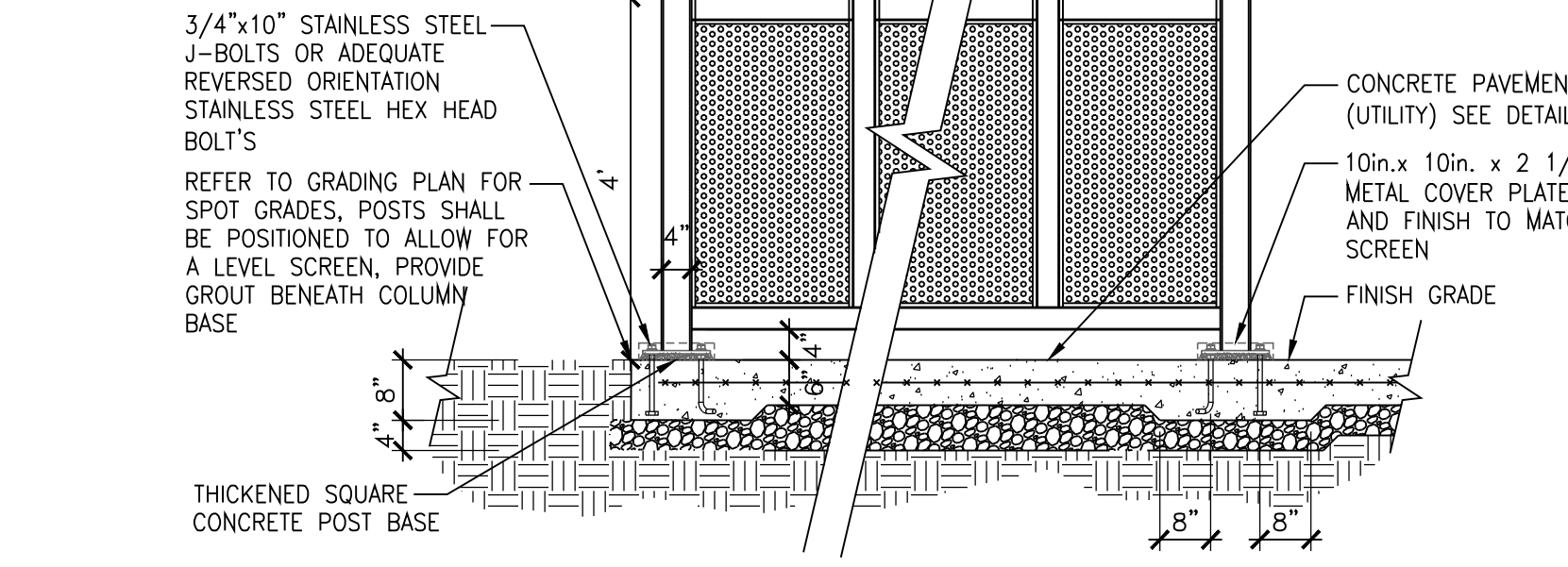


4 ADA PICNIC TABLE @ CONC. PAD (PT1) & SHELTER (PT3) & SMALL EX. SHELTERS
NOT TO SCALE



NOTES:

- METAL SCREEN ENCLOSURE, REFER TO SPECIFICATIONS.
- ALL COMPONENTS TO BE BLACK COATED.

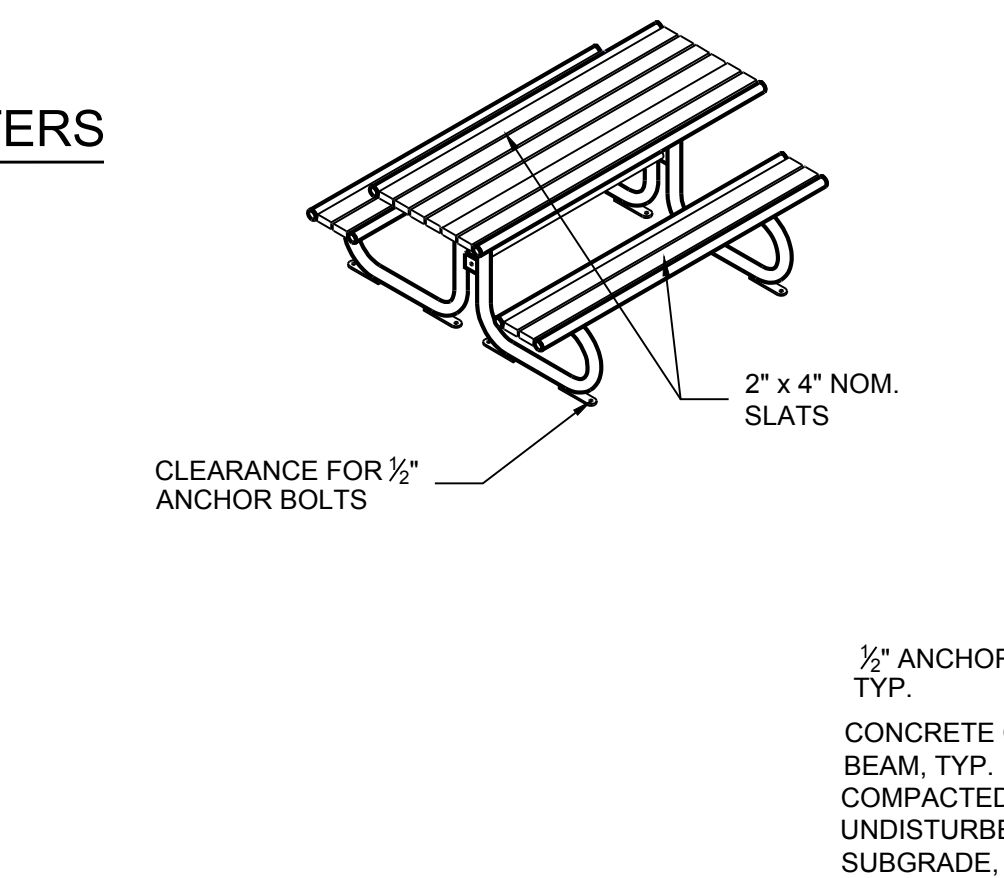


7 REFUSE AREA (RA)
1/2"=1'-0"

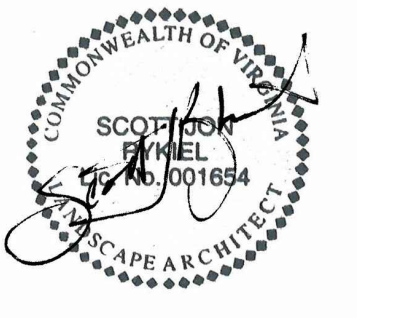
2A BENCH ENLARGEMENT
3/4"=1'-0"

NOTES:

- PICNIC TABLE SHALL BE MODEL NUMBER CM-565 (SURFACE MOUNT) BY VICTOR-STANLEY, INC. PHONE: (800) 368-2573, (301) 855-8300. SLATS: IPE. FRAME: BLACK OR APPROVED EQUAL.
- CONTRACTOR SHALL VERIFY DIMENSIONS OF TABLE AND LEGS PRIOR TO CONSTRUCTION.
- EIGHT (8) IN THE PICNIC SHELTER, TWO (2) IN EACH OF THE SMALL EXISTING SHELTERS AND SIX (6) ON THE LAWN. SIXTEEN (16) TOTAL.



5 PICNIC TABLE @ LAWN & SHELTER & SMALL EX. SHELTERS (PT2)
NOT TO SCALE



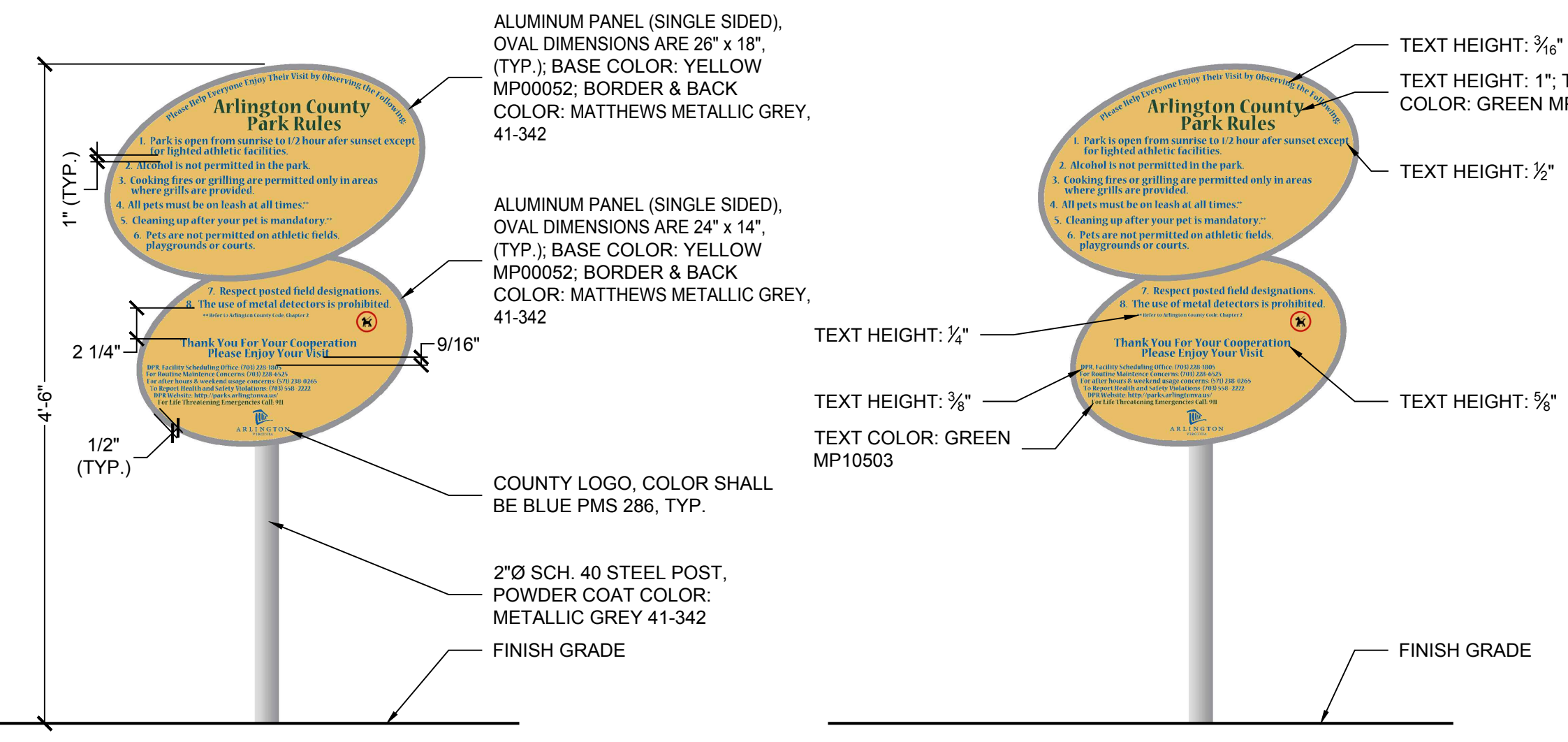
APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

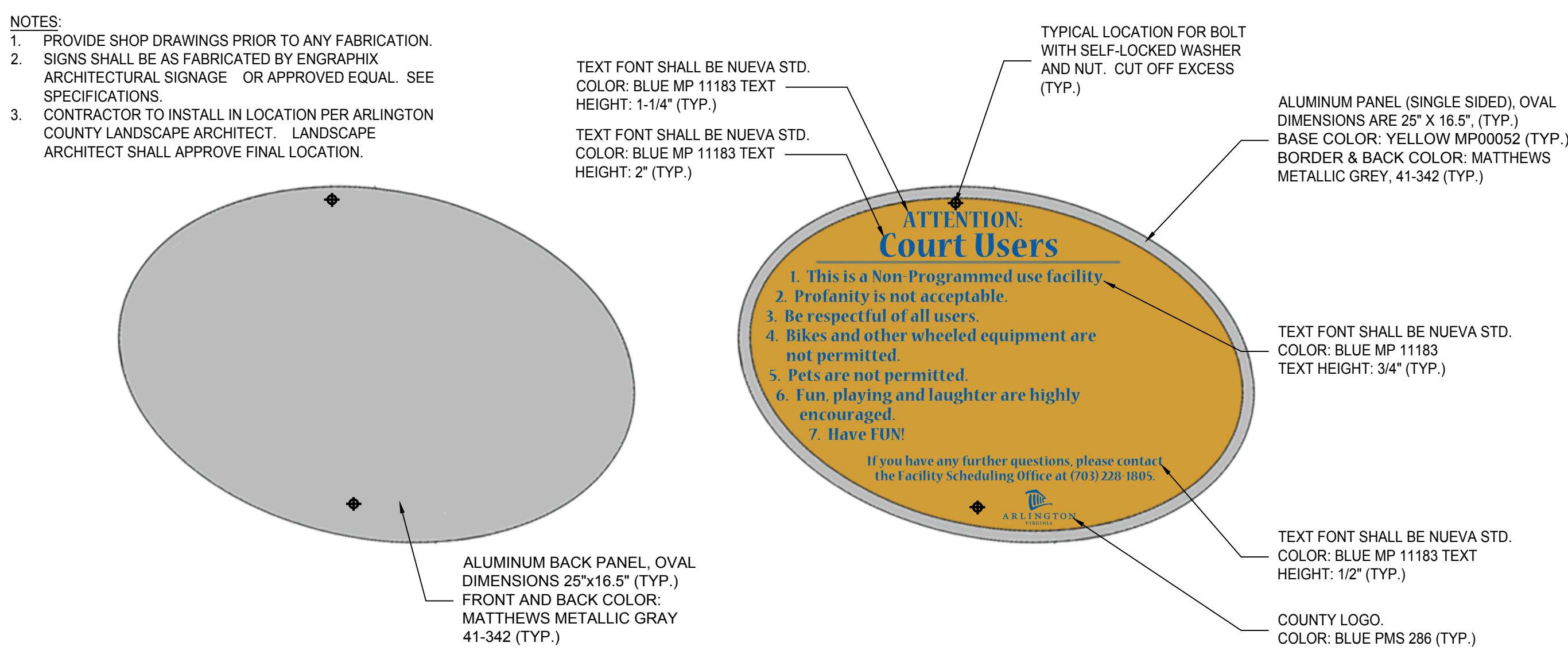
DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A
FILENAME: L1.06 SIGNAGE DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\B\A05 100 CD
PLOTTED: SEPTEMBER 16 2021
PLOTTED BY: MFLIPPONE

SHEET
SIGNAGE DETAILS
L1.06

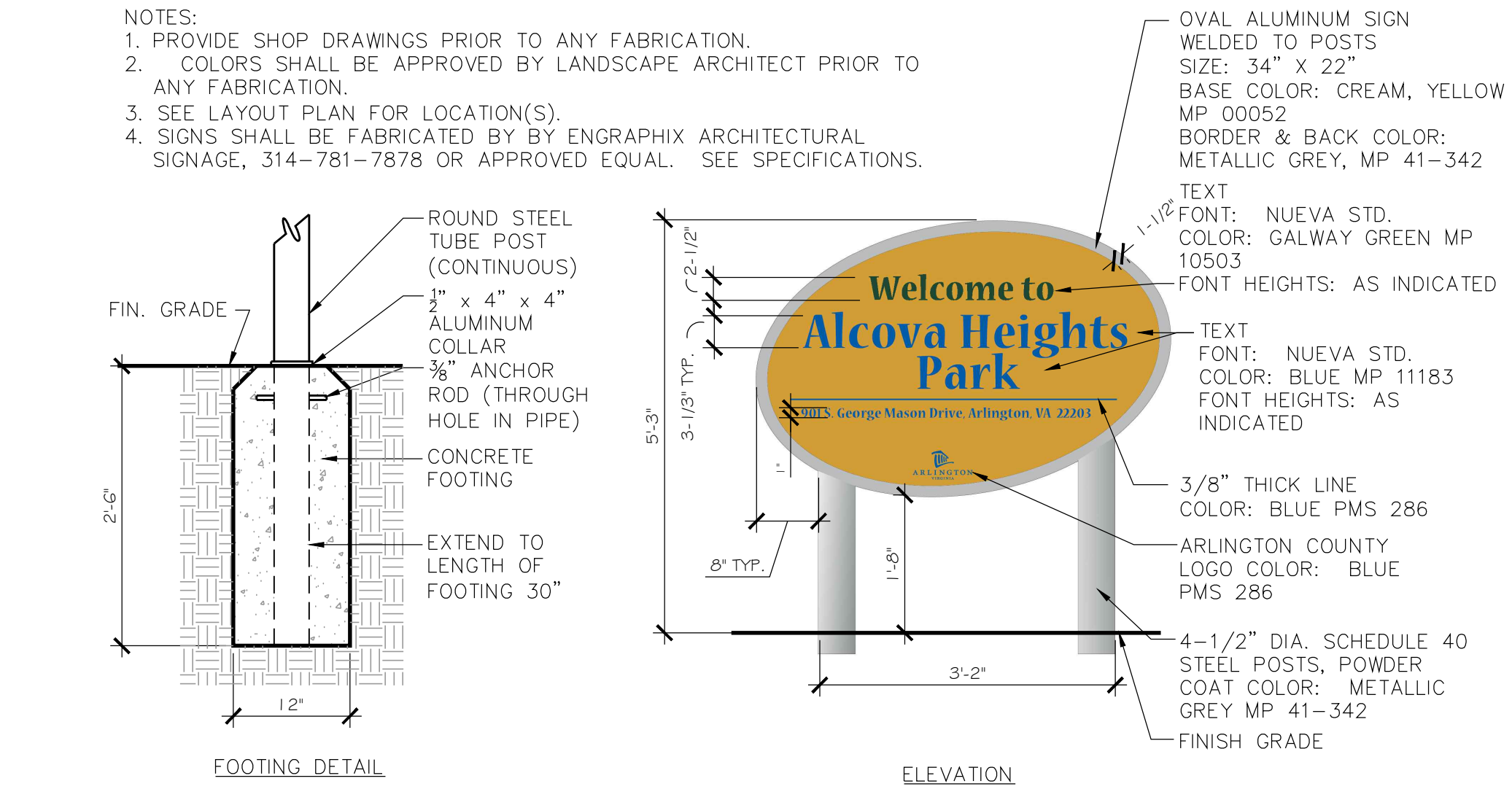
ARLINGTON COUNTY, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES	
Alcova Heights Park Renovation Phase I 901 S. George Mason Drive Arlington, Virginia 22204 Arlington County, Virginia	
Scale: As shown	Number: 44 of 68



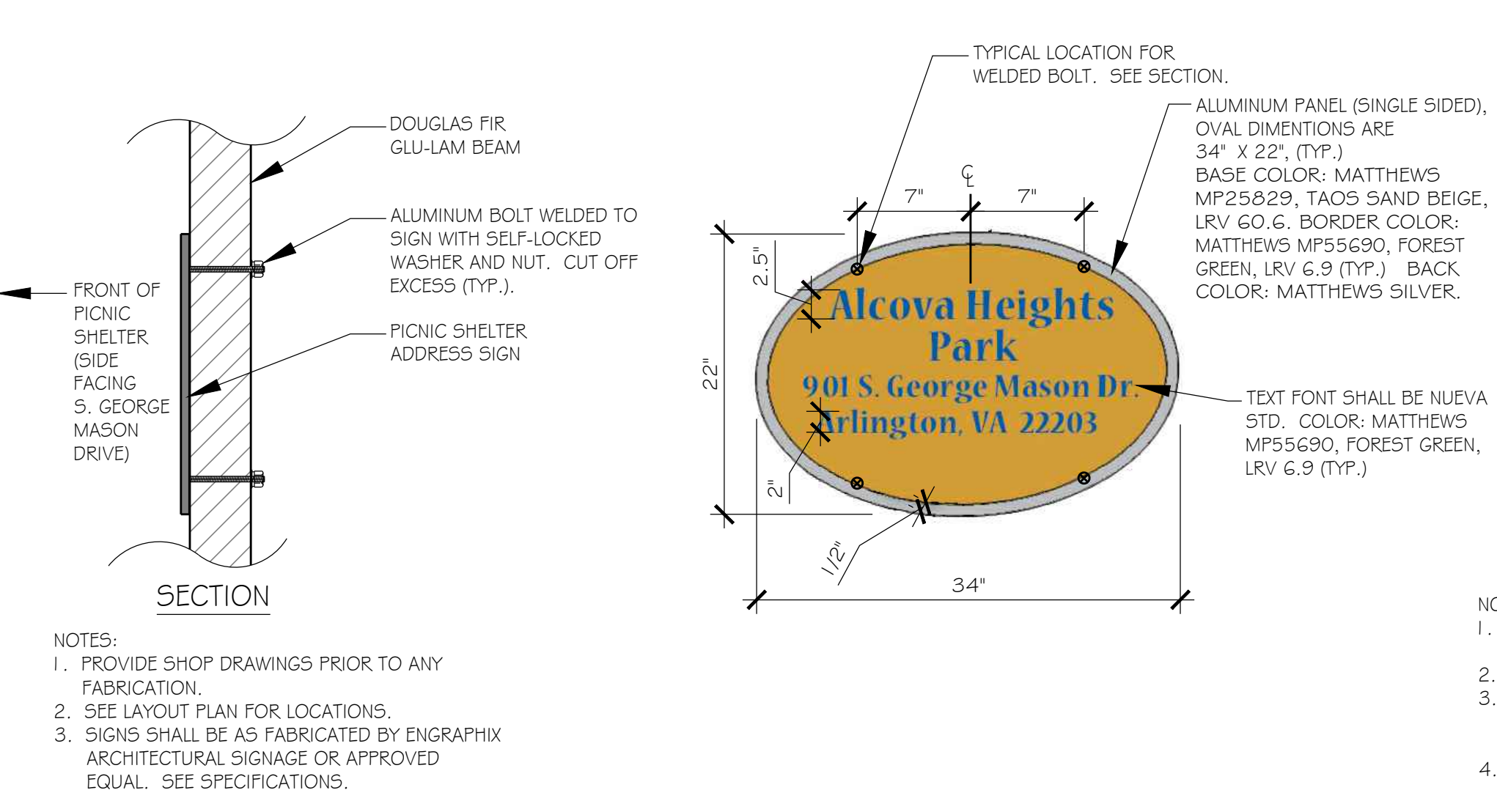
1 PARK RULES SIGN
NOT TO SCALE



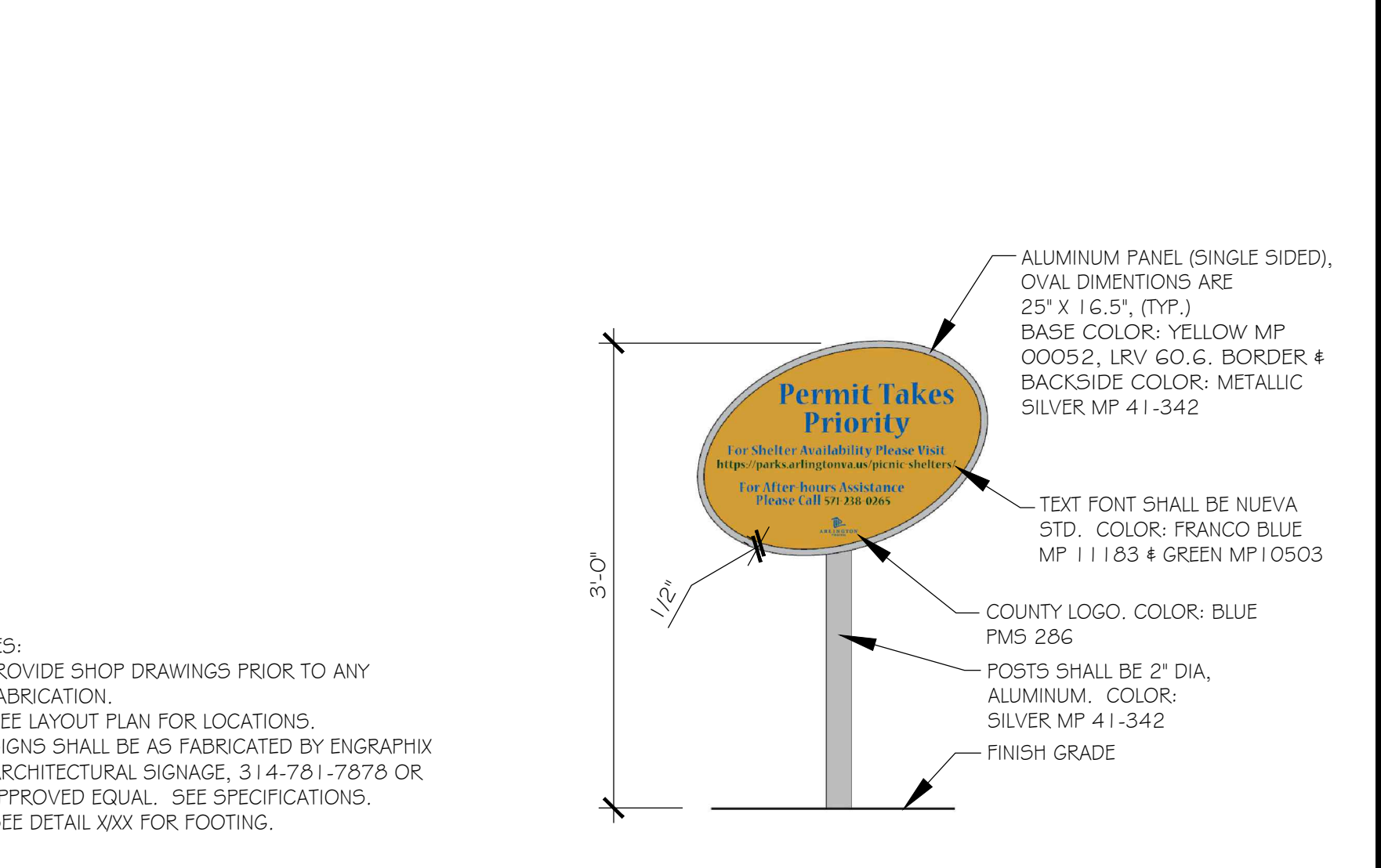
2 MULTI-USE COURT RULES SIGN
NOT TO SCALE



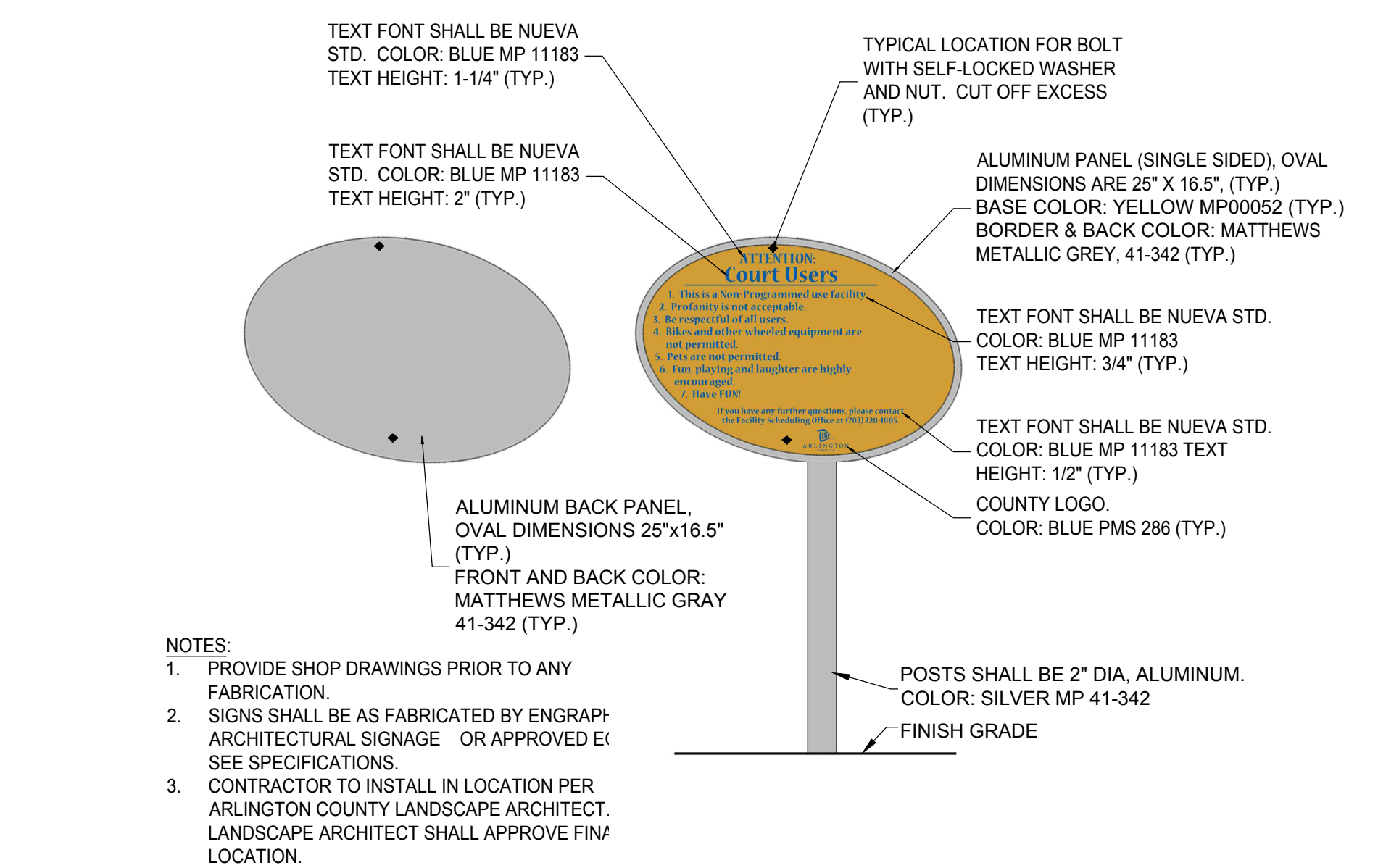
3 PARK ENTRY SIGN
NOT TO SCALE



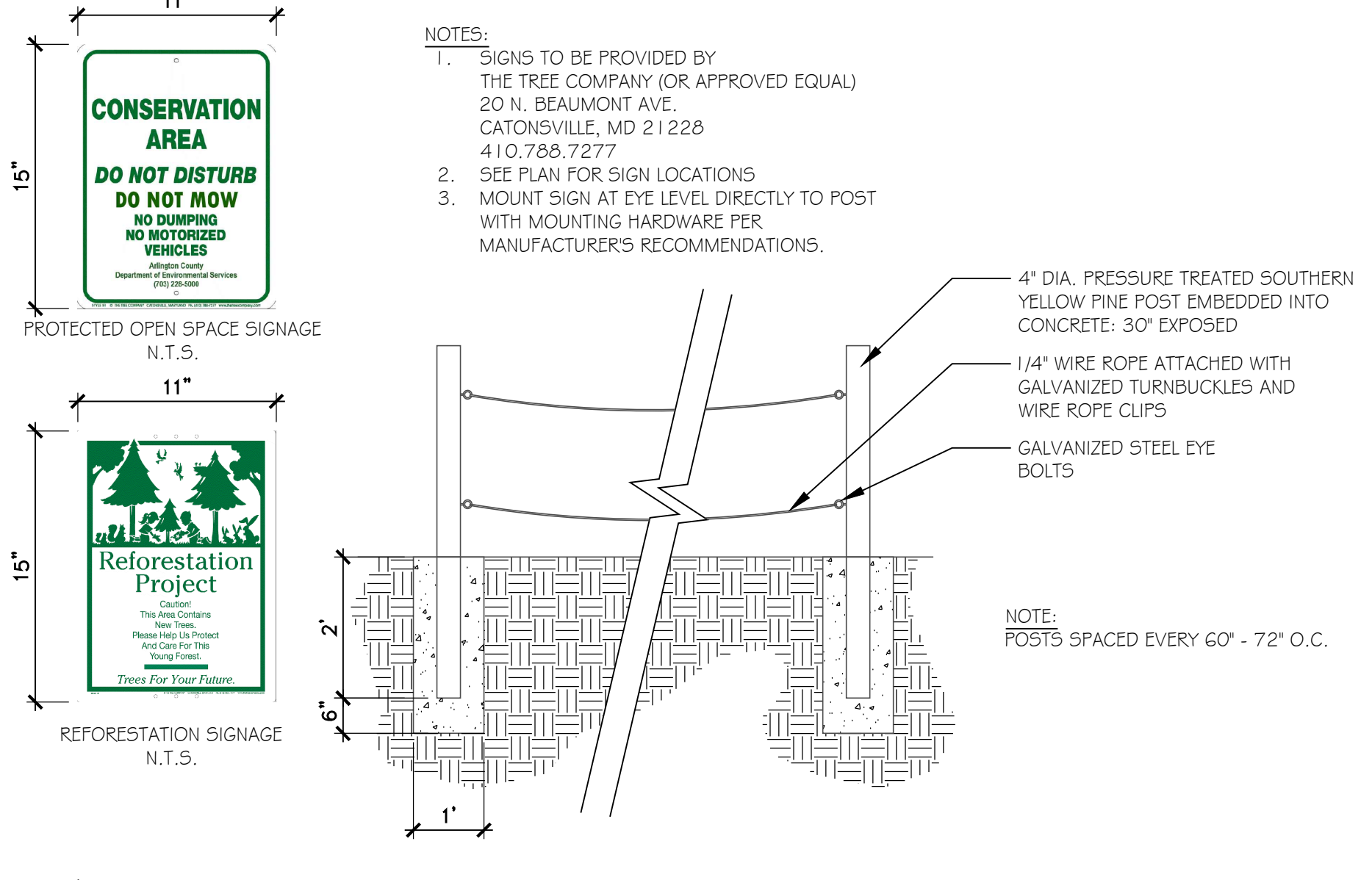
4 PICNIC SHELTER #2 ADDRESS SIGN (IN PROGRESS)
NOT TO SCALE



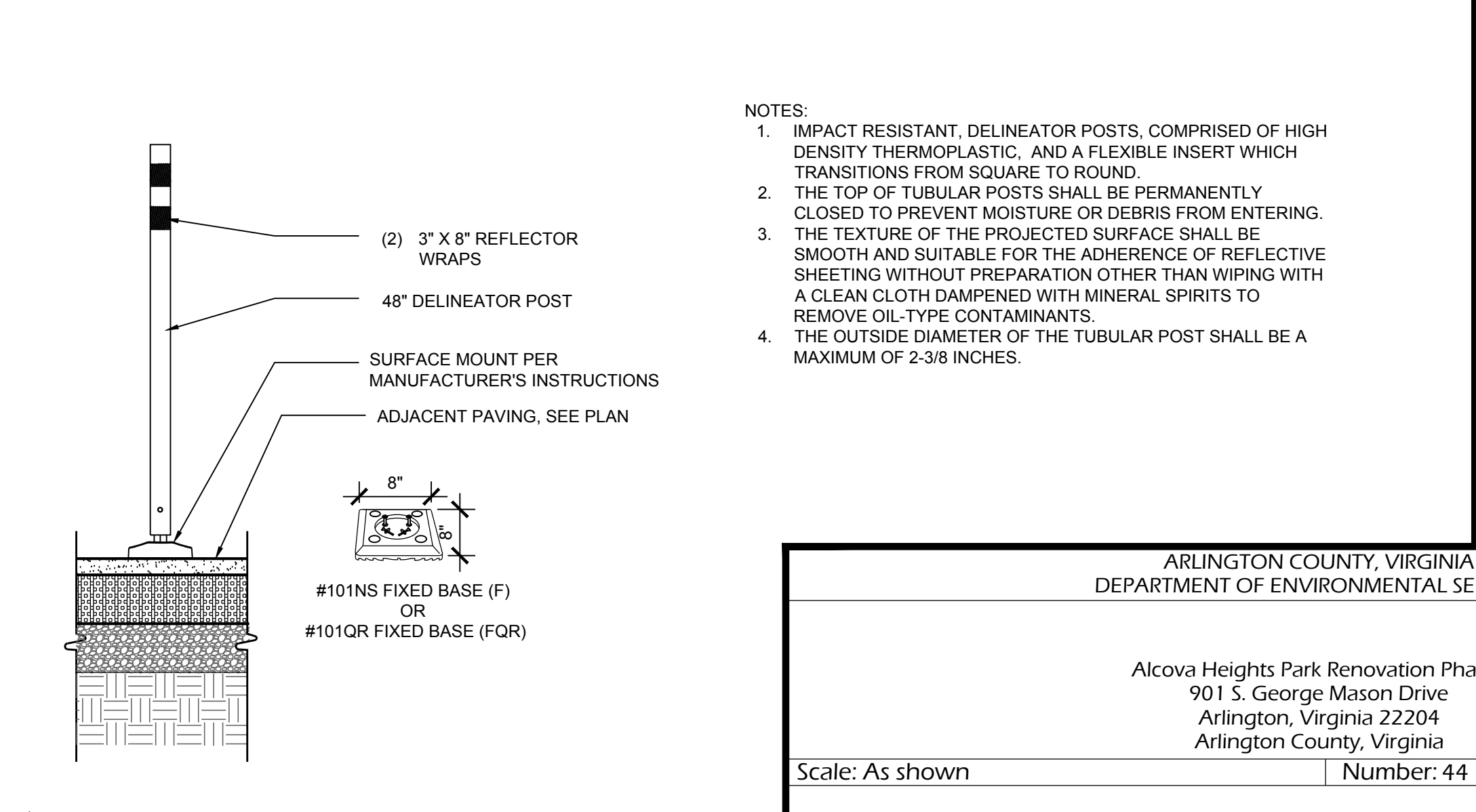
5 RESERVATION SIGN
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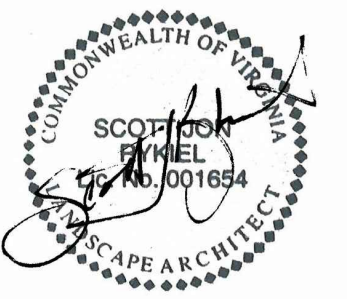
6 VOLLEYBALL COURT RULES SIGN
NOT TO SCALE



7 REFORESTATION/PROTECTED OPEN SPACE BARRIER & SIGNAGE
NOT TO SCALE



8 FLEXIBLE DELINEATOR POST
NOT TO SCALE



APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

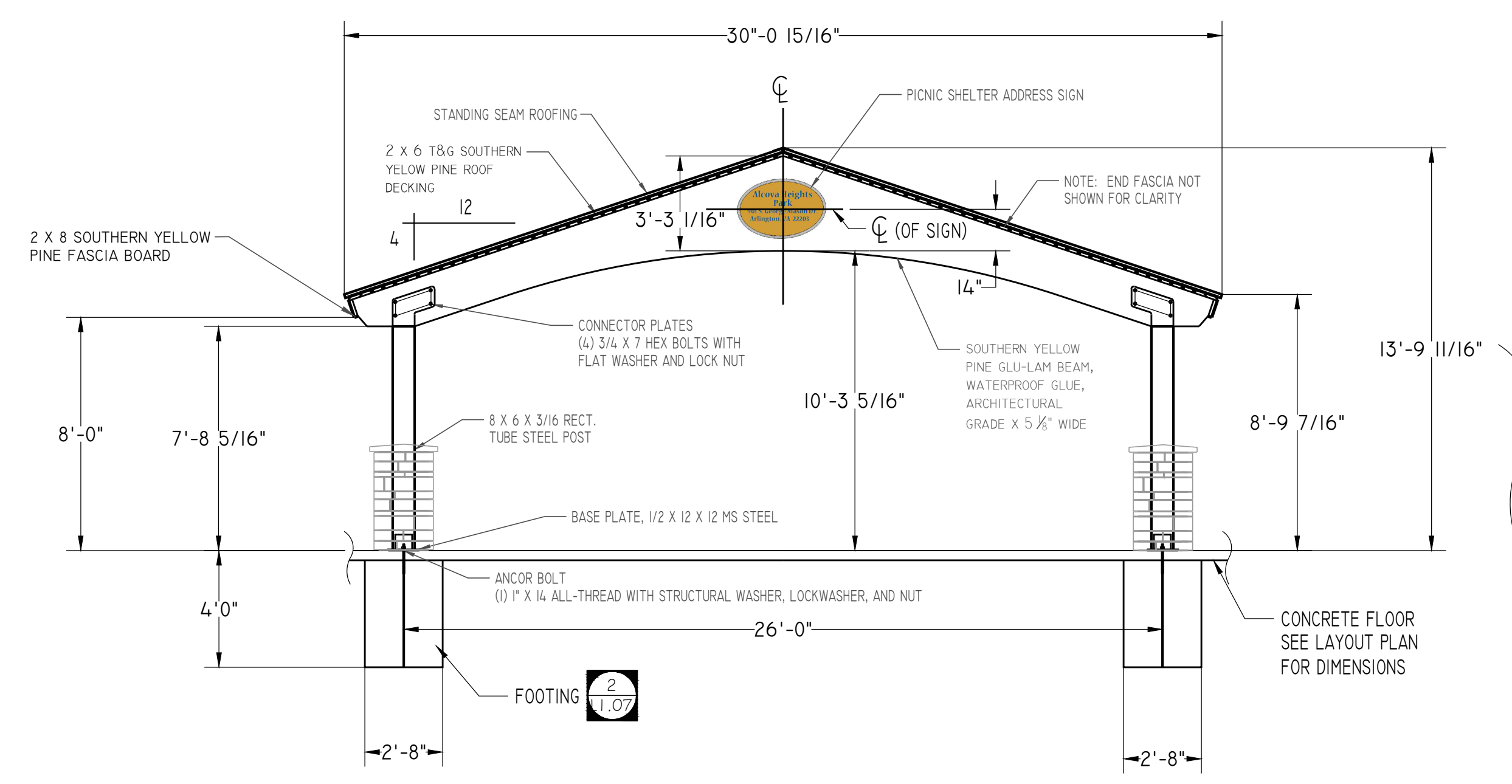
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CHECKED: SK
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PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS
PARK\CAD\MRA\05 100 CD
PLOTTED: SEPTEMBER 7 2021
PLOTTED BY: MFILIPPONE

SHEET
PICNIC SHELTER DETAILS
L1.07

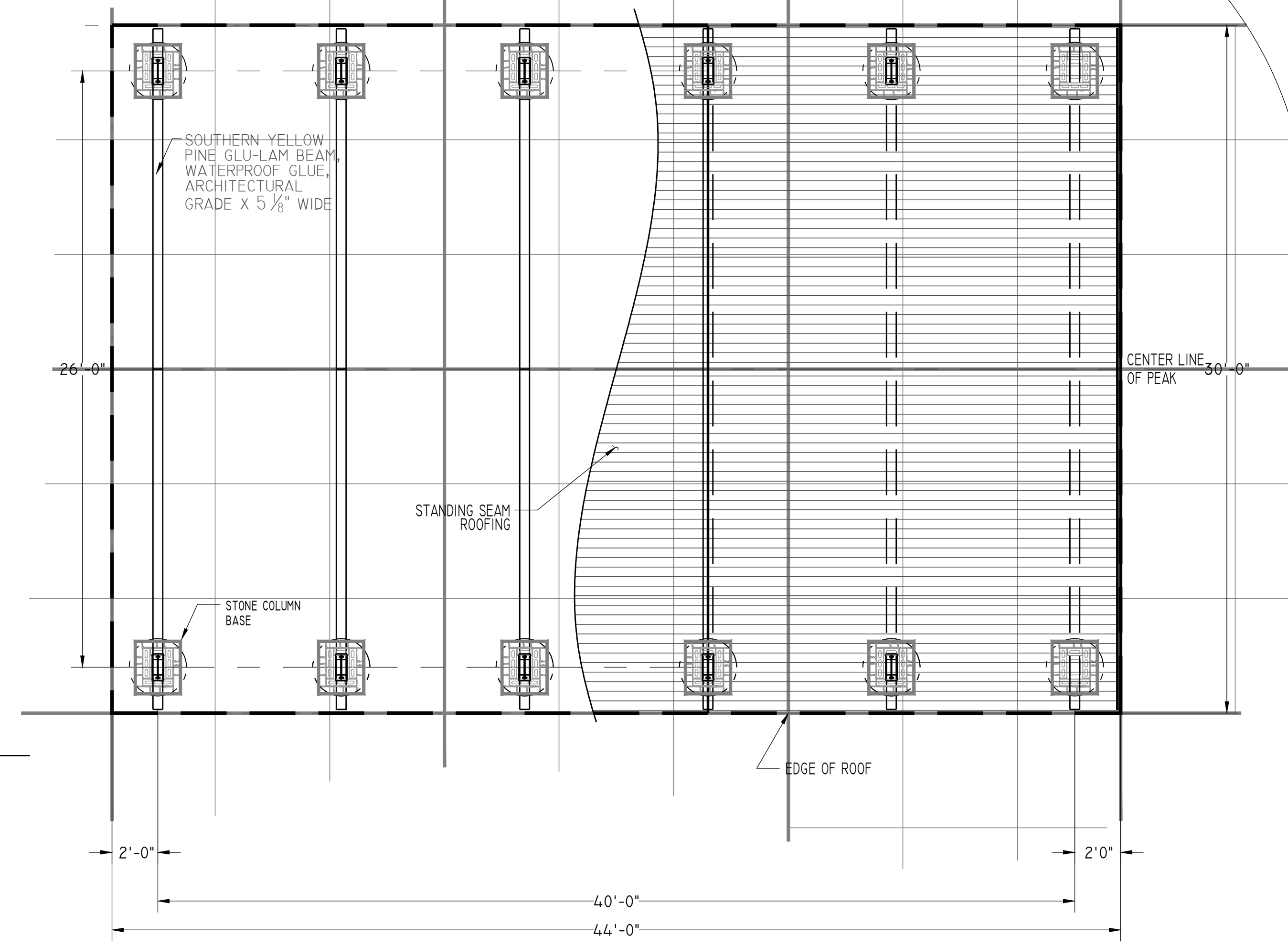
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

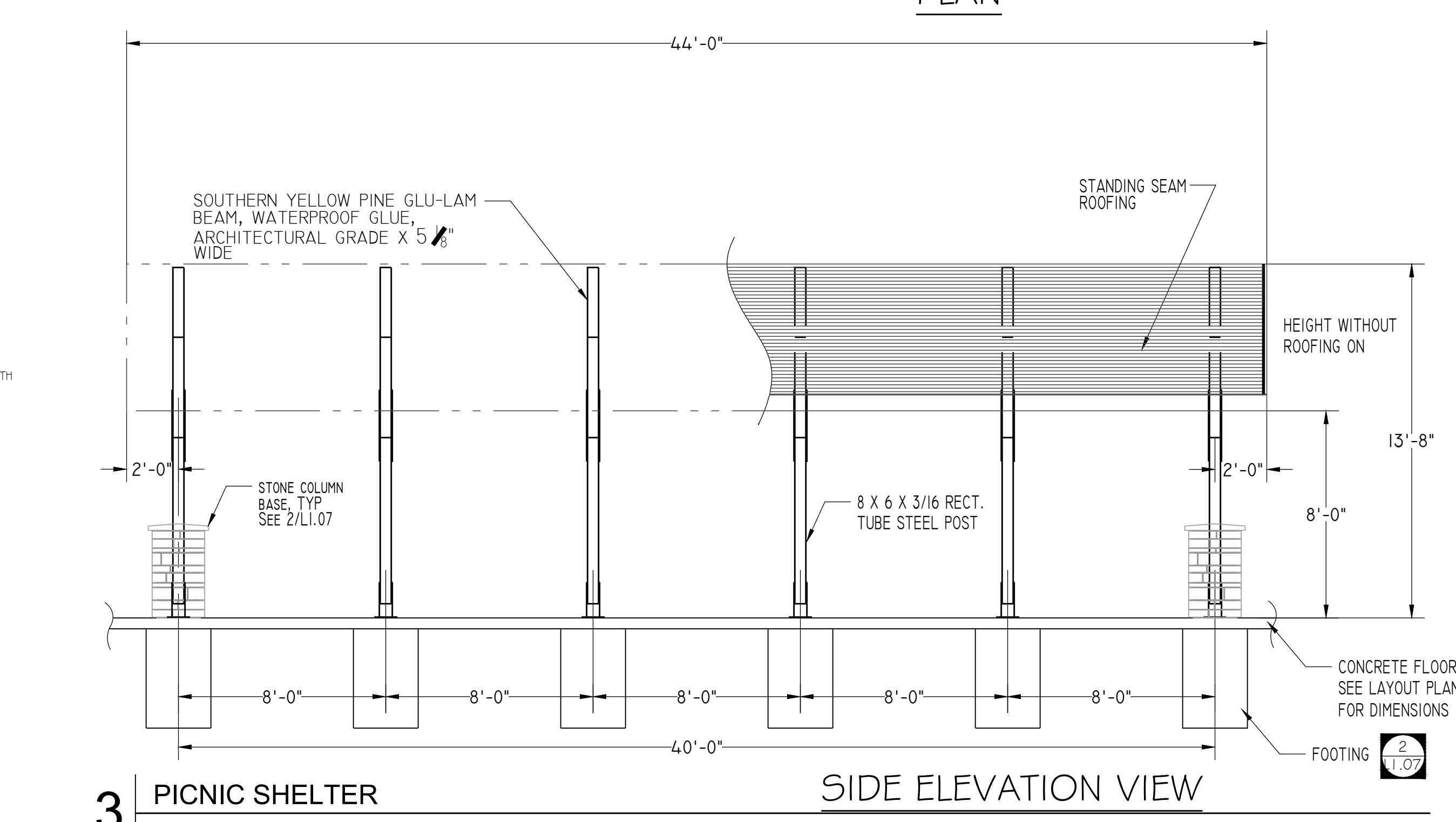
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END ELEVATION VIEW



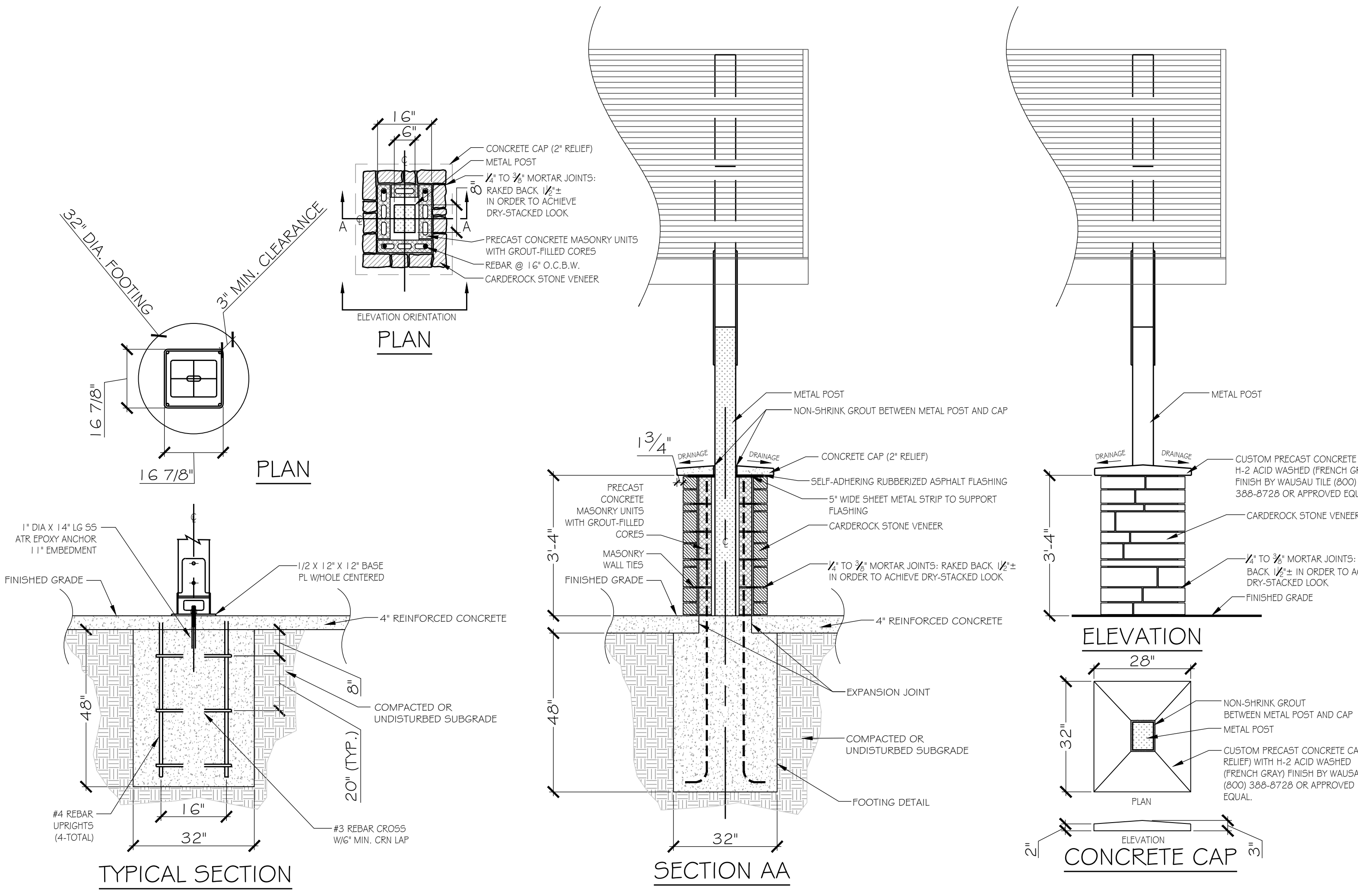
PLAN



SIDE ELEVATION VIEW

Cedar Forest
PO Box 145
West Olive, MI 49460
Phone: (600) 552-9495
info@cedarforestproducts.com
MODEL: LB3044, 30' X 44'
LOW PITCH BEAM SHELTER
WIDTH OF SHELTER: 30' - 0"
LENGTH OF SHELTER: 44' - 0"
HEIGHT OF EAVE: 8' - 0"
OVERALL HEIGHT: 13' - 9-11/16"
ROOF TYPE: 1 1/2" WIDE STANDING SEAM 24 GAUGE
ROOF DECK: 2X6 SOUTHERN YELLOW PINE T&G
FASCIA: 2X8 SOUTHERN YELLOW PINE
ROOF PITCH: 4/12

1 PICNIC SHELTER ELEVATION
1/4"=1'-0"



2 PICNIC SHELTER POST
1/2"=1'-0"

3 PICNIC SHELTER
1/4"=1'-0"



TREE AND BULB PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
SHADE TREES					
8	AR	Acer rubrum 'October Glory'	2"-2.5" Cal	B&B	Full Crown
4	AS	Acer saccharum 'Legacy'	2"-2.5" Cal	B&B	Matched
5	FA	Fagus grandifolia	2"-2.5" Cal	B&B	Spring dig only; fall dig hazard
4	LS	Liquidambar styraciflua 'Ward'	2"-2.5" Cal	B&B	Strong central leader
8	LT	Liriodendron tulipifera	2"-2.5" Cal	B&B	Spring dig only; Fall dig hazard
5	NS	Nyssa sylvatica	2"-2.5" Cal	B&B	Spring Dig only; Fall Dig Hazard
4	OA	Oxydendrum arboreum	2"-2.5" Cal	B&B	Matched
5	QC	Quercus coccinea	2"-2.5" Cal	B&B	Spring dig only; fall dig hazard
5	QP	Quercus phellos	2"-2.5" Cal	B&B	Spring dig only; fall dig hazard
8	QPA	Quercus palustris	2"-2.5" Cal	B&B	Spring dig only; fall dig hazard
3	SA	Sassafras albidum	6-8" HT.	Cont.	Multi-stem, 3-5 canes
BULBS					
995	NAR	Narcissus '3D'	DN1	Bulb	10" O.C. average; should be arranged informally
995	NAR	Narcissus 'Acropolis'	DN1	Bulb	10" O.C. average; should be arranged informally
995	NAR	Narcissus 'Pheasant's Eye'	DN1	Bulb	10" O.C. average; should be arranged informally
995	ALL	Allium 'Purple Sensation'	DN1	Bulb	10" O.C. average; should be arranged informally

REFORESTATION PLANT SCHEDULE (TOTAL)

QTY.	BOTANICAL/COMMON NAME	SIZE
CANOPY TREES		
13	Acer rubrum	1" Cal.
13	Liriodendron tulipifera	1" Cal.
UNDERSTORY TREES		
43	Amelanchier canadensis	1" Cal.
43	Cercis canadensis	1" Cal.
43	Cornus florida	1" Cal.
43	Magnolia virginiana	1" Cal.
SHRUBS		
94	Cornus amomum	#2
94	Hamamelis virginiana	#2
94	Lindera benzoin	#2
94	St. Andrew's Cross	#2
94	Ilex verticillata (80% female)	#2
94	Ita virginica	#2
94	Corylus americana	#2
94	Viburnum dentatum	#2
94	Viburnum prunifolium	#2
GRASSES/PERENNIALS		
188	Andropogon virginicus var. virginicus	#SP4
188	Baptisia australis var. australis	#SP4
188	Coreopsis verticillata	#SP4
188	Dryopteris marginalis	#SP4
188	Eurybia divaricata	#SP4
188	Helianthus divaricatus	#SP4
188	Juncus effusus	#SP4
186	Polystichum acrostichoides	#SP4
186	Rudbeckia hirta	#SP4
186	Solidago rugosa	#SP4

NOTE: SEE L2.10-L2.14 FOR UNDERSTORY SHRUB AND PERENNIAL PLANTING ENLARGEMENTS

TREE WATERING NOTE: TWO-YEARS OF WATERING FOR ALL NEWLY PLANTED TREES - PERFORMED BY OTHERS, NOT FOR BID.

SEED MIX @ REFORESTATION AREA (TOTAL FOR ENTIRE SITE)

0.86 AC Woodland Understory Seed Mix

Arlington County - Resource Protection Area Native Seed Mix

Percent of Mix (%)	Latin Name	Common Name
20	Lolium multiflorum	Annual rye
30	Elymus virginicus	Virginia wild rye
25	Panicum clandestinum	Deer-tongue grass
15	Elymus riparius	Riverbank wild rye
5	Elymus hystrix	Bottlebrush grass
2	Chamaecrista fasciculata	Partridge pea
1	Solidago rugosa	Rough-stemmed goldenrod
1	Asclepias syriaca	Common milkweed
1	Euthamia graminifolia	Grass-leaved goldenrod

Apply at 50 lbs/acre (2 lb/1000 sf) between August 15th and May 15th.

PROTECTED OPEN SPACE PLANTING SUMMARY:

TOTAL REQUIRED	TOTAL REQUIRED	ALREADY PROPOSED	TOTAL PROVIDED
CANOPY TREES	22	5	17
UNDERSTORY TREES	43	0	43
SHRUBS	234	0	234
GRASSES/PERENNIALS	234	0	468

PROTECTED OPEN SPACE PLANT SCHEDULE (TOTAL)

QTY.	BOTANICAL/COMMON NAME	SIZE
CANOPY TREES		
8	Acer rubrum	1" Cal.
9	Liriodendron tulipifera	1" Cal.
UNDERSTORY TREES		
10	Amelanchier canadensis	1" Cal.
10	Cercis canadensis	1" Cal.
13	Cornus florida	1" Cal.
10	Magnolia virginiana	1" Cal.
SHRUBS		
78	Ilex verticillata (80% female)	#2
78	Ita virginica	#2
78	Viburnum prunifolium	#2
GRASSES/PERENNIALS		
94	Helianthus divaricatus	#SP4
94	Juncus effusus	#SP4
94	Polystichum acrostichoides	#SP4
94	Rudbeckia hirta	#SP4
92	Solidago rugosa	#SP4

REFORESTATION PLANTING SUMMARY:

TOTAL REQUIRED	TOTAL REQUIRED	CURRENTLY EXISTING	TOTAL PROVIDED
CANOPY TREES	86	60	26
UNDERSTORY TREES	172	0	172
SHRUBS	937	0	937
GRASSES/PERENNIALS	937	0	1,874

1 PLANTING PLAN

- PLANTING KEY**
- EXISTING TREE CRITICAL ROOT ZONE
 - PROPOSED SHADE TREE
 - WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA
 - BULBS PLANTED INTO TURF
 - FIBERSOIL REINFORCED TURF
 - PROTECTED OPEN SPACE
 - L00 - LIMIT OF DISTURBANCE
 - L0C - LIMIT OF CLEARING
 - RESOURCE PROTECTION AREA (RPA)

WOODLAND UNDERSTORY SEED MIX SEEDING PROCEDURE:

- SCALP-MOW EXISTING VEGETATION LOW TO THE GROUND, TAKING CARE TO AVOID TREE ROOTS. WHERE PERMITTED, CAN SPOT-SPRAY POST-EMERGENT HERBICIDE ONLY (NO PRE-EMERGENT HERBICIDE AND NO PESTICIDE) ON HARD-TO-KILL AREAS OF EXISTING LAWN WITHIN REFORESTATION/SEEDING AREA. CHECK APPLICABLE PERMITS AND PERMISSIONS BEFORE USING NON-MECHANICAL METHODS.
- IF SOIL IS VERY HARD AT SURFACE, RAKE MOUND PRIOR TO SEEDING; IF SOIL IS FRIABLE, SKIP TO STEP 3.
- DIVIDE SITE AND SEED MIX INTO SMALLER AREAS AND HAND OR MACHINE BROADCAST: MIX LARGE/MEDIUM SEED (INCLUDING NURSE CROP) WITH SUFFICIENT VOLUME OF INERT BULKING AGENT (SAND, CAT LITTER, RICE HULLS, ETC) FOR EASY SPREADING AND BROADCAST (KEEPING IN MIND MACHINERY LIMITATIONS PER NOTE) SPREAD ACROSS AREA.
- RAKE SEED AREA WITH SPRING TOOTH HARROW OR GARDEN RAKE SO THAT SEED RECEIVES 1/4-1/2" COVERAGE.
- DIVIDE SMALL/FLUFFY SEED INTO SECTIONS AND MIX WITH SUFFICIENT VOLUME OF INERT BULKING AGENT. HAND SPREAD- DO NOT COVER.
- OPTIONAL: MULCH WITH WEED-FREE STRAW TO 50% COVERAGE.

MAINTENANCE:

- DURING THE FIRST GROWING SEASON, MOW TO A 6-8" HEIGHT WHENEVER HEIGHT EXCEEDS 12". THIS WILL PREVENT ANNUAL WEEDS AND NURSE CROP FROM SETTING SEED AND PERSISTING WHILE ALLOWING PERENNIALS TO FOCUS ON ROOT DEVELOPMENT.
- ASSUMING NO WIDE-SPREAD WEED PROBLEMS ARE OBSERVED, DURING THE SECOND GROWING SEASON AND BEYOND, SITE CAN BE MOWED EITHER ONCE ANNUALLY IN MARCH OR BEFORE PERENNIALS EXHIBIT ANY GREEN GROWTH TO 8" OR ONLY WHEN INCURSION BY WOODY PLANTS IS A CONCERN.

NOTE: HAND-HELD EQUIPMENT ONLY TO BE USED WITHIN REFORESTATION AREA- NO EQUIPMENT ACCESS IS PERMITTED. 135 TREE REPLACEMENTS REQUIRED. 118 ARE INCLUDED IN THESE DOCUMENTS, REMAINING 17 TO BE PROVIDED OFF SITE.

REFORESTATION NOTES:

- SEE SHEET C13.10 FOR MINIMUM REFORESTATION PLANTING REQUIREMENTS
- LAY TREES OUT RANDOMLY. DO NOT PLANT TREES IN A GRID PATTERN
- APPROXIMATE ON-CENTER SPACING SHALL BE 20' O.C.

PROTECTED OPEN SPACE NOTES:

- SEE SHEET C13.20 FOR MINIMUM PROTECTED OPEN SPACE PLANTING REQUIREMENTS
- LAY TREES OUT RANDOMLY. DO NOT PLANT TREES IN A GRID PATTERN.
- APPROXIMATE ON-CENTER SPACING SHALL BE 40' O.C.

ARLINGTON VIRGINIA

DEPARTMENT OF PARKS & RECREATION
 FACILITIES & ENGINEERING DIVISION
 ENGINEERING BUREAU
 2100 CLARENDON BOULEVARD, SUITE 414
 ARLINGTON, VA 22201
 PHONE: 703.228.4747
 FAX: 703.228.3328

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APPROVALS

DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS

DATE

Alcova Heights Park Renovation Phase I

DESIGNED: SK
 DRAWN: AS
 CHECKED: SK
 MISS UTILITY TRANSMITTAL #: N/A

FILENAME: L2.00 PLANTING PLAN.DWG
 PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD

PLOTTED: AUGUST 31 2021
 PLOTTED BY: MFLIPPONE

SHEET
 TREE AND BULB PLANTING PLAN- NORTH ENLARGEMENT

L2.00

ARLINGTON COUNTY, VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
 901 S. George Mason Drive
 Arlington, Virginia 22204
 Arlington County, Virginia

Scale: As shown

Number: 47 of 68

BID SET: 21-DPR-ITB-291



Alcova Heights Park Renovation Phase I

DESIGNED: SK
 DRAWN: AS
 CHECKED: SK
 MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
 L2.01 PLANTING PLAN.DWG
 PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD

PLOTTED: SEPTEMBER 16 2021
 PLOTTED BY: MFLIPPONE

SHEET
 TREE AND BULB PLANTING PLAN - SOUTH ENLARGEMENT

L2.01

TREE AND BULB PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
SHADE TREES					
1	AR	Acer rubrum 'October Glory'	2"-2.5" Cal	B&B	Full Crown
3	AS	Acer saccharum 'Legacy' Legacy Sugar Maple	2"-2.5" Cal	B&B	Matched
5	FA	Fagus grandifolia American Beech	2"-2.5" Cal	B&B	Spring dig only, fall dig hazard
3	LS	Liquidambar styraciflua 'Ward' Cherokee Sweet Gum	2"-2.5" Cal	B&B	Strong central leader
2	LT	Liriodendron tulipifera Yellow Poplar	2"-2.5" Cal	B&B	Spring dig only; Fall Dig Hazard
2	NS	Nyssa sylvatica Black Gum	2"-2.5" Cal	B&B	Spring Dig only; Fall Dig Hazard
3	OA	Oxydendrum arboreum Sourwood	2"-2.5" Cal	B&B	Matched
2	QC	Quercus coccinea Scarlet Oak	2"-2.5" Cal	B&B	Spring dig only, fall dig hazard
5	QP	Quercus phellos Willow Oak	2"-2.5" Cal	B&B	Spring dig only, fall dig hazard
2	QPA	Quercus palustris Pin Oak	2"-2.5" Cal	B&B	Spring dig only, fall dig hazard
4	SA	Sassafras albidum Sassafras	6-8' Ht.	Cont.	Multi-stem, 3-5 canes
BULBS					
790	NAR	Narcissus '3D' Daffodil	DN1 (Top Size)	Bulb	10" O.C. average- should be arranged informally
790	NAR	Narcissus 'Acropolis' Daffodil	DN1 (Top Size)	Bulb	10" O.C. average- should be arranged informally
790	NAR	Narcissus 'Pheasant's Eye' Daffodil	DN1 (Top Size)	Bulb	10" O.C. average- should be arranged informally
790	ALL	Allium 'Purple Sensation' Ornamental Onion	DN1 (Top Size)	Bulb	10" O.C. average- should be arranged informally

NOTE: SEE L2.10-L2.14 FOR UNDERSTORY SHRUB AND PERENNIAL PLANTING ENLARGEMENTS

TREE WATERING NOTE: TWO-YEARS OF WATERING FOR ALL NEWLY PLANTED TREES - PERFORMED BY OTHERS, NOT FOR BID.

SEED MIX @ REFORESTATION AREA (TOTAL FOR ENTIRE SITE)
 0.86 AC Woodland Understory Seed Mix

Arlington County - Resource Protection Area Native Seed Mix

Percent of Mix (%)	Latin Name	Common Name
20	<i>Lolium multiflorum</i>	Annual rye
30	<i>Elymus virginicus</i>	Virginia wild rye
25	<i>Panicum clandestinum</i>	Deer-tongue grass
15	<i>Elymus riparius</i>	Riverbank wild rye
5	<i>Elymus hystrix</i>	Bottlebrush grass
2	<i>Chamaecrista fasciculata</i>	Partridge pea
1	<i>Solidago rugosa</i>	Rough-stemmed goldenrod
1	<i>Asclepias syriaca</i>	Common milkweed
1	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod

Apply at 50 lbs/acre (2 lb/1000 sf) between August 15th and May 15th.

PROTECTED OPEN SPACE PLANT SCHEDULE (TOTAL)

QTY.	BOTANICAL/COMMON NAME	SIZE
CANOPY TREES		
8	Acer rubrum Red Maple	1" Cal.
9	Liriodendron tulipifera Tulip Tree	1" Cal.
UNDERSTORY TREES		
10	Amelanchier canadensis Canadian Serviceberry	1" Cal.
10	Cercis canadensis Redbud	1" Cal.
13	Cornus florida Flowering Dogwood	1" Cal.
10	Magnolia virginiana Sweet Bay	1" Cal.
SHRUBS		
78	Ilex verticillata (80% female) Winterberry	#2
78	Itea virginica Virginia Sweetspire	#2
78	Viburnum prunifolium Black Haw	#2
GRASSES/PERENNIALS		
94	Helianthus divaricatus Woodland Sunflower	#SP4
94	Juncus effusus Soft Rush	#SP4
94	Polystichum acrostichoides Christmas Fern	#SP4
94	Rudbeckia hirta Black-eyed Susan	#SP4
92	Solidago rugosa Rough-stemmed Goldenrod	#SP4

PROTECTED OPEN SPACE NOTES:
 1. SEE SHEET C13.10 FOR MINIMUM PROTECTED OPEN SPACE PLANTING REQUIREMENTS
 2. LAY TREES OUT RANDOMLY. DO NOT PLANT TREES IN A GRID PATTERN.
 3. APPROXIMATE ON-CENTER SPACING SHALL BE 40' O.C.

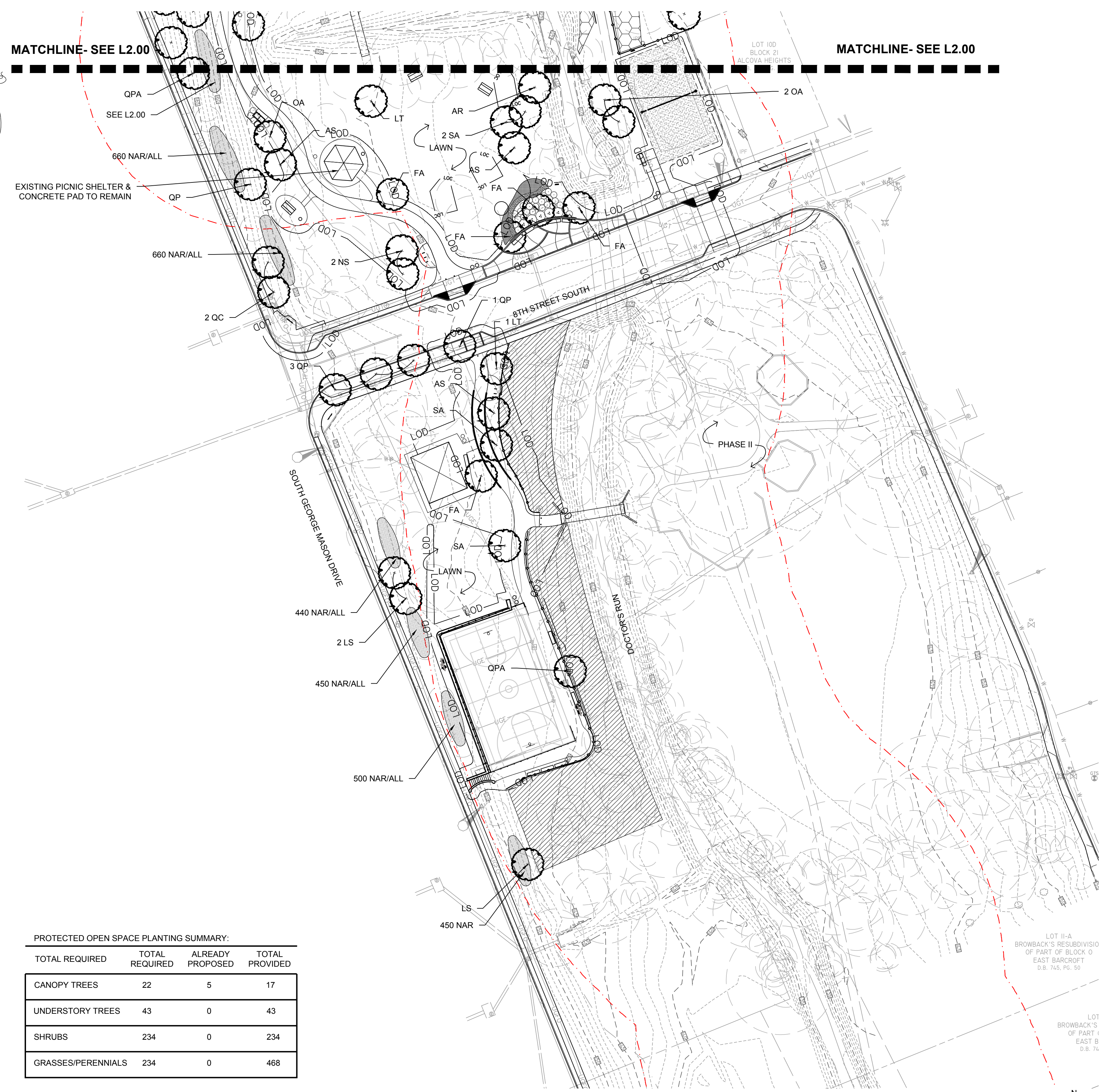
REFORESTATION PLANT SCHEDULE (TOTAL)

QTY.	BOTANICAL/COMMON NAME	SIZE
CANOPY TREES		
13	Acer rubrum Red Maple	1" Cal.
13	Liriodendron tulipifera Tulip Tree	1" Cal.
UNDERSTORY TREES		
43	Amelanchier canadensis Canadian Serviceberry	1" Cal.
43	Cercis canadensis Redbud	1" Cal.
43	Cornus florida Flowering Dogwood	1" Cal.
43	Magnolia virginiana Sweet Bay	1" Cal.
SHRUBS		
94	Cornus amomum Silky Dogwood	#2
94	Hamamelis virginiana Witch Hazel	#2
94	Lindera benzoin Spicebush	#2
94	Hypericum hypericoides St. Andrew's Cross	#2
94	Ilex verticillata (80% female) Winterberry	#2
94	Itea virginica Virginia Sweetspire	#2
94	Corylus americana American Hazelnut	#2
93	Sambucus canadensis American Black Elderberry	#2
93	Viburnum dentatum Arrowwood Viburnum	#2
93	Viburnum prunifolium Black Haw	#2
GRASSES/PERENNIALS		
188	Andropogon virginicus var. virginicus Broomsedge	#SP4
188	Baptisia australis var. australis Blue Wild Indigo	#SP4
188	Coreopsis verticillata Whorled Tickseed	#SP4
188	Dryopteris marginalis Marginal Wood Fern	#SP4
188	Eurybia divaricata White Wood Aster	#SP4
188	Helianthus divaricatus Woodland Sunflower	#SP4
188	Juncus effusus Soft Rush	#SP4
186	Polystichum acrostichoides Christmas Fern	#SP4
186	Rudbeckia hirta Black-eyed Susan	#SP4
186	Solidago rugosa Rough-stemmed Goldenrod	#SP4

REFORESTATION NOTES:
 1. SEE SHEET C13.10 FOR MINIMUM REFORESTATION PLANTING REQUIREMENTS
 2. LAY TREES OUT RANDOMLY. DO NOT PLANT TREES IN A GRID PATTERN.
 3. APPROXIMATE ON-CENTER SPACING SHALL BE 20' O.C.

REFORESTATION PLANTING SUMMARY:

TOTAL REQUIRED	TOTAL REQUIRED	CURRENTLY EXISTING	TOTAL PROVIDED
CANOPY TREES	86	60	26
UNDERSTORY TREES	172	0	172
SHRUBS	937	0	937
GRASSES/PERENNIALS	937	0	1,874



PROTECTED OPEN SPACE PLANTING SUMMARY:

TOTAL REQUIRED	TOTAL REQUIRED	ALREADY PROPOSED	TOTAL PROVIDED
CANOPY TREES	22	5	17
UNDERSTORY TREES	43	0	43
SHRUBS	234	0	234
GRASSES/PERENNIALS	234	0	468

1 PLANTING PLAN

1" = 40'

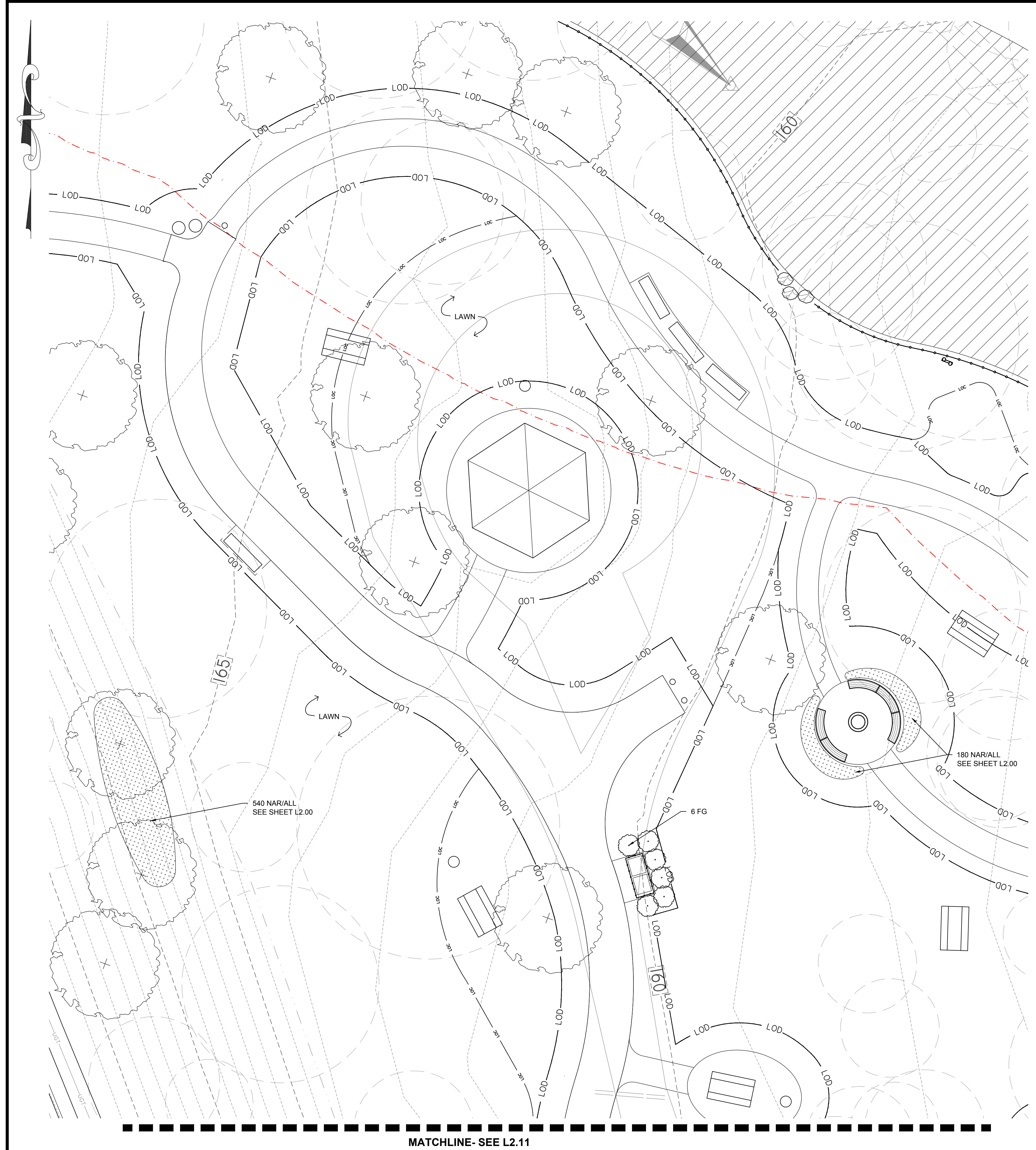
PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA
- FIBERSOIL REINFORCED TURF
- PROTECTED OPEN SPACE
- LIMIT OF DISTURBANCE
- LIMIT OF CLEARING
- RESOURCE PROTECTION AREA (RPA)

WOODLAND UNDERSTORY SEED MIX SEEDING PROCEDURE:

- SEEDING CAN OCCUR IN SPRING (BETWEEN SPRING THAW AND JUNE 30) OR FALL (SEPTEMBER-DECEMBER). DORMANT SEEDING (FALL) IS PREFERRED AS IT INCREASES GERMINATION & LOWERS DORMANCY IN MANY SPECIES.
- SCALP-MOW EXISTING VEGETATION LOW TO THE GROUND, TAKING CARE TO AVOID TREE ROOTS. WHERE PERMITTED, CAN SPOT-SPRAY POST-EMERGENT HERBICIDE ONLY (NO PRE-EMERGENT HERBICIDE AND NO PESTICIDE) ON HARD-TO-KILL AREAS OF EXISTING LAWN WITHIN REFORESTATION/SEEDING AREA. CHECK APPLICABLE PERMITS AND PERMISSIONS BEFORE USING NON-MECHANICAL METHODS.
- IF SOIL IS VERY HARD AT SURFACE, RAKE MOUND PRIOR TO SEEDING; IF SOIL IS FRIABLE, SKIP TO STEP 3.
- DIVIDE SITE AND SEED MIX INTO SMALLER AREAS AND HAND OR MACHINE BROADCAST: MIX LARGE/MEDIUM SEED (INCLUDING NURSE CROP) WITH SUFFICIENT VOLUME OF INERT BULKING AGENT (SAND, CAT LITTER, RICE HULLS, ETC) FOR EASY SPREADING AND BROADCAST (KEEPING IN MIND MACHINERY LIMITATIONS PER NOTE) SPREAD ACROSS AREA.

- RAKE SEEDED AREA WITH SPRING TOOTH HARROW OR GARDEN RAKE SO THAT SEED RECEIVES 1/4-1/2" COVERAGE.
- DIVIDE SMALL/FLUFFY SEED INTO SECTIONS AND MIX WITH SUFFICIENT VOLUME OF INERT BULKING AGENT. HAND SPREAD- DO NOT COVER.
- OPTIONAL: MULCH WITH WEED-FREE STRAW TO 50% COVERAGE.
- DURING THE FIRST GROWING SEASON, MOW TO A 6-8" HEIGHT WHENEVER HEIGHT EXCEEDS 12". THIS WILL PREVENT ANNUAL WEEDS AND NURSE CROP FROM SETTING SEED AND PERSISTING WHILE ALLOWING PERENNIALS TO FOCUS ON ROOT DEVELOPMENT.
- ASSUMING NO WIDE-SPREAD WEED PROBLEMS ARE OBSERVED, DURING THE SECOND GROWING SEASON AND BEYOND, SITE CAN BE MOWED EITHER ONCE ANNUALLY IN MARCH OR BEFORE PERENNIALS EXHIBIT ANY GREEN GROWTH TO 8" OR ONLY WHEN INCUSSION BY WOODY PLANTS IS A CONCERN.



UNDERSTORY PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
6	FG	SHRUBS Fothergilla gardenii 'Blue Mist' Fothergilla	#3	Cont.	24" Spd.

PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE. SEE L2.00 AND L2.01
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA. SEE L2.00 AND L2.01
- BULBS PLANTED INTO TURF. SEE L2.00 AND L2.01
- FIBERSOIL REINFORCED TURF
- PROTECTED OPEN SPACE
- LOD - LIMIT OF DISTURBANCE
- LOC - LIMIT OF CLEARING
- RESOURCE PROTECTION ZONE (RPZ)

NOTE:
HAND-HELD EQUIPMENT ONLY TO BE USED
WITHIN REFORESTATION AREA- NO EQUIPMENT
ACCESS IS PERMITTED.



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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APPROVALS	DATE
DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
**Alcova Heights Park
Renovation
Phase I**

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L2.10 PLANTING ENLARGEMENT PLAN.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS
PARK\CAD\MRA\05 100 CD

PLOTTED: AUGUST 31 2021
PLOTTED BY: MFLIPPONE

SHEET
PLANTING PLAN-
ENLARGEMENT
L2.10

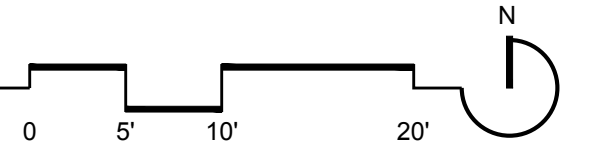
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

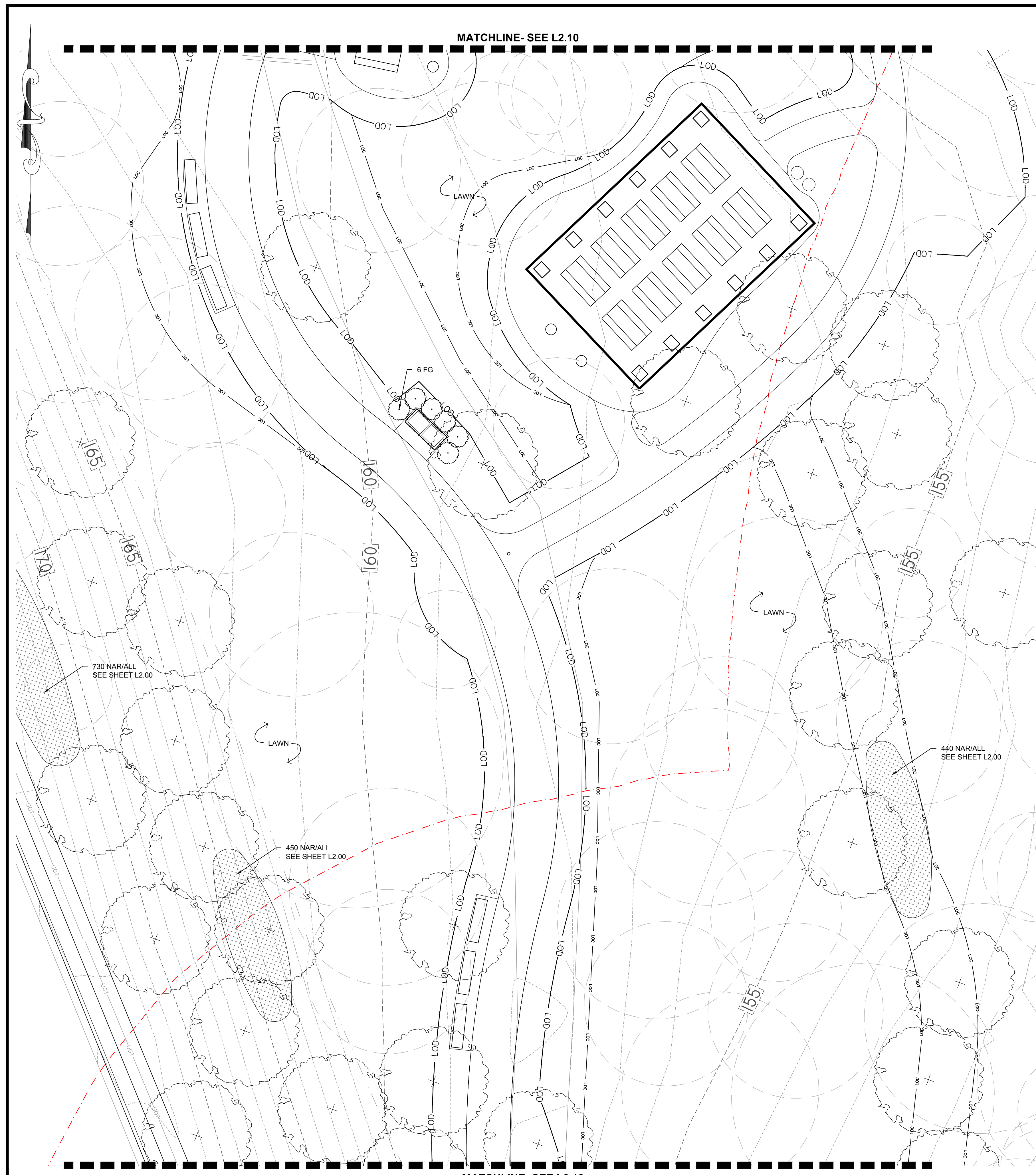
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown | Number: 49 of 68

1 PLANTING ENLARGEMENT PLAN
1" = 10'

REVISED ON 1/21/2016
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UNDERSTORY PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/Common Name	SIZE	ROOT	COMMENTS
6	FG	Fothergilla gardenii 'Blue Mist' Fothergilla	#3	Cont.	24" Spd.

PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE. SEE L2.00 AND L2.01
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA. SEE L2.00 AND L2.01
- BULBS PLANTED INTO TURF. SEE L2.00 AND L2.01
- FIBERSOIL REINFORCED TURF
- PROTECTED OPEN SPACE
- LOD - LIMIT OF DISTURBANCE
- LOC - LIMIT OF CLEARING
- RESOURCE PROTECTION AREA (RPA)

NOTE:
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DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A
FILENAME:
L2.11 PLANTING ENLARGEMENT PLAN.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS
PARK\CAD\MRA\05 100 CD
PLOTTED: AUGUST 31 2021
PLOTTED BY: MFLIPPONE

SHEET
PLANTING PLAN-
ENLARGEMENT
L2.11

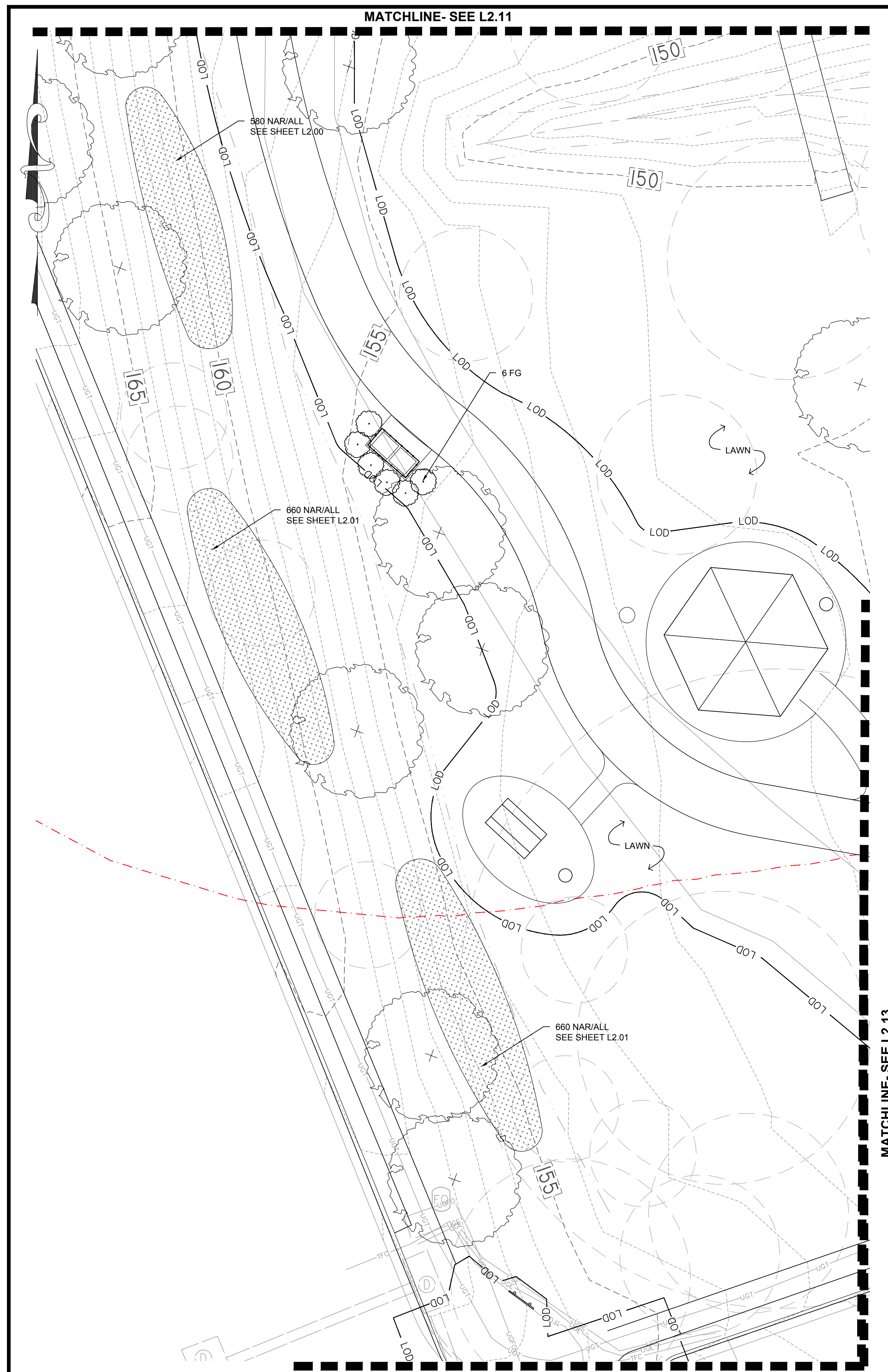
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: As shown | Number: 50 of 68

1 PLANTING ENLARGEMENT PLAN

1" = 10'
REVISED ON 1/21/2016

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BID SET: 21-DPR-ITB-291



1 PLANTING ENLARGEMENT PLAN
1" = 10'

UNDERSTORY PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/Common Name	SIZE	ROOT	COMMENTS
6	FG	Fothergilla gardenii 'Blue Mist' Fothergilla	#3	Cont.	24" Spd.

PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE, SEE L2.00 AND L2.01
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA, SEE L2.00 AND L2.01
- BULBS PLANTED INTO TURF, SEE L2.00 AND L2.01
- FIBERSOIL REINFORCED TURF
- PROTECTED OPEN SPACE
- LIMIT OF DISTURBANCE
- LIMIT OF CLEARING
- RESOURCE PROTECTION AREA (RPA)

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WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
**Alcova Heights Park
Renovation
Phase I**

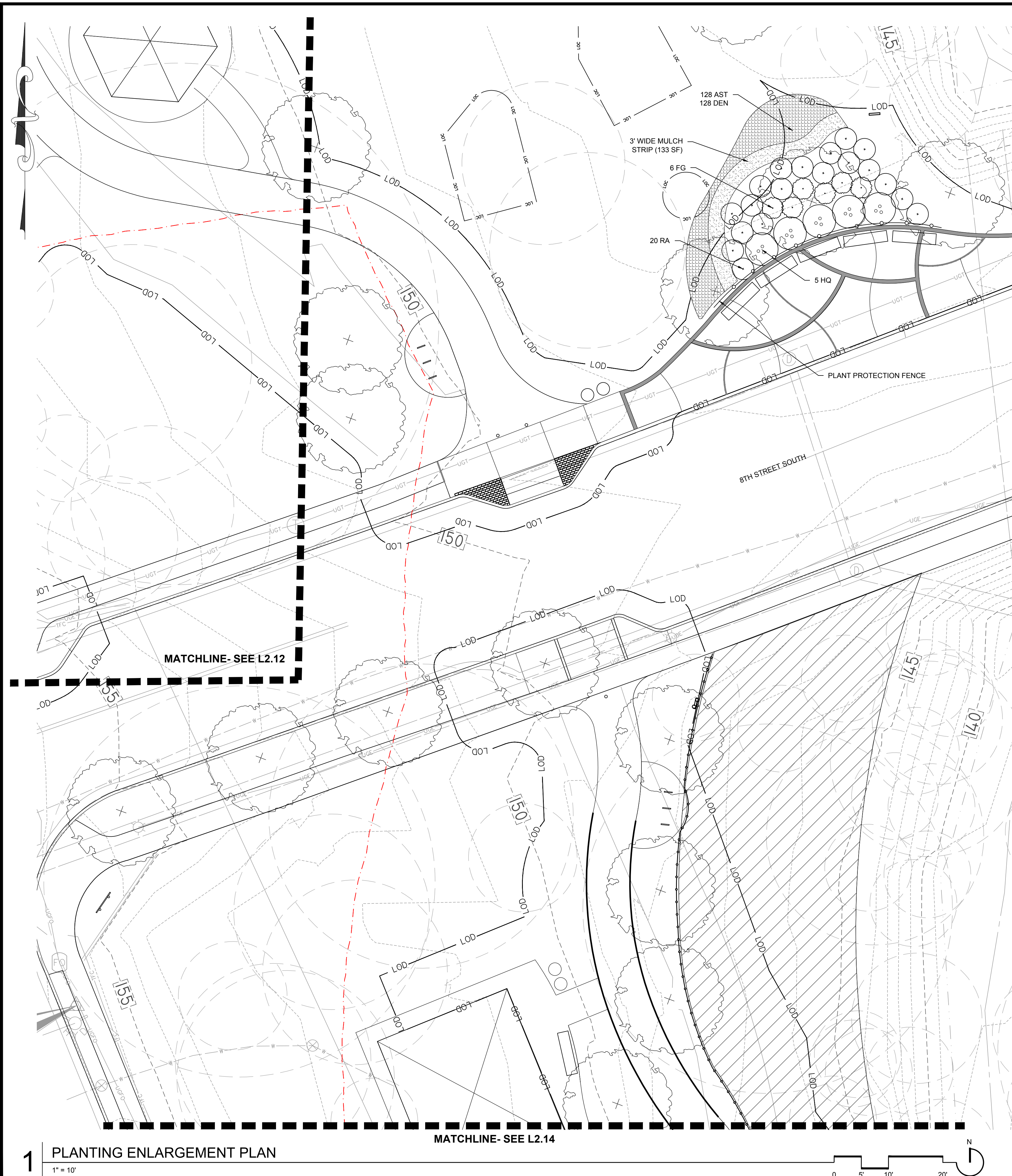
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CHECKED: SK
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PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS
PARK\CAD\MRA\05 100 CD
PLOTTED: AUGUST 31 2021
PLOTTED BY: MFLIPPONE

SHEET
PLANTING PLAN-
ENLARGEMENT
L2.12

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown | Number: 51 of 68



UNDERSTORY PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS	SPACING
SHRUBS						
6	FG	Fothergilla gardenii 'Blue Mist'	#3	Cont.	24" Spd.	
		Fothergilla				
5	HQ	Hydrangea quercifolia 'Sikes Dwarf'	#5	Cont.	36" Spd.	
		Dwarf Oakleaf Hydrangea				
20	RA	Rhus aromatica 'Gro Lo'	#3	Cont.	18" Spd.	30" O.C.
		Dwarf Fragrant Sumac				
PERENNIALS						
128	AST	Aster (Eurybia) divaricatus	#1	Cont.	12" Ht.	12" O.C.
		Woodland Aster				
128	DEN	Dennstaedtia punctiloba	#1	Cont.	12" Ht.	12" O.C.
		Hay-Scented Fern				

PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE, SEE L2.00 AND L2.01
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA, SEE L2.00 AND L2.01
- BULBS PLANTED INTO TURF, SEE L2.00 AND L2.01
- FIBERSOIL REINFORCED TURF
- PROTECTED OPEN SPACE
- LIMIT OF DISTURBANCE
- LIMIT OF CLEARING
- RESOURCE PROTECTION AREA (RPA)

NOTE:
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DESIGN TEAM ENGINEER SUPERVISOR	
CONSTRUCTION MANAGEMENT SUPERVISOR	
WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

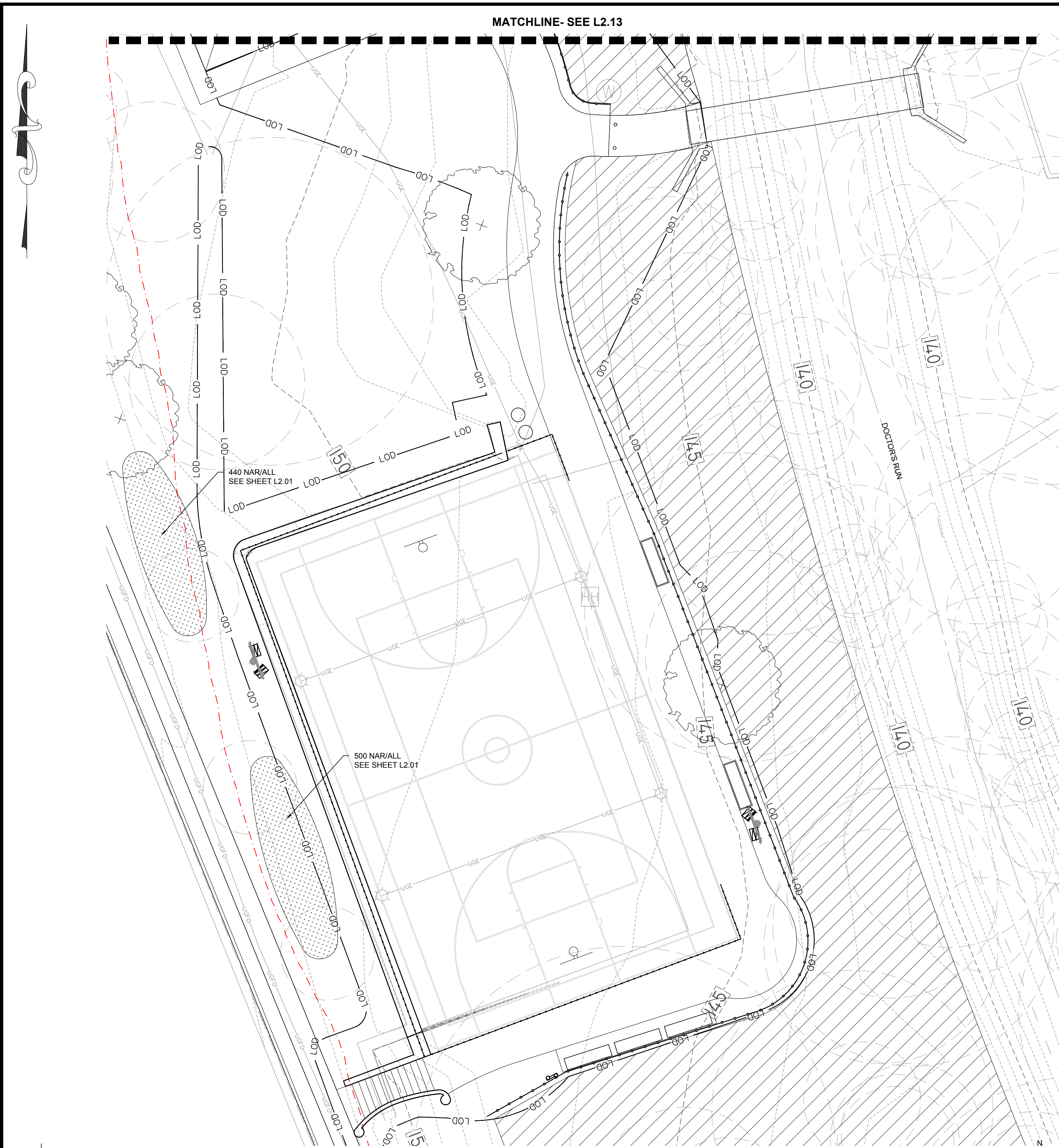
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PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\MRA\05 100 CD
PLOTTED: SEPTEMBER 16 2021
PLOTTED BY: MFILIPPONE

SHEET
PLANTING PLAN- ENLARGEMENT
L2.13

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

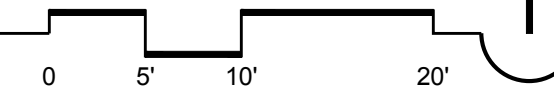
Scale: As shown | Number: 52 of 68

1 PLANTING ENLARGEMENT PLAN
1" = 10'



NO UNDERSTORY PLANTINGS THIS SHEET

1 PLANTING ENLARGEMENT PLAN
1" = 10'



PLANTING KEY

- EXISTING TREE CRITICAL ROOT ZONE
- PROPOSED SHADE TREE, SEE L2.00 AND L2.01
- WOODLAND UNDERSTORY SEED MIX @ REFORESTATION AREA, SEE L2.00 AND L2.01
- BULBS PLANTED INTO TURF, SEE L2.00 AND L2.01
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WATER, SEWER, STREETS BUREAU CHIEF	
TRANSPORTATION DIRECTOR	
PROJECT MANAGER	
REVISIONS	DATE

Project Name and Location
Alcova Heights Park Renovation Phase I

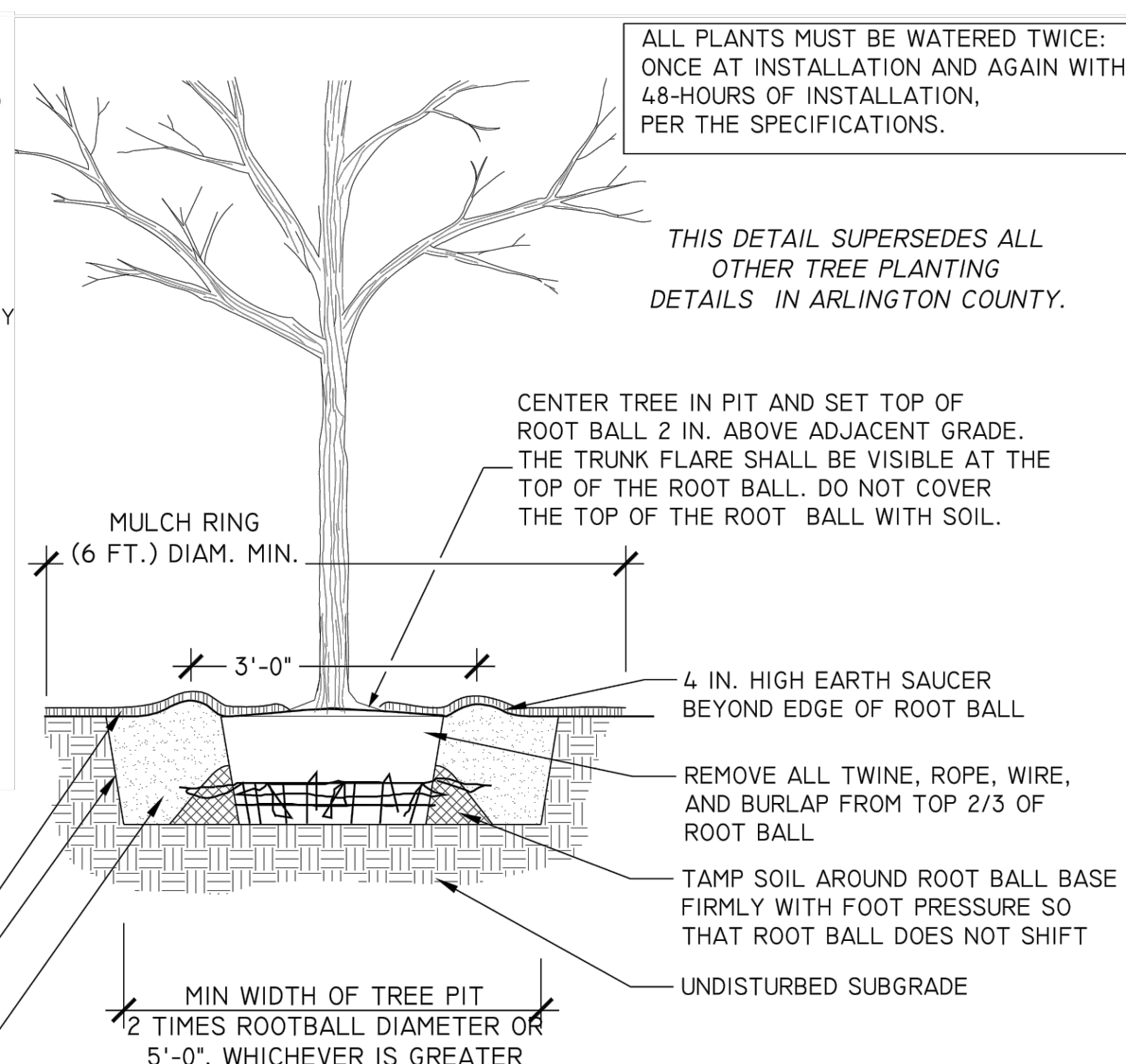
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FILENAME:
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PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS
PARK\CAD\MRA\05 100 CD
PLOTTED: AUGUST 31 2021
PLOTTED BY: MFLIPPONE

SHEET
PLANTING PLAN-
ENLARGEMENT
L2.14

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES
Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia
Scale: As shown | Number: 53 of 68

NOTES

1. AT PLANTING PRUNE ONLY CROSSING LIMBS, BROKEN OR DEAD BRANCHES, AND ANY BRANCHES THAT POSE A HAZARD TO PEDESTRIANS PER ANSI STANDARD A300. DO NOT PRUNE INTO OLD WOOD ON EVERGREENS.
2. CONTRACTOR SHALL MAXIMIZE EXCAVATED AREA FOR TREE PIT WITHOUT ADVERSELY IMPACTING ADJACENT SITE FEATURES.
3. UNLESS OTHERWISE DIRECTED BY ARLINGTON COUNTY URBAN FORESTER, BACKFILL SOIL MIXTURE WILL BE 3/4 EXISTING SOIL CLEANED OF DEBRIS (GRAVEL, ROCKS, STICKS, TRASH, ETC.) AND MIXED WITH 1/4 ORGANIC MATERIAL (COMPOSTED BARK, LEAF MOLD, OR OTHER PLANT DEBRIS PROCESSED TO A POINT OF DECAY AND APPROVED BY THE URBAN FORESTER; PEAT MOSS SHALL NOT BE USED).
4. CONTRACTOR SHALL LEGALLY REMOVE EXCESS SOIL & DEBRIS FROM SITE.
5. TREES PLANTED WITHOUT THE TRUNK FLARE VISIBLE WILL BE REJECTED.
6. TREES MAY ONLY BE STAKED IF REQUIRED BY THE COUNTY URBAN FORESTER. REFER TO STAKING DETAILS.



ALL PLANTS MUST BE WATERED TWICE: ONCE AT INSTALLATION AND AGAIN WITHIN 48-HOURS OF INSTALLATION, PER THE SPECIFICATIONS.

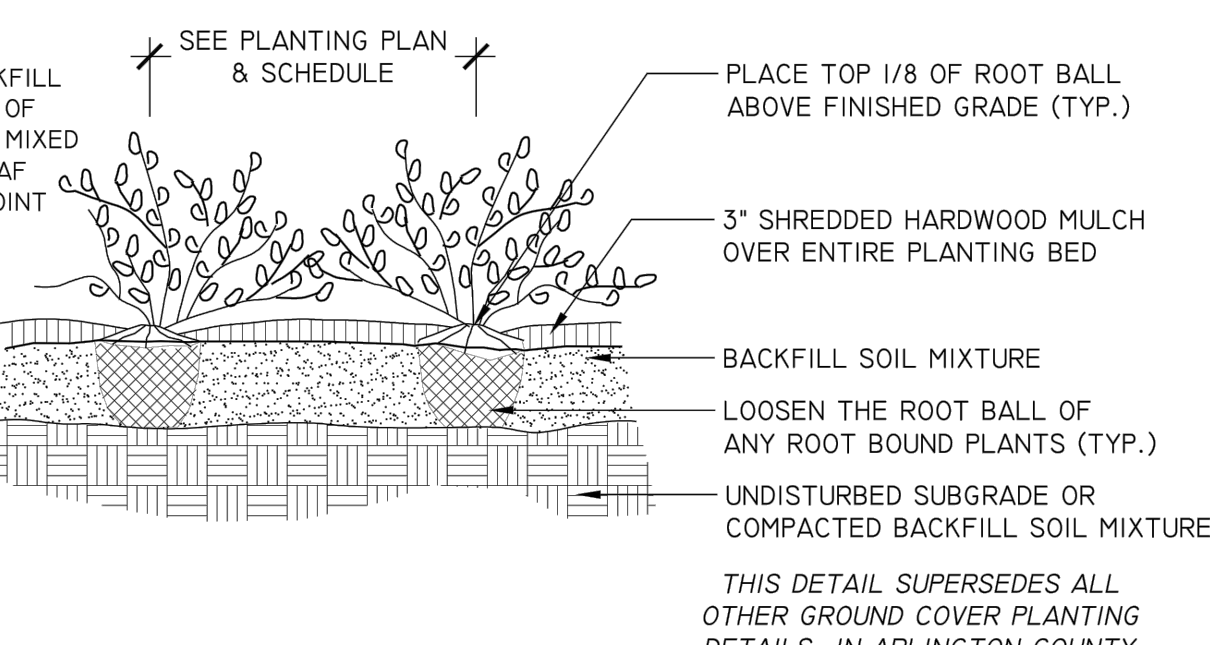
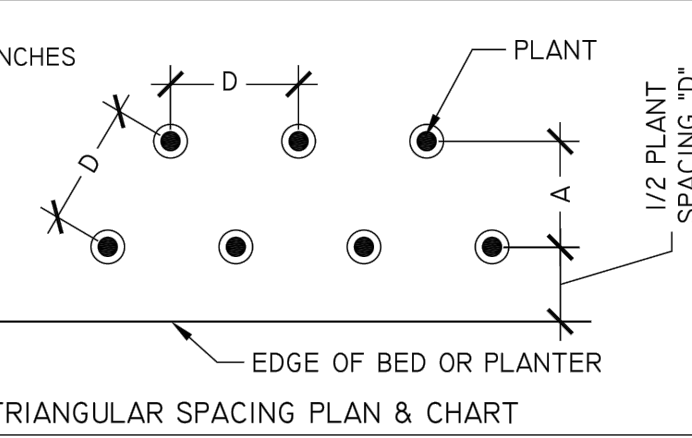
THIS DETAIL SUPERSEDES ALL OTHER TREE PLANTING DETAILS IN ARLINGTON COUNTY.

1 TREE PLANTING DETAIL
FOR OPEN PLANTING AREAS FREE OF PAVING OR GRATES
329300.1 (2019)

NOT TO SCALE
ARLINGTON COUNTY
DPR

NOTES

1. AT PLANTING PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING PIT/TRENCH SHALL BE DUG DEEP ENOUGH TO ALLOW AT LEAST 1/8TH OF ROOT BALL TO SET ABOVE EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE THE MOST VISIBLE.
4. GROUND COVERS AND PERENNIALS SHALL BE INSTALLED WITH TRIANGULAR SPACING. REFER TO CHART.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR COUNTY URBAN FORESTER, BACKFILL SOIL MIXTURE WILL BE 3/4 EXISTING SOIL CLEANED OF DEBRIS (GRAVEL, ROCKS, STICKS, TRASH, ETC.) AND MIXED WITH 1/4 ORGANIC MATERIAL (COMPOSTED BARK, LEAF MOLD, OR OTHER PLANT DEBRIS PROCESSED TO A POINT OF DECAY AND APPROVED BY THE COUNTY URBAN FORESTER; PEAT MOSS SHALL NOT BE USED).
5. CONTRACTOR SHALL REMOVE EXCESS SOIL & DEBRIS FROM SITE.
6. DO NOT PLACE MULCH IN CONTACT WITH STEM OF PLANTS.



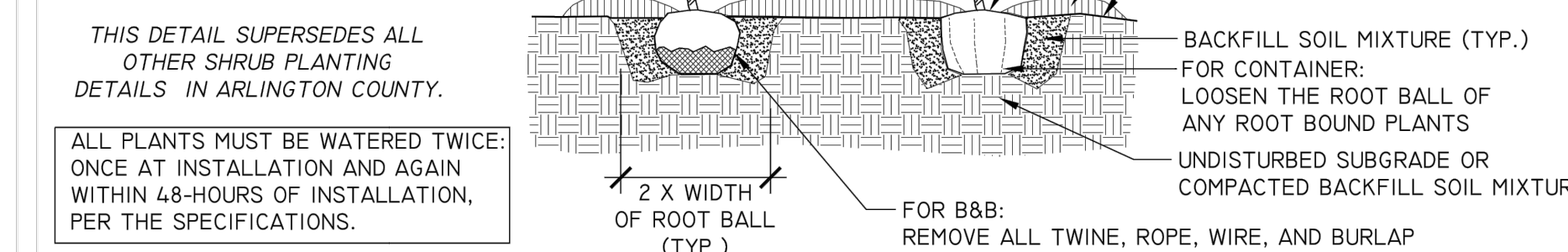
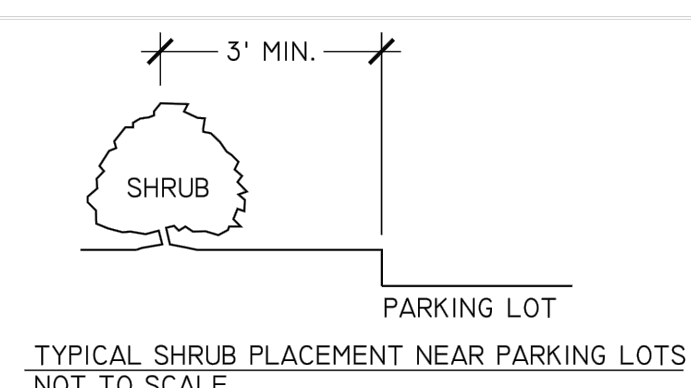
ALL PLANTS MUST BE WATERED TWICE: ONCE AT INSTALLATION AND AGAIN WITHIN 48-HOURS OF INSTALLATION, PER THE SPECIFICATIONS.

2 GROUND COVERS & PERENNIAL PLANTING
ELEVATION 329300.10 (2019)

NOT TO SCALE
ARLINGTON COUNTY
DPR

NOTES

1. AT PLANTING PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING PIT/TRENCH SHALL BE DUG DEEP ENOUGH TO ALLOW AT LEAST 1/8TH OF ROOT BALL TO SET ABOVE EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS IN THE CENTER OF THE PLANTING PIT. ORIENT BEST FACE OF PLANT TO BE THE MOST VISIBLE.
4. UNLESS OTHERWISE DIRECTED BY COUNTY URBAN FORESTER, BACKFILL SOIL MIXTURE WILL BE 3/4 EXISTING SOIL CLEANED OF DEBRIS (GRAVEL, ROCKS, STICKS, TRASH, ETC.) AND MIXED WITH 1/4 ORGANIC MATERIAL (COMPOSTED BARK, LEAF MOLD, OR OTHER PLANT DEBRIS PROCESSED TO A POINT OF DECAY AND APPROVED BY THE COUNTY URBAN FORESTER; PEAT MOSS MAY NOT BE USED).
5. CONTRACTOR SHALL REMOVE EXCESS SOIL & DEBRIS FROM SITE.
6. DO NOT PLACE MULCH IN CONTACT WITH STEM OF SHRUBS



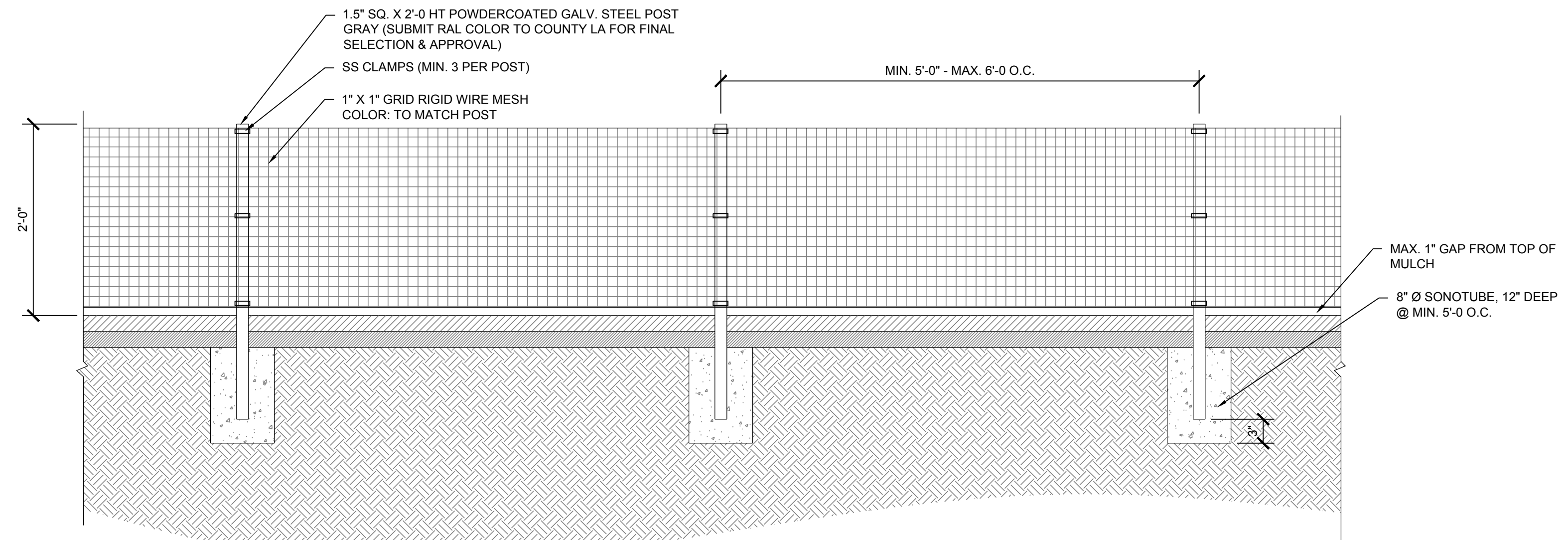
ALL PLANTS MUST BE WATERED TWICE: ONCE AT INSTALLATION AND AGAIN WITHIN 48-HOURS OF INSTALLATION, PER THE SPECIFICATIONS.

3 SHRUB PLANTING
ELEVATION 329300.8 (2019)

NOT TO SCALE
ARLINGTON COUNTY
DPR

PLANTING GENERAL NOTES

1. THIS PLAN IS FOR PLANTING PURPOSES ONLY, AND ANY OTHER INFORMATION SHOWN IS FOR REFERENCE ONLY. SEE SITE PLAN FOR INFORMATION ABOUT ALL LAYOUT, GRADING AND OTHER SITE IMPROVEMENTS.
2. CALL MISS UTILITY AT 811 OR 1-800-257-7777 TO MARK UTILITIES AT LEAST 48 HOURS BEFORE DIGGING.
3. ALL MATERIALS AND PLANTING PROCEDURES EXCEPT AS OTHERWISE NOTED SHALL CONFORM TO THE LATEST EDITION OF "LANDSCAPE SPECIFICATION GUIDELINES" BY THE LANDSCAPE CONTRACTORS ASSOCIATION MD-DC-VA.
4. PLANTS SHALL CONFORM TO THE CURRENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, (ANSI Z60.1)
5. PLANT NAMES SHALL BE THOSE GIVEN IN THE LATEST EDITION OF STANDARD PLANT NAMES, AMERICAN COMMITTEE ON HORTICULTURAL NOMENCLATURE.
6. TOPSOIL SHALL MEET SPECIFICATIONS AS PER THE 2011 MD STANDARDS AND SPECIFICATIONS FOR SOIL AND EROSION AND SEDIMENT CONTROL.
7. THE CONTRACTOR SHALL SUBMIT REPRESENTATIVE SOIL SAMPLES FROM BOTH IN-SITU SOILS AND SOILS BROUGHT IN FROM OFF-SITE TO A STATE LICENSED TESTING LABORATORY. THE CONTRACTOR SHALL INCORPORATE OR APPLY SOIL AMENDMENTS AND FERTILIZATION BASED UPON RESULTS OF THE SOIL TESTS AND RECOMMENDATIONS BY THE TEST LAB.
8. THE CONTRACTOR SHALL APPLY GRASS ACCORDING TO THE 2011 MD STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. DO NOT USE KENTUCKY 31 TALL FESCUE.
9. THE CONTRACTOR SHALL STAKE OUT ALL PLANTING BEDS AND TREE LOCATIONS AND THESE MUST BE APPROVED BY THE LANDSCAPE ARCHITECT OR OWNER BEFORE DIGGING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND COORDINATE PLANTINGS WITH ALL EXISTING UTILITIES. IF DISCREPANCIES OCCUR BECAUSE OF UTILITY LOCATIONS OR OTHER EXISTING CONDITIONS THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY TO COORDINATE ANY NECESSARY ADJUSTMENTS.
10. ALL PLANT MATERIAL SHALL BE LABELED BY THE NURSERY AND DELIVERED WITH LABELS IN PLACE FOR INSPECTION. SUBSTITUTIONS IN PLANT SPECIES OR SIZE WILL NOT BE PERMITTED EXCEPT WITH THE APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNER. PRUNING IS NOT TO OCCUR UNTIL MATERIAL HAS BEEN PLANTED. CONTRACTOR SHALL PRUNE PLANT MATERIAL AS SOON THEREAFTER AS IS ADVISABLE UNDER STANDARD HORTICULTURAL PRACTICES.
11. IT IS OF UTMOST IMPORTANCE THAT ALL PLANT MATERIAL BE SET SLIGHTLY HIGHER IN RELATION TO GRADE THAN IT WAS GROWN IN THE NURSERY AND WITH GOOD EARTH TO ROOT CONTACT. ANY MATERIALS OR WORK MAY BE REJECTED BY THE LANDSCAPE ARCHITECT IF IT DOES NOT MEET THIS OR ANY OTHER REQUIREMENT OF THE SPECIFICATIONS, AND REJECTED MATERIALS SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
12. THE CONTRACTOR SHALL MULCH AND WATER ALL PLANTS WELL ON THE DAY THEY ARE PLANTED. THE SURFACE MULCH LAYER SHALL CONSIST OF STANDARD FINE SHREDDED AGED HARDWOOD MULCH. THE CONTRACTOR SHALL APPLY THE MULCH UNIFORMLY TO A 2 TO 3 INCH DEPTH. BARK SHALL BE KEPT 3 TO 4 INCHES AWAY FROM ALL TRUNKS AND WOODY STEMS.
13. IN CASE OF DISCREPANCIES BETWEEN QUANTITIES ON THE PLANT LIST AND THE PLAN, THE PLAN SHALL GOVERN.
14. SEED OR SOD BARE AREAS AS DIRECTED BY OWNER FOR ALL DISTURBED AREAS TO BE STABILIZED THAT ARE NOT LANDSCAPED OR COVERED.
15. ANY PLANTING WITHIN A FOREST RETENTION AREA, AS DESIGNATED ON THE FOREST CONSERVATION PLAN AND SHOWN ON THIS PLAN, MUST BE DONE TO AVOID ANY ADVERSE IMPACT TO THE ROOTS OF EXISTING TREES. THE CONTRACTORS PERFORMING WORK ON THE SITE ARE RESPONSIBLE FOR PROTECTING EXISTING NATIVE AND NON-INVASIVE PLANTINGS DURING CONSTRUCTION.
16. ALL PLANTING BEDS SHALL RECEIVE PRE-EMERGENT TREATMENT SUCH AS SNAPSHOT, FREEHAND OR APPROVED EQUAL AFTER INSTALLING MULCH.
17. SEE PLANT SCHEDULE FOR BULB SPACING. PLANT BULBS AT 6" DEPTH.



- NOTES**
1. SONOTUBE TO BE MIN. 4" BELOW FFE

4 PLANT PROTECTION FENCE
1"-1'-0"



DEPARTMENT OF PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
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ARLINGTON, VA 22201
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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
L3.00 PLANTING DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\DRAWINGS 100 CD

PLOTTED: SEPTEMBER 3 2021
PLOTTED BY: MFILIPPONE

SHEET PLANTING DETAILS

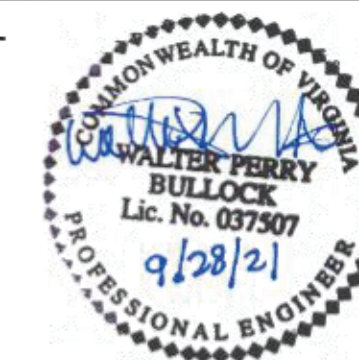
L3.00

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 54 of 68

SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: WPB
DRAWN: WPB
CHECKED: AIE
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
DEMOLITION AND NEW WORK PLAN -
ELECTRICAL.DWG
PATH: 3:\VA\21014.00\DRAWINGS\CADD\ELEC
PLOTTED: September 28, 2021
PLOTTED BY: PBULLOCK

SHEET

ELECTRICAL PLAN E1.00

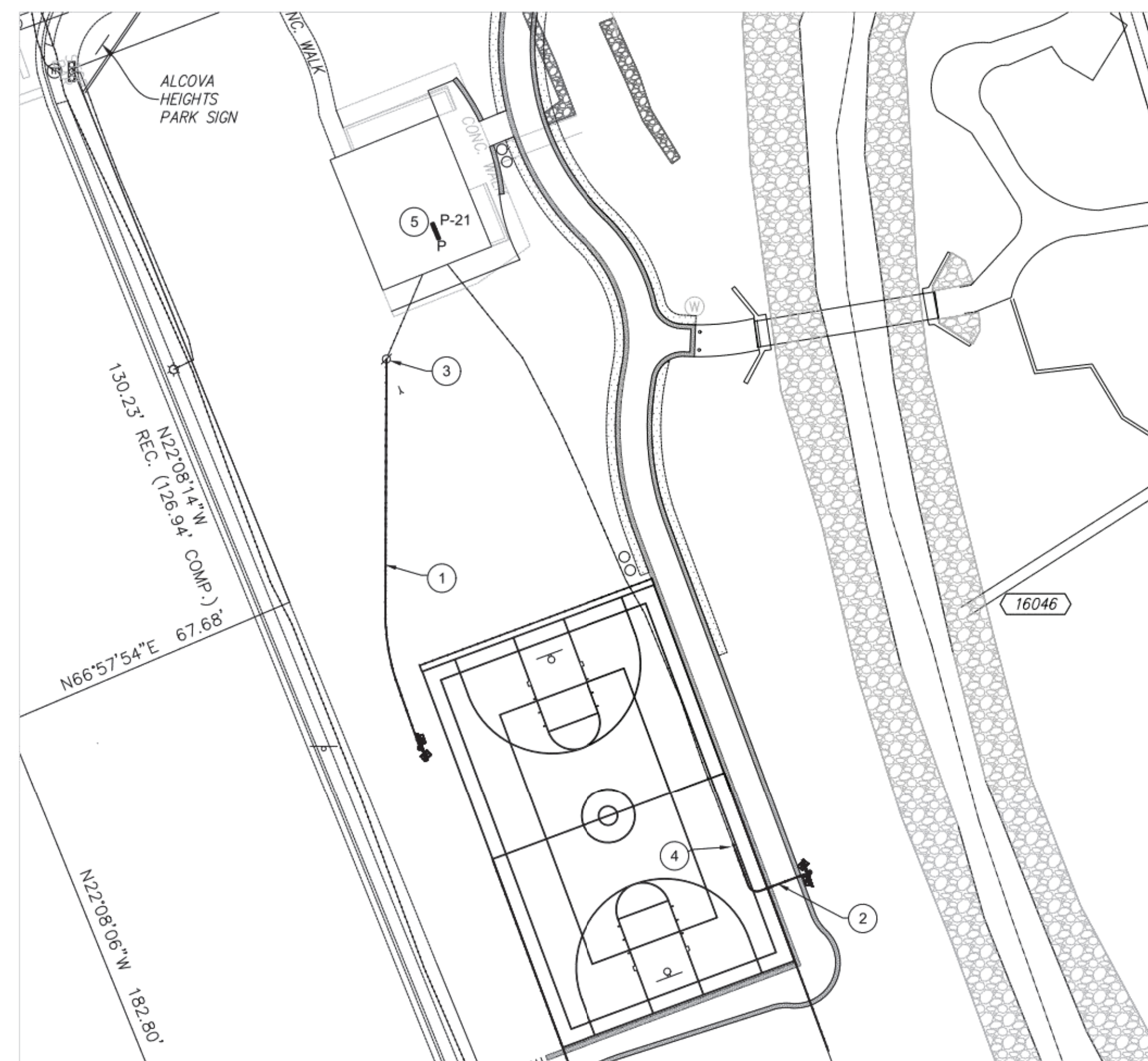
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

ELECTRICAL PLAN

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: AS SHOWN

Number: 55 of 68

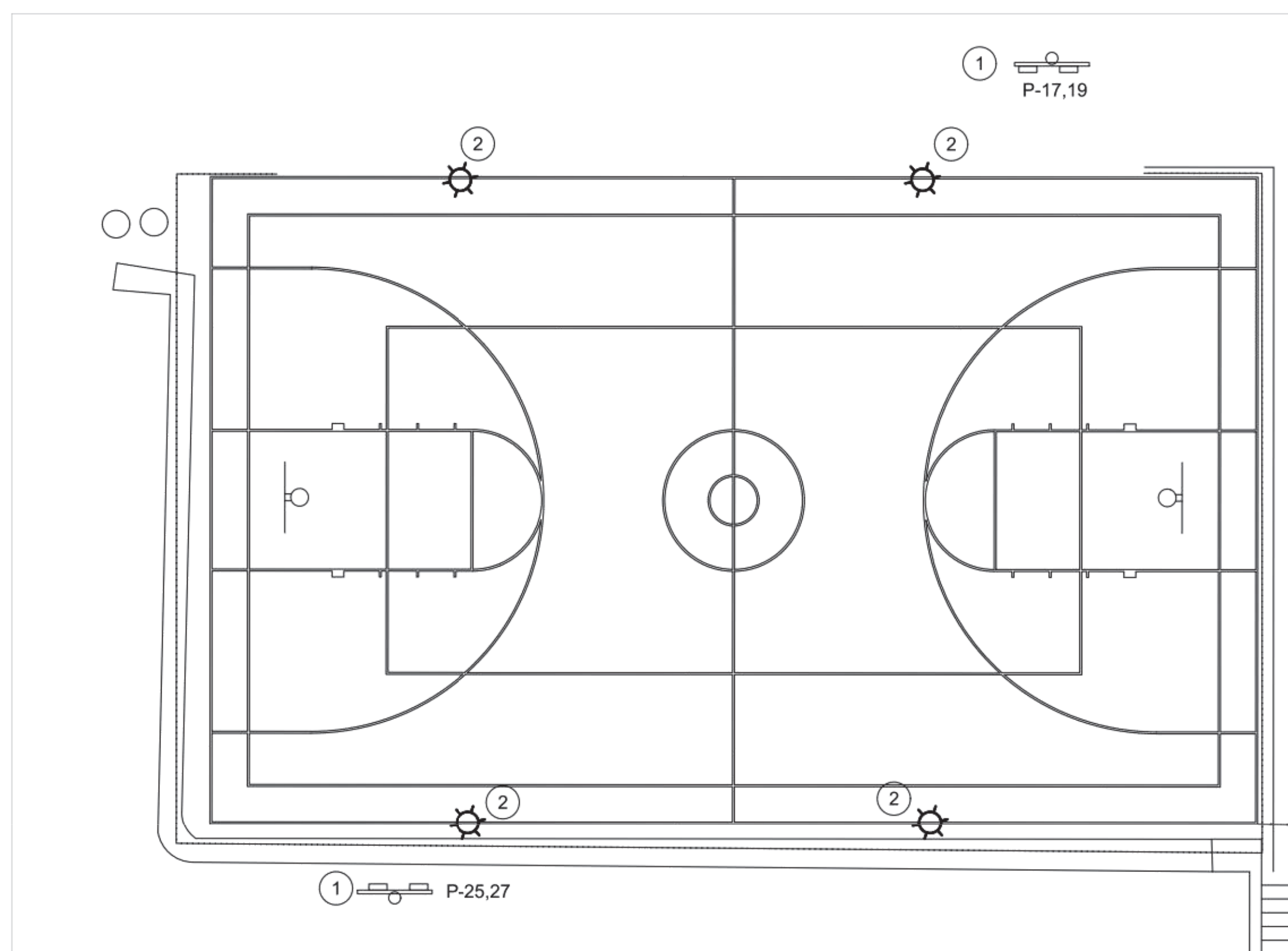


PARTIAL SITE PLAN - ELECTRICAL

GRAPHIC SCALE: 1" = 25'-0"

KEY NOTES

- ROUTE 3/4" PVC SCHEDULE 40, OR RTRC FIBERGLASS CONDUIT, FROM EXISTING HANDHOLE TO NEW LIGHTING FIXTURE POLE BASE VIA DIRECTIONAL BORE. MATCH EXISTING. COORDINATE ALL INSTALLATION REQUIREMENTS WITH CIVIL ENGINEERING DRAWINGS.
- EXTEND 3/4" PVC SCHEDULE 40, OR RTRC FIBERGLASS CONDUIT, FROM EXISTING LIGHT FIXTURE POLE BASE LOCATION TO EXIST POLE BASE VIA DIRECTIONAL BORE. MATCH EXISTING. COORDINATE ALL INSTALLATION REQUIREMENTS WITH CIVIL ENGINEERING DRAWINGS.
- EXISTING HAND HOLE, REFER TO SITE/CIVIL DRAWINGS FOR EXACT LOCATION.
- EXISTING POLE BASE LOCATION, REFER TO SITE/CIVIL DRAWINGS FOR EXACT LOCATION.
- MUSCO LIGHTING CONTROL PANEL. REFER TO "ALCOVA HEIGHTS PARK - PHASE II RESTROOM RENOVATION", DRAWINGS.



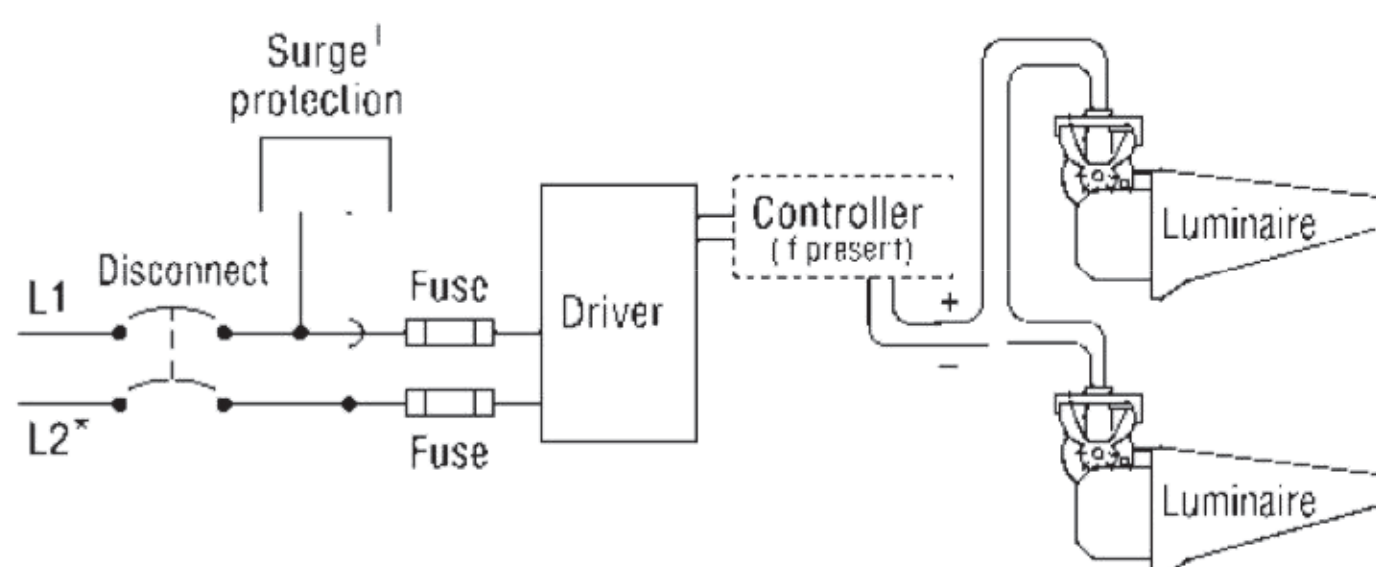
BASKETBALL COURT - DEMOLITION AND NEW LIGHTING

GRAPHIC SCALE: 1" = 10'-0"

KEY NOTES

- NEW POLE LIGHTING FIXTURE. MUSCO LIGHTING TLC-LED-400-BA1 OR APPROVED EQUAL. EACH LIGHTING POLE SHALL HAVE PUSHBUTTON/STROBE SYSTEM. PROVIDE 2-#12 FOR EACH PUSHBUTTON SWITCH AND STROBE SYSTEM - REFER TO PUSHBUTTON/STROBE DETAILS ON THIS SHEET. COORDINATE ALL CONNECTIONS WITH VENDOR SYSTEMS REQUIREMENTS.
- DISCONNECT AND REMOVE EXISTING LIGHTING FIXTURES AND DUESS SYSTEM. REMOVE EXISTING CONDUCTORS BACK TO THE PANELBOARD AND LIGHTING CONTACTOR.

Typical Wiring

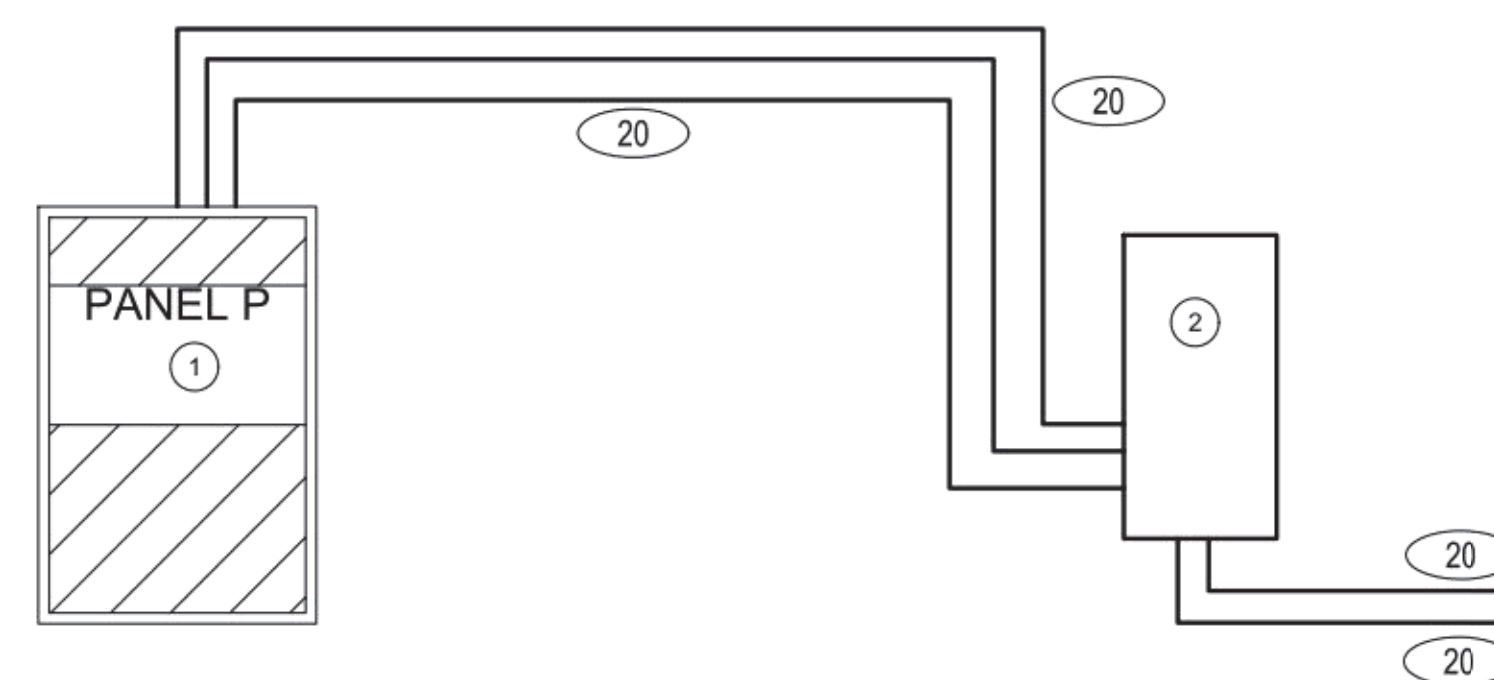


* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

LUMINAIRE WIRING DETAILS - ELECTRICAL

SCALE: NTS
INFORMATION PROVIDED BY VENDOR. COORDINATE ALL INSTALLATION WITH VENDOR.

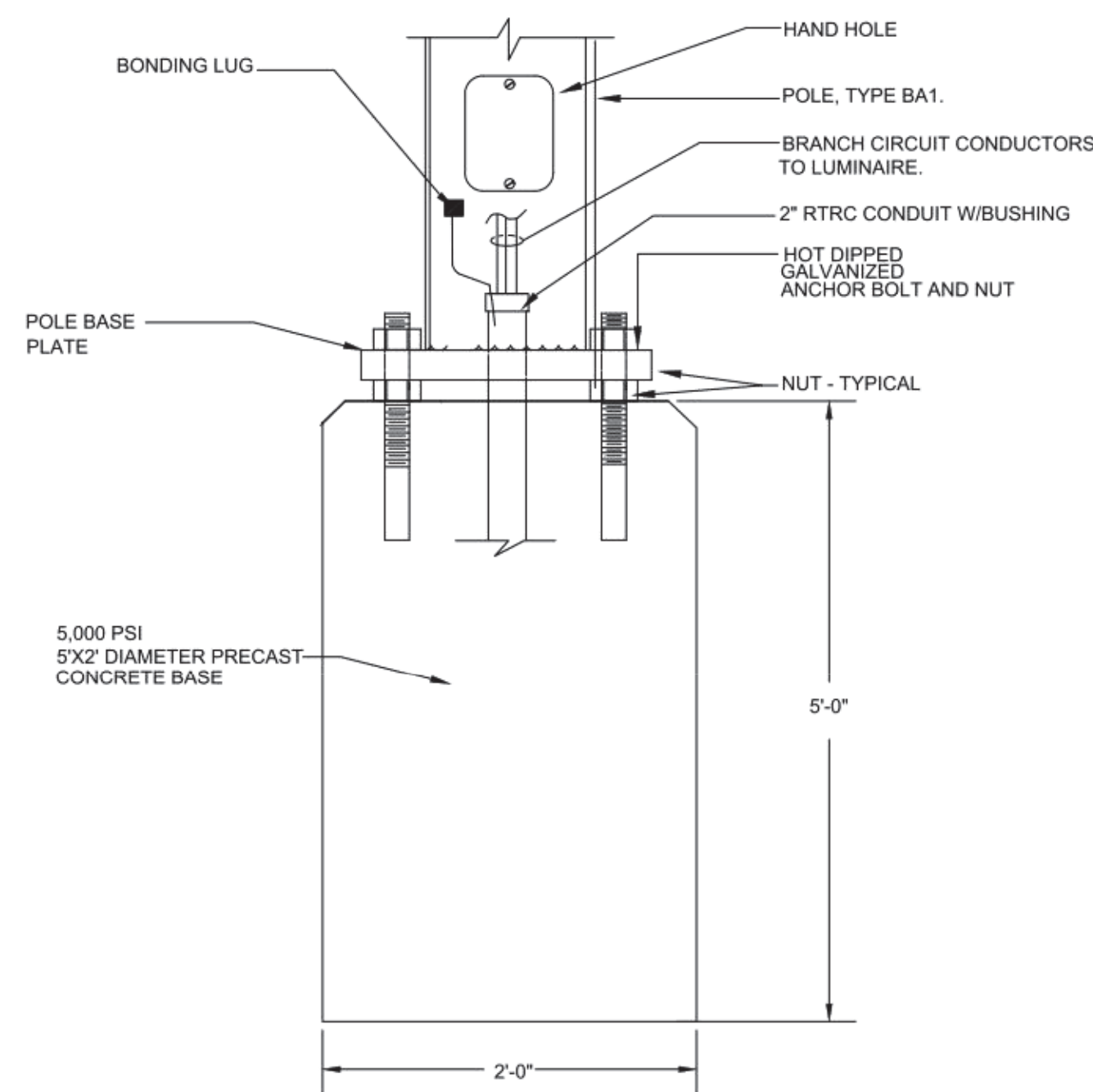
SYMBOL	# OF SETS	CONDUCTORS (COPPER)	GND.	CONDUIT	CONDUIT (W/O NEUTRAL)	AMPS
20	1	2 #12	#12	3/4"	3/4"	20A



PARTIAL POWER RISER DIAGRAM

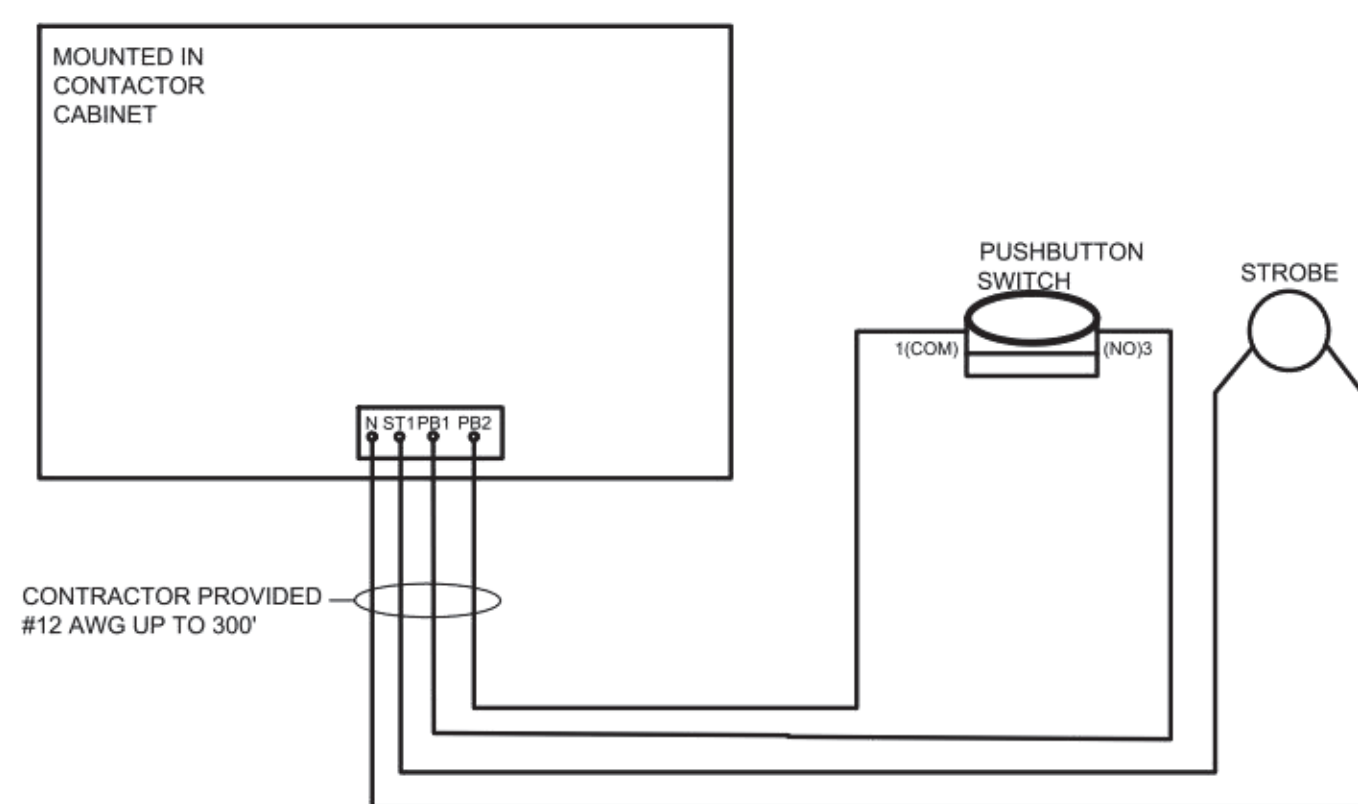
SCALE: NO SCALE
UNLESS OTHERWISE INDICATED AS 'NEW WORK', THE POWER RISERS IS EXISTING AND HAVE BEEN PREVIOUSLY PERMITTED. CONTRACTOR SHALL CONFIRM EXISTING CONDITIONS, AND NOTE ANY CHANGES ON THE RECORD SET.

- REFER TO "ALCOVA HEIGHTS PARK - PHASE II RESTROOM RENOVATION", DRAWINGS.
- MUSCO LIGHTING CONTROL PANEL. REFER TO "ALCOVA HEIGHTS PARK - PHASE II RESTROOM RENOVATION", DRAWINGS.



POLE BASE DETAILS - ELECTRICAL

SCALE: NTS
CONTRACTOR TO VERIFY ALL POLE BASE REQUIREMENTS WITH THE CIVIL/SITE ENGINEER AND THE MANUFACTURER PRIOR TO BID AND INSTALLATION.



PUSHBUTTON/STROBE WIRING DETAILS - ELECTRICAL

SCALE: NTS

ELECTRICAL NOTES AND SPECIFICATIONS

- ALL WORK SHALL BE DONE IN CONFORMANCE WITH ALL LOCAL AND STATE CODES RULES AND REGULATIONS, THE LATEST ADOPTED JURISDICTIONAL CODES, AND OF THE AUTHORITY HAVING JURISDICTION.
- OBTAIN AND PAY FOR ALL PERMITS, ALL FEES AND ALL TAXES.
- IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION, WHENEVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISH AND INSTALL COMPLETE AND READY FOR USE".
- PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, FIXTURES, SERVICES AND PERFORM ALL OPERATIONS REQUIRED FOR A COMPLETE AND SAFE INSTALLATION OF THE ELECTRICAL SYSTEMS AND RELATED WORK. ELECTRICAL SYSTEMS AND EQUIPMENT SHALL IN GENERAL INCLUDE THE FOLLOWING:
 - GENERAL PROVISIONS FOR ELECTRICAL WORK
 - WIRING, DISTRIBUTION EQUIPMENT, RACEWAYS AND DEVICES
 - LIGHTING FIXTURES AND LAMPS
 - GROUNDING SYSTEM
 - TELEPHONE CONDUIT
 - MECHANICAL EQUIPMENT, MOTORS AND PLUMBING EQUIPMENT, WIRING AND CONDUIT
 - FIRE ALARM SYSTEM
 - INSTALLATION AND ALL CONNECTIONS.
- PROVIDE ALL MATERIAL AND EQUIPMENT NOT INDICATED AS EXISTING IN THE CONTRACT DOCUMENTS. ALL MATERIAL SHALL BE NEW AND THE BEST PRODUCTS OF REPUTABLE MANUFACTURERS AND SHALL BE IN NEW CONDITION AT ACCEPTANCE OF WORK.
- PROVIDE A GUARANTEE TO COVER ALL MATERIALS, LABOR AND EQUIPMENT. GUARANTEE SHALL BE FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. GUARANTEE SHALL COVER PAYMENT FOR ANY REPAIRS OR REPLACEMENTS CAUSED BY DEFECTIVE WORKMANSHIP OR FAULTY MATERIALS WITHIN THE PERIOD COVERED BY THE GUARANTEE.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH NECA-1 GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION.
- THE CONTRACTOR SHALL WALK THE WORK SITE PRIOR TO BIDDING AND VERIFY EXISTING CONDITIONS. DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE ENGINEERING ASSESSMENT AT THE TIME OF DESIGN. CIRCUITS SHOWN ARE BASED ON RECORD DRAWING AND FIELD CONDITIONS. CONDUIT SHALL NOT BE CONSIDERED AS DIRECT PATH STRAIGHT RUNS. THE CONTRACTOR SHALL EXPECT TO ROUTE CONDUIT AROUND EXISTING STRUCTURAL COMPONENTS AND ALL EQUIPMENT. THE CONTRACTOR SHALL PROVIDE REQUIRED PULL BOXES TO MAINTAIN NO MORE THAN FOUR 90 DEGREE EQUIVALENT BENDS IN EACH CONDUIT RUN.
- PROVIDE ALL SCAFFOLDING, RIGGING, HOISTING, AND SERVICES NECESSARY FOR ERECTION AND DELIVERY INTO THE PREMISES OF ANY EQUIPMENT AND APPARATUS, WHETHER FURNISHED BY THIS CONTRACT OR OWNER, AND REMOVAL OF SAME FROM PREMISES WHEN NO LONGER REQUIRED.
- INSTALL ALL WORK IN A NEAT AND ORDERLY MANNER, USING ONLY WORKMEN THOROUGHLY QUALIFIED IN THE TRADE OR DUTIES THEY ARE TO PERFORM. ROUGH WORK WILL BE REJECTED.
- UNLESS OTHERWISE REQUIRED BY TRADE CUSTOM OR SPECIFIED UNDER ANOTHER SECTION OF THE SPECIFICATIONS, CUTTING AND PATCHING SHALL BE DONE BY THE APPROPRIATE TRADE. PROVIDE SKETCHES SHOWING THE LOCATIONS AND SIZES OF ALL OPENINGS, CHASES ETC. REQUIRED.
- DO NOT CUT STRUCTURAL MEMBERS WITHOUT THE APPROVAL OF THE ARCHITECT/ENGINEER, AND ALL SUCH CUTTING SHALL BE DONE IN MANNER DIRECTED BY HIM.
- MAINTAIN CLEAN WORK AREA AT ALL TIMES DURING CONSTRUCTION.
- TEST ALL LIGHTING, POWER, FIRE ALARM AND OTHER SYSTEMS. SYSTEMS SHALL OPERATE SATISFACTORILY AS DESIGNED AND INTENDED. REPORT ANY DEFICIENCIES TO THE ARCHITECT/ENGINEER.
- PROVIDE A FIELD-APPLIED WARNING LABEL ON EACH SWITCHBOARD, PANELBOARD, CONTROL PANEL, STARTER, VFD, AND MOTOR CONTROL CENTER TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARD, PER NEC 110.16.
- GENERAL PROVISION FOR ELECTRICAL WORK:
 - DRAWINGS:** ELECTRICAL DRAWINGS ARE CONSIDERED DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND SYSTEMS. REFER TO ARCHITECTURAL DRAWINGS TO VERIFY LOCATION OF EQUIPMENT, ETC. COORDINATE ROUGH-IN REQUIREMENTS AND INSTALLATION REQUIREMENTS WITH OTHER TRADES.
 - QUALITY OF MATERIALS:** NEW, BEST OF THEIR RESPECTIVE KIND, FREE FROM DEFECTS, AND LISTED BY UNDERWRITERS LABORATORIES, INC. AND BEARING THEIR LABEL.
 - VOLTAGE CHARACTERISTICS:** 277/480 VOLT AND 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL AS NOTED.
 - SHOP DRAWINGS:**
 - SUBMIT ELECTRONIC SHOP DRAWINGS FOR ALL FIXTURES AND DEVICES. OBTAIN APPROVAL BEFORE EQUIPMENT IS ORDERED, BUILT OR INSTALLED. CATALOGS, PAMPHLETS, OR OTHER DOCUMENTS SUBMITTED TO DESCRIBE ITEMS FOR WHICH APPROVAL IS BEING REQUESTED SHALL BE AS SPECIFIED AND IDENTIFICATION CATALOG, PAMPHLET, ETC., OF ITEM SUBMITTED SHALL BE CLEARLY NAMED IN INK. DATA OF A GENERAL NATURE AND FAXES WILL NOT BE ACCEPTED. SUBMITTAL SHALL INCLUDE CONTRACTOR'S NAME AND NAME OF JOB.
 - LIGHTING FIXTURES
 - LIGHTING CONTROLS
 - BUILDING WIRE
 - RGS, IMC, EMT, RTRC CONDUIT
 - INSTALL ALL NEW WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES.
 - VISIT SITE AND INSPECT EXISTING FACILITIES BEFORE BID IN ORDER TO ENSURE PROPER EVALUATION OF WORKING CONDITIONS AND LOCATION OF EXISTING EQUIPMENT.
- WIRING, DISTRIBUTION EQUIPMENT AND DEVICES:
 - CONDUCTORS:** COPPER, IN ACCORDANCE WITH ASTM STANDARDS, SIZE REFERENCES AWG. CONDUCTORS ARE BASED ON 90°C RATING. NO. 10 AND SMALLER - SOLID, THHN OR THHW 600 VOLT; NO. 8 AND LARGER - STRANDED THHW OR THHN 600 VOLT. MINIMUM SIZE: NO. 12.
 CONTRACTOR SHALL PROVIDE NEUTRAL CONDUCTOR IN SWITCH BOXES COMPLYING WITH NEC 404.2(C).
 - ALL CONDUCTORS SHALL BE IDENTIFIED BY COLOR AS INDICATED IN THE COLOR CODE CHART.

COLOR CODE CHART				
PHASE A	PHASE B	PHASE C	NEUTRAL	GROUND
120/240V	BLACK	RED	N/A	WHITE GREEN
 - RACEWAYS:** (ROUTE CONCEALED BEHIND OR ABOVE BUILDING FINISHES UON)
 - ELECTRIC METALLIC TUBING (EMT), THIN WALL PIPE, GALVANIZED, MINIMUM 1/2" EXCEPT AS NOTED OR REQUIRED FOR WIRING.
 - ALL FITTINGS AND COUPLINGS SHALL BE STEEL - CAST FITTINGS PROHIBITED.
 - BELOW GRADE:** PVC SCHEDULE 40, RTRC FIBERGLASS CONDUIT, RIGID GALVANIZED STEEL CONDUIT, INTERMEDIATE METAL CONDUIT, EMT WITH COMPRESSION FITTINGS IS NOT ACCEPTABLE.
 - TERMINATIONS:** ALL EQUIPMENT PROVIDED ON THE PROJECT, INCLUDING PANELBOARDS AND DISCONNECT SWITCHES, SHALL HAVE MANUFACTURER TERMINATIONS RATED AT 75°C.
- LIGHTING FIXTURES AND LAMPS:
 - PROVIDE COMPLETE SYSTEM OF LIGHTING FIXTURES, LAMPS, ACCESSORIES AND SUPPORTS AS SPECIFIED AND SHOWN. FOR TYPES, REFER TO THIS PAGE FOR TYPES.
 - COORDINATE THE LIGHTING FIXTURE LAYOUT WITH THE CIVIL PLAN.

ELECTRICAL ABBREVIATIONS

- | | |
|--------------|---|
| A | AMPS |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHU | AIR HANDLING UNIT |
| AWG | AMERICAN WIRE GAUGE |
| BRK | BREAKER |
| C OR COND | CONDUIT |
| CIRC | CIRCUIT |
| CLG | CEILING |
| CU | CONDENSING UNIT |
| DHC | DUCT HEATING COIL |
| (E) OR EXIST | EXISTING |
| EC | EMPTY CONDUIT W/PULL WIRE |
| EF | EXHAUST FAN |
| EM | EMERGENCY |
| EMT | ELECTRIC METALLIC TUBING |
| EPO | EMERGENCY POWER OFF |
| EWC | ELECTRIC WATER COOLER |
| EWH | ELECTRIC WATER HEATER |
| FACP | FIRE ALARM CONTROL PANEL |
| FAAP | FIRE ALARM ANNUNCIATOR PANEL |
| FLA | FULL LOAD AMPS |
| FT | FOOT |
| FRAC | FRACTIONAL |
| FSS | FUSED SAFETY SWITCH |
| GFI | GROUND FAULT INTERRUPTER |
| GND | GROUND |
| GPR | GROUND PENETRATING RADAR |
| HP | HORSEPOWER |
| IG | ISOLATED GROUND |
| IMC | INTERMEDIATE METAL CONDUIT |
| JB | JUNCTION BOX |
| KVA | KILOVOLT AMPS |
| KW | KILOWATT |
| MCB | MAIN CIRCUIT BREAKER |
| + OR MH | MOUNTING HEIGHT (ABOVE FINISHED FLOOR) |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVERCURRENT PROTECTION |
| NEMA | NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| NFSS | NON-FUSED SAFETY SWITCH |
| NO. OR # | NUMBER |
| OCPP | OVER CURRENT PROTECTION DEVICE |
| PANL | PANEL |
| P | POLE |
| Ø OR PH | PHASE |
| PFF | PROVISIONS FOR FUTURE |
| PVC | POLYVINYL CHLORIDE |
| R OR RE | RELOCATED |
| RGS | RIGID GALVANIZED STEEL |
| RLA | RUNNING LOAD AMPS |
| RM | ROOM |
| RTU | ROOF TOP UNIT |
| SWBD | SWITCHBOARD |
| TELE | TELEPHONE |
| TYP | TYPICAL |
| UH | UNIT HEATER |
| V | VOLTAGE |
| VAV | VARIABLE AIR VOLUME |
| W | WIRE |
| W/ | WITH |
| WP | WEATHERPROOF |
| WH | WALL HEATER |
| UON | UNLESS OTHERWISE NOTED |

ELECTRICAL SYMBOLS

- ALL MOUNTING HEIGHTS SHALL BE AS INDICATED BELOW, UNLESS OTHERWISE NOTED OR INDICATED ON PLANS. (HEIGHT INDICATED IS TO TOP OF DEVICE).
- ALL DEVICES SHALL BE RECESSED MOUNTED FLUSH IN WALL, CEILING OR FLOOR UNLESS OTHERWISE NOTED.
- FOR INSTALLATIONS IN EXISTING CONCRETE SLABS, CONTRACTOR SHALL:
 - COORDINATE CORING OR TRENCHING SCHEDULE WITH BUILDING MANAGEMENT TO OCCUR AFTER NORMAL BUSINESS HOURS.
 - X-RAY AND/OR GPR SLAB PRIOR TO CORING OR TRENCHING TO ENSURE THAT THE WORK WILL COMPLETELY AVOID INTERFERENCE WITH ANY EXISTING SYSTEMS IN THE SLAB.

GENERAL SYMBOLS

- 120/240 VOLT, 1 PHASE, 3 WIRE PANELBOARD
- DEMOLITION PLANS:**
 - FIXTURES AND DEVICES SHOWN WITH DARK DASHED LINES ARE EXISTING TO BE RELOCATED.
 - FIXTURES AND DEVICES SHOWN WITH LIGHT SOLID LINES ARE EXISTING TO REMAIN.
- NEW WORK PLANS:**
 - FIXTURES AND DEVICES SHOWN WITH DARK SOLID LINES ARE NEW.
 - FIXTURES AND DEVICES SHOWN WITH LIGHT SOLID LINES ARE EXISTING TO REMAIN.
 - FIXTURES AND DEVICES SHOWN WITH DARK DASHED LINES ARE RELOCATED DEVICES IN THEIR NEW LOCATIONS.

SINGLE PHASE PANEL SCHEDULE															
Panel ID: P	Condition: EXISTING			Voltage: 120/240V											
Location: ELEC CLOSET 05	Type: NORMAL			Service: 1 PHASE, 3 WIRE											
Mounting: SURFACE	Manufacturer:			Main: 550A MCB											
Neutral: SOLID				AIC: 10,000											
Load Description	kVA	Wire Size	Cond. Size	Brk	P	Ø	A	B	Ø	P	Brk	Wire Size	kVA	Load Description	
Existing Load (E)	0.6	EX	EX	20	1	1	1	1	2	2	30	EX	EX	4.5	(E) Existing Load
LTS (E)	0.1	EX	EX	20	1	3	1	4	-	-	-	-	-	-	(E) Existing Load
REC (E)	0.5	EX	EX	20	1	5	1	6	2	20	EX	EX	2.6	(E) Existing Load	
REC (E)	0.5	EX	EX	20	1	7	2	8	-	-	-	-	-	-	(E) Existing Load
REC (E)	0.5	EX	EX	20	1	9	1	10	1	20	EX	EX	0.2	(E) Existing Load	
Existing Load (E)	1.7	EX	EX	20	1	11	1	12	1	20	EX	EX	1.5	(E) Existing Load	
Existing Load (E)	1.7	EX	EX	20	1	13	1	14	1	20	EX	EX	1.5	(E) Existing Load	
Existing Load (E)	1.7	EX	EX	20	1	15	1	16	1	20	EX	EX	1.5	(E) Existing Load	
BASKETBALL LTS	1.0	12	3/4	20	2	17	1	18	1	20	EX	EX	1.5	(E) Existing Load	
---	-	-	-	-	-	19	1	20	1	20	EX	EX	0.5	(E) REC	
CONTROL POWER	0.9	12	3/4	20	1	21	1	22	X	X	X	X	X	PFF	
Existing Load (E)	0.2	EX	EX	20	1	23	1	24	X	X	X	X	X	PFF	
BASKETBALL LTS	1.0	12	3/4	20	2	25	1	26	X	X	X	X	X	PFF	
---	-	-	-	-	-	27	1	28	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	29	1	30	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	31	1	32	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	33	1	34	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	35	1	36	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	37	1	38	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	39	1	40	X	X	X	X	X	PFF	
PFF	X	X	X	X	X	41	1	42	X	X	X	X	X	PFF	

Notes: Unless noted otherwise, all breakers are EXISTING to be used as indicated.

	Load Summary			Additional Options:
	Connected kVA	Demand Factor	Demand kVA	
Lighting (L)	2.0	100%	2.0	Sub-Feed Lugs
Receptacles (R)	2.2	19 + 50%*10	2.2	NECA 3R Enclosure
Largest Motor Load (LM)	0.0	125%	0.0	200% Neutral
Remaining HVAC Loads	0.0	100%	0.0	Isolated Ground
Miscellaneous	19.8	100%	19.8	Service Entrance Rated
Kitchen Equipment	0.0	100%	0.0	
	0.0	0%	0.0	
TOTAL CONNECTED kVA =	23.9		23.9	
			99.8	TOTAL DEMAND AMP

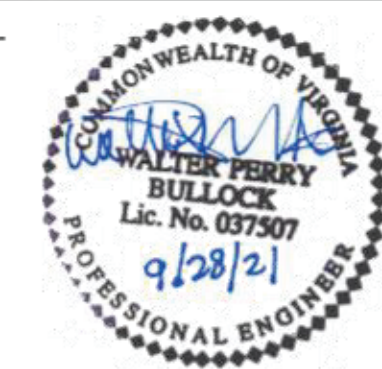
1. REFER TO 'ALCOVA HEIGHTS PARK - PHASE II RESTROOM RENOVATION', DRAWINGS.



DEPARTMENT OF
PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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SEAL



APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: WPB
DRAWN: WPB
CHECKED: AIE
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
COVERSHEET - ELECTRICAL.DWG

PATH: J:\AA21014.00\DRAWINGS\CADD\ELEC
PLOTTED: September 28, 2021
PLOTTED BY: PBULLOCK

SHEET

ELECTRICAL NOTES & SPECIFICATIONS E1.01

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

ELECTRICAL NOTES & SPECIFICATIONS

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: AS SHOWN Number: 55A of 68

Arlington County Alcova Heights Park Basketball
Arlington, VA

Lighting System

Pole / Fixture Summary	Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Lead	Circuit
BA1-BA2	40'	40'		2	TLC-LED-400	0.80 KW	A
				4		1.60 KW	

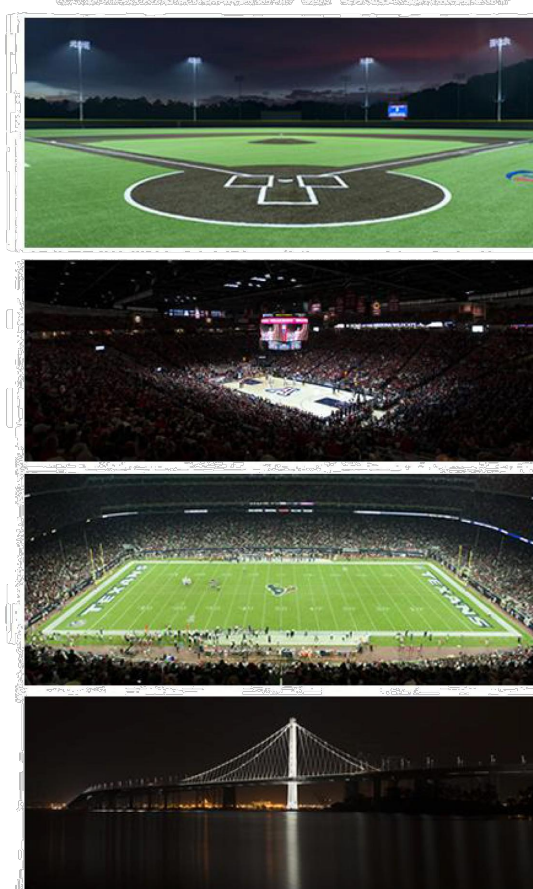
Circuit Summary	Circuit	Description	Lead	Fixture Qty
A		Basketball		4

Fixture Type Summary	Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-400		LED 5700K - 75 CRI	400W	46,500	>120,000	>120,000	>120,000	4

Light Level Summary

Grid Name	Calculation Metric	Ave	Min	Max	Max/Min	Ave/Min	Circuits	Fixture Qty
Basketball	Horizontal Illuminance	30.8	19	36	1.94	1.62	A	4
Blanket Grid	Horizontal	3.32	0	26	0.00		A	4

From Hometown to Professional

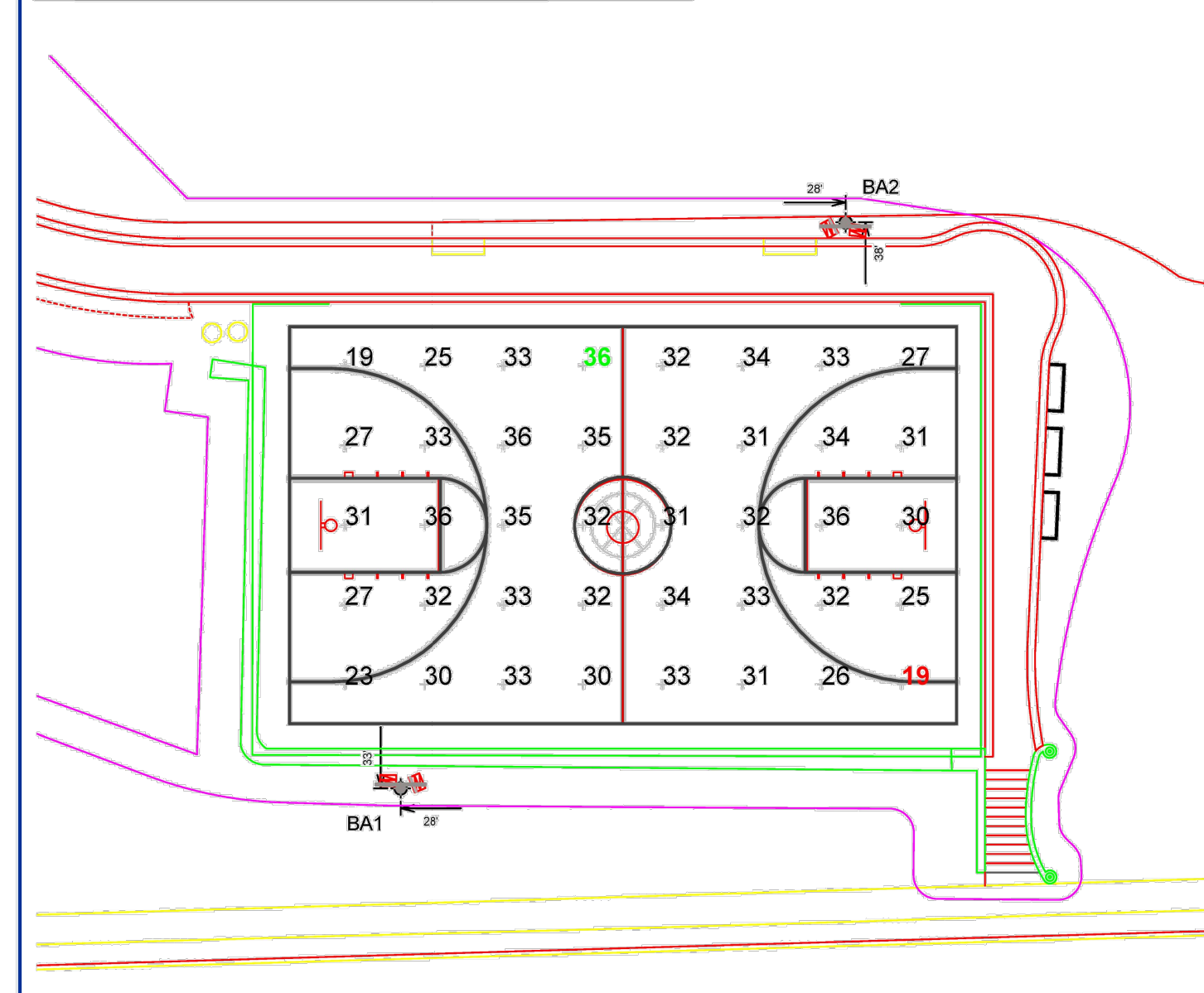


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ENGINEERED DESIGN By: Brayton Carter • File #197891C • 07-Jul-20

PROJECT SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN									
QTY	LOCATION	POLE	SIZE	GRADE ELEVATION	MOORING HEIGHT	LUMINAIRE TYPE	QTY	LEAD	OTHER
1	BA1	40'	5'	45'		TLC-LED-400	2	2	0
1	BA2	40'	5'	40'		TLC-LED-400	2	2	0
2						TLC-LED-400	4	4	0



SCALE IN FEET 1 : 20
ENGINEERED DESIGN By: Brayton Carter • File #197891C • 07-Jul-20

Arlington County Alcova Heights Park Basketball
Arlington, VA

GRID SUMMARY	
Name:	Basketball
Size:	84' x 50'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	30
Scan Average:	30.82
Maximum:	36
Minimum:	19
Avg / Min:	1.66
Guaranteed Max / Min:	1.94
Max / Min:	1.94
UG (adjacent pts):	1.39
CU:	0.64
CV:	0.14
No. of Points:	40

LUMINAIRE INFORMATION
Color / CRI: 5700K - 75 CRI
Luminaire Output: 46,500 lumens
No. of Luminaires: 4
Total Load: 1.6 KW

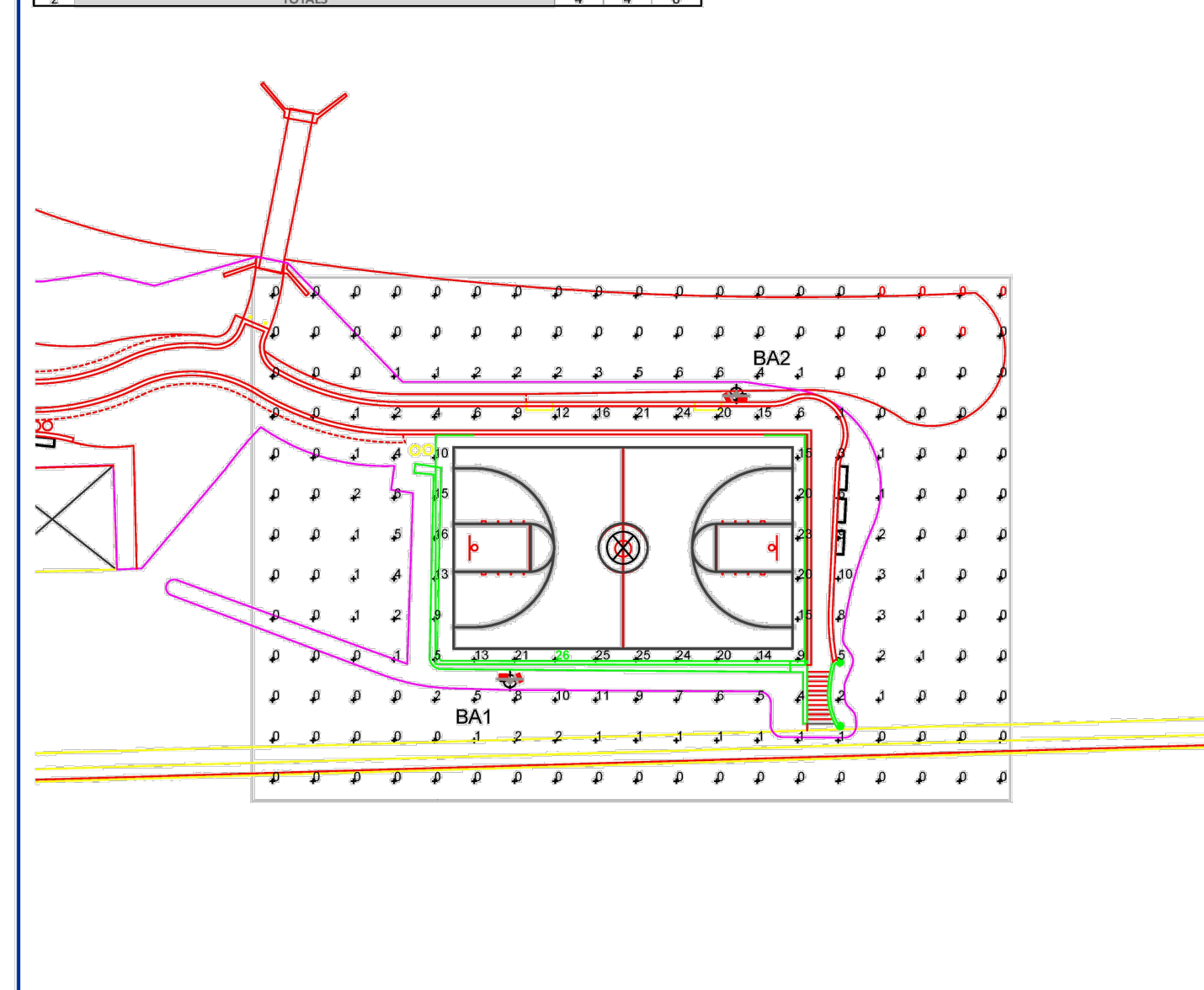
Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.
Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.
Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.
Installation Requirements: Results assume ± 3% nominal voltage at the side of the driver and structures located within 3 feet (1m) of design locations.



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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN									
QTY	LOCATION	POLE	SIZE	GRADE ELEVATION	MOORING HEIGHT	LUMINAIRE TYPE	QTY	LEAD	OTHER
1	BA1	40'	5'	45'		TLC-LED-400	2	2	0
1	BA2	40'	5'	40'		TLC-LED-400	2	2	0
2						TLC-LED-400	4	4	0



SCALE IN FEET 1 : 40
ENGINEERED DESIGN By: Brayton Carter • File #197891C • 07-Jul-20

Arlington County Alcova Heights Park Basketball
Arlington, VA

GRID SUMMARY	
Name:	Blanket Grid
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Scan Average:	3.32
Maximum:	26
Minimum:	0
Avg / Min:	-
Max / Min:	-
UG (adjacent pts):	376.96
CU:	0.36
No. of Points:	207

LUMINAIRE INFORMATION
Color / CRI: 5700K - 75 CRI
Luminaire Output: 46,500 lumens
No. of Luminaires: 4
Total Load: 1.6 KW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.
Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.
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ILLUMINATION SUMMARY



SCALE IN FEET 1 : 200
ENGINEERED DESIGN By: Brayton Carter • File #197891C • 07-Jul-20

Arlington County Alcova Heights Park Basketball
Arlington, VA

EQUIPMENT LAYOUT

INCLUDES:
- Basketball
Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.
Installation Requirements: Results assume ± 3% nominal voltage at the side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN									
QTY	LOCATION	POLE	SIZE	GRADE ELEVATION	MOORING HEIGHT	LUMINAIRE TYPE	QTY	LEAD	OTHER
1	BA1	40'	5'	45'		TLC-LED-400	2	2	0
1	BA2	40'	5'	40'		TLC-LED-400	2	2	0
2						TLC-LED-400	4	4	0

SINGLE LUMINAIRE AMPERAGE DRAW CHART									
Ballast Specifications (all ballasts factory)									
Single Phase Voltage	208	220	240	277	347	380	480		
TLC-LED-400	2.9	3.2	2.8	3.7	5.4	1.3	1.8		



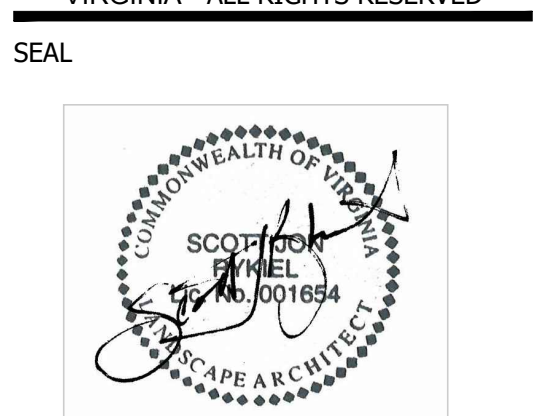
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EQUIPMENT LAYOUT



DEPARTMENT OF PARKS & RECREATION
FACILITIES & ENGINEERING DIVISION
ENGINEERING BUREAU
2100 CLARENDON BOULEVARD, SUITE 414
ARLINGTON, VA 22201
PHONE: 703.228.4747
FAX: 703.228.3328

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APPROVALS DATE

DESIGN TEAM ENGINEER SUPERVISOR

CONSTRUCTION MANAGEMENT SUPERVISOR

WATER, SEWER, STREETS BUREAU CHIEF

TRANSPORTATION DIRECTOR

PROJECT MANAGER

REVISIONS DATE

Project Name and Location

Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
E1.02 LIGHTING PLAN.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\DRAWING\18074

PLOTTED: JULY 15 2021
PLOTTED BY: MFLIPPONE

SHEET

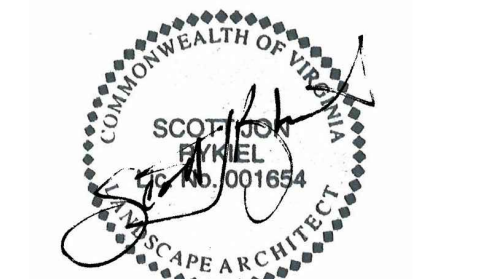
LIGHTING PLAN

E1.02

ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

Scale: As shown Number: 55B of 68



Alcova Heights Park Renovation Phase I

DESIGNED: SK
DRAWN: AS
CHECKED: SK
MISS UTILITY TRANSMITTAL #: N/A

FILENAME:
E1.03 LIGHTING DETAILS.DWG
PATH: S:\18 PROJECTS\18074 ALCOVA HEIGHTS PARK\CAD\DRW\18074 100 CD

PLOTTED: JULY 15 2021
PLOTTED BY: MFLIPPONE

SHEET

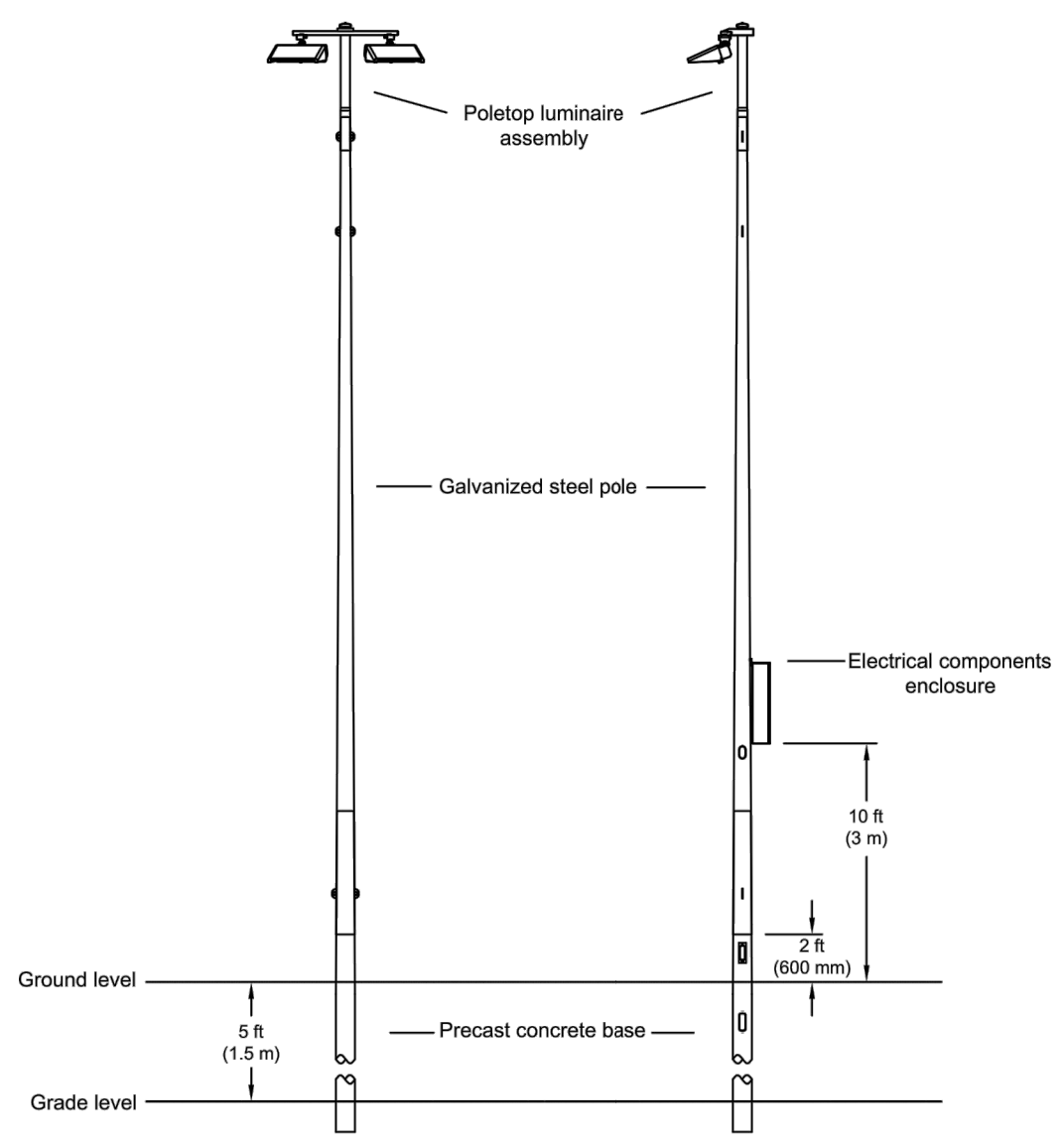
LIGHTING DETAILS

E1.03

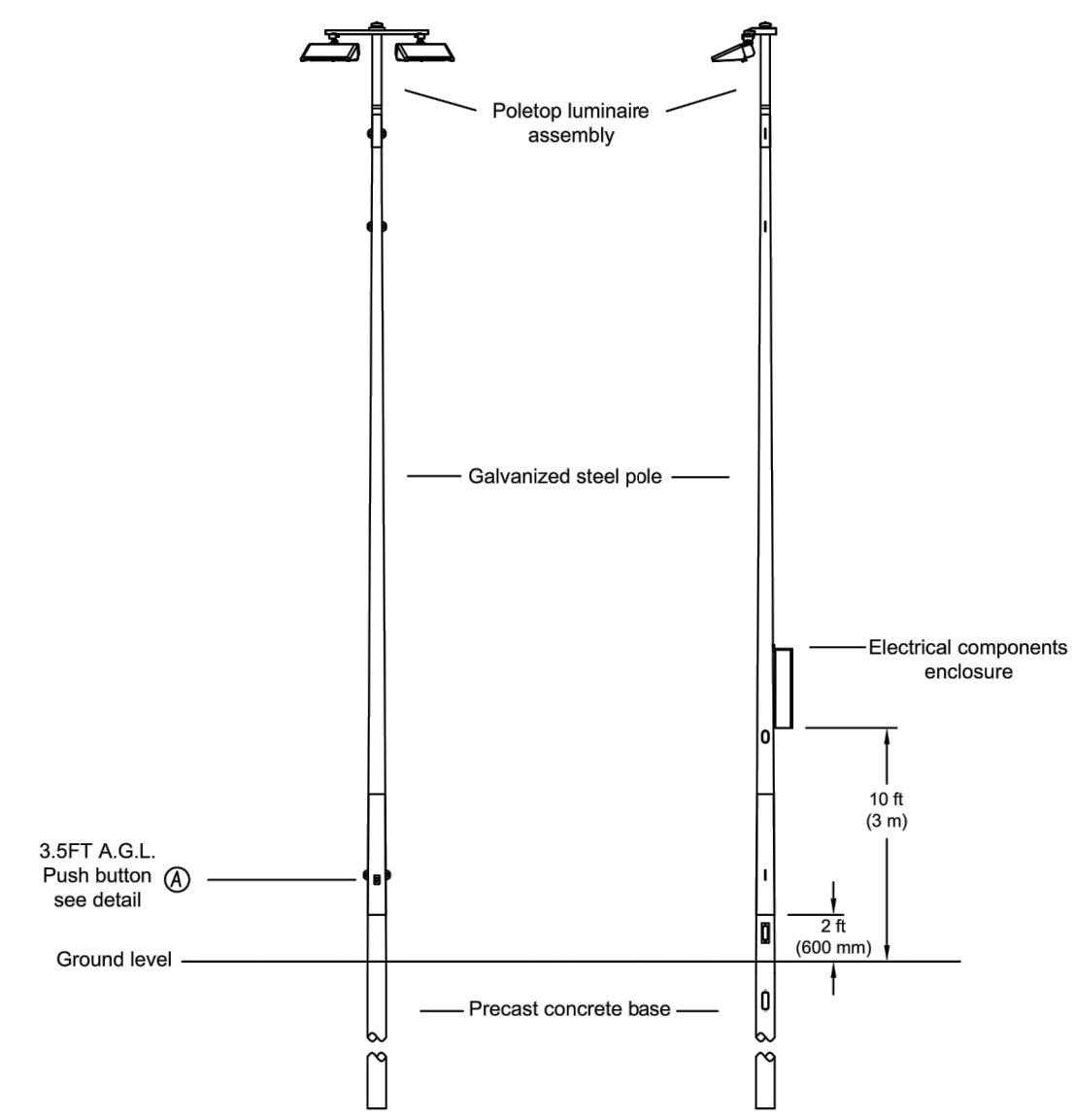
ARLINGTON COUNTY, VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SERVICES

Alcova Heights Park Renovation Phase I
901 S. George Mason Drive
Arlington, Virginia 22204
Arlington County, Virginia

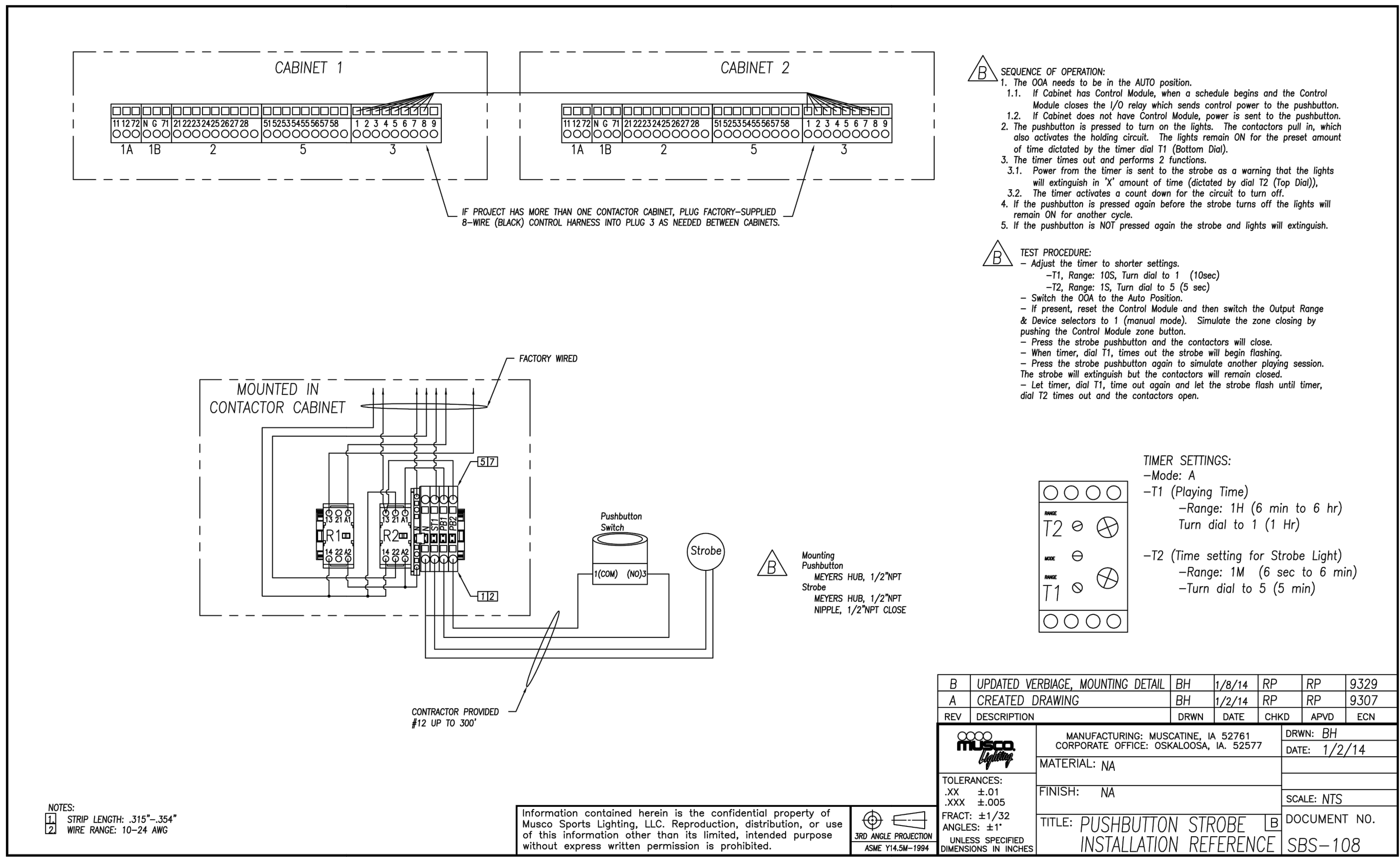
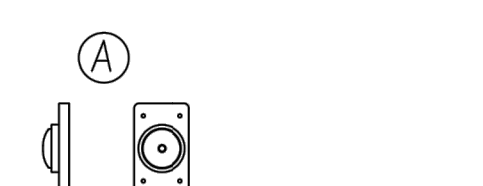
Scale: As shown Number: 55C of 68



POLE(S): BA1
Musco 40FT Light-Structure System™ pole
TLC for LED™ luminaires
(2) TLC-LED-400



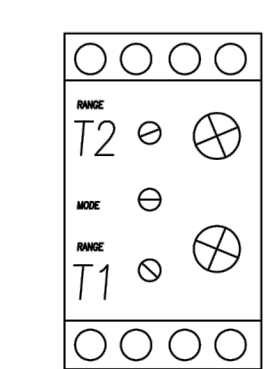
POLE(S): BA2
Musco 40FT Light-Structure System™ pole
TLC for LED™ luminaires
(2) TLC-LED-400



- SEQUENCE OF OPERATION:**
- The OOA needs to be in the AUTO position.
 - If Cabinet has Control Module, when a schedule begins and the Control Module closes the I/O relay which sends control power to the pushbutton.
 - If Cabinet does not have Control Module, power is sent to the pushbutton.
 - The pushbutton is pressed to turn on the lights. The contactors pull in, which also activates the holding circuit. The lights remain ON for the preset amount of time dictated by the timer dial T1 (Bottom Dial).
 - The timer times out and performs 2 functions.
 - Power from the timer is sent to the strobe as a warning that the lights will extinguish in "X" amount of time (dictated by dial T2 (Top Dial)).
 - The timer activates a count down for the circuit to turn off.
 - If the pushbutton is pressed again before the strobe turns off the lights will remain ON for another cycle.
 - If the pushbutton is NOT pressed again the strobe and lights will extinguish.

- TEST PROCEDURE:**
- Adjust the timer to shorter settings.
 - T1, Range: 10S, Turn dial to 1 (10sec)
 - T2, Range: 1S, Turn dial to 5 (5 sec)
 - Switch the OOA to the Auto Position.
 - If present, reset the Control Module and then switch the Output Range & Device selectors to 1 (manual mode). Simulate the zone closing by pushing the Control Module zone button.
 - Press the strobe pushbutton and the contactors will close.
 - When timer, dial T1, times out the strobe will begin flashing.
 - Press the strobe pushbutton again to simulate another playing session. The strobe will extinguish but the contactors will remain closed.
 - Let timer, dial T1, time out again and let the strobe flash until timer, dial T2 times out and the contactors open.

- TIMER SETTINGS:**
- Mode: A
 - T1 (Playing Time)
 - Range: 1H (6 min to 6 hr)
 - Turn dial to 1 (1 Hr)
 - T2 (Time setting for Strobe Light)
 - Range: 1M (6 sec to 6 min)
 - Turn dial to 5 (5 min)



- Mounting:**
MEYERS HUB, 1/2"NPT
Strobe
MEYERS HUB, 1/2"NPT
NIFFLE, 1/2"NPT CLOSE

B	UPDATED VERBAGE, MOUNTING DETAIL	BH	1/8/14	RP	RP	9329
A	CREATED DRAWING	BH	1/2/14	RP	RP	9307
REV	DESCRIPTION	DRWN	DATE	CHKD	APVD	ECN
0000	MUSCO					
MANUFACTURING: MUSCATINE, IA 52761		DRWN: BH		DATE: 1/2/14		
CORPORATE OFFICE: OSKALOOSA, IA 52577		RP: RP		DATE: 1/2/14		
MATERIAL: NA		FINISH: NA		SCALE: NTS		
TOLERANCES: .XX ±.01		FRACT: ±1/32		ANGLES: ±1°		
.XX ±.005		UNLESS SPECIFIED		DIMENSIONS IN INCHES		
TITLE: PUSHBUTTON STROBE INSTALLATION REFERENCE		DOCUMENT NO.		SBS-108		

Control System Summary

Project Information

Project Specific Notes:

- A dedicated control circuit must be supplied per distribution panel location.
- If the control voltage is NOT available, a control transformer is required.
- Electrical distribution panel to provide overcurrent protection for circuits.
- HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart.
- See chart on page 2 for wiring requirements.
- Equipment grounding conductor and splices must be insulated (per circuit).
- Lightning ground protection (per pole), if not Musco supplied.
- Electrical conduit wireway system.
- Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum.
- Mounting hardware for cabinets.
- Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present).
- Anti-corrosion compound to apply to ends of wire, if necessary.

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1. Control and Monitoring Cabinet	24 X 48

QTY	SIZE (AMPS)
2	30 AMP
1	

Materials Checklist

Contractor/Customer Supplied:

- A dedicated control circuit must be supplied per distribution panel location.
- If the control voltage is NOT available, a control transformer is required.
- Electrical distribution panel to provide overcurrent protection for circuits.
- HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart.
- See chart on page 2 for wiring requirements.
- Equipment grounding conductor and splices must be insulated (per circuit).
- Lightning ground protection (per pole), if not Musco supplied.
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- Mounting hardware for cabinets.
- Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present).
- Anti-corrosion compound to apply to ends of wire, if necessary.

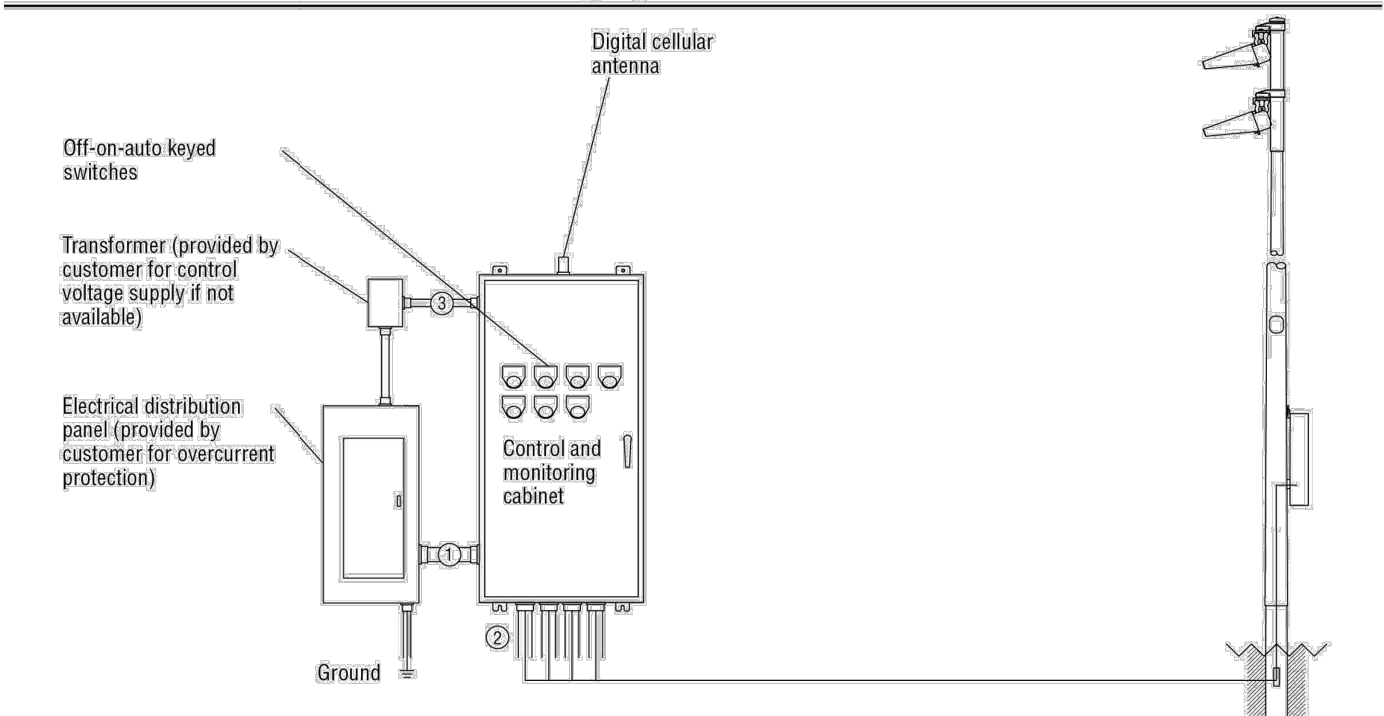
Call Control-Link Central™ operations center at 877.347.3319 to schedule activation of the control system upon completion of the installation.

Note: Activation may take up to 1 1/2 hours.

Control System Summary

Arlington County Alcova Heights Park Basketball / 197891 - 197891C
Service 1 - Page 2 of 4

Control-Link. Control and Monitoring System



Circuit ID	Description	# of Wires	Wire (AWS)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*C	N/A	No	C,E

- IMPORTANT NOTES:**
- Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
 - In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
 - One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
 - If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
 - A single control circuit must be supplied per control system.
 - Size overcurrent devices using the full load amps column of the Circuit Summary by Zone chart. Minimum power factor is 0.9.
- NOTE:** Refer to Installation Instructions for more details on equipment information and the installation requirements.

Control System Summary

Arlington County Alcova Heights Park Basketball / 197891 - 197891C
Service 1 - Page 3 of 4

SWITCHING SCHEDULE

Field/Zone Description	Zones
Basketball	1

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 1063.0 SEALED: 127.8

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
BA1	Basketball	2	1	4.0	30	C1	1
BA2	Basketball	2	1	4.0	30	C2	1

*Full Load Amps based on amps per driver.

Control System Summary

Arlington County Alcova Heights Park Basketball / 197891 - 197891C
Service 1 - Page 4 of 4

PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole BA1	4.00		
1	1	C2	Pole BA2	4.00		

ZONE SCHEDULE

ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 1	1	Basketball	BA1 BA2	C1 C2

Project Name and Location

PLAT SHOWING
TOPOGRAPHIC SURVEY
ON THE PROPERTY OF
COUNTY BOARD OF ARLINGTON,
VIRGINIA

ALCOVA HEIGHTS PARK

901 S. GEORGE MASON DRIVE

Arlington, Virginia

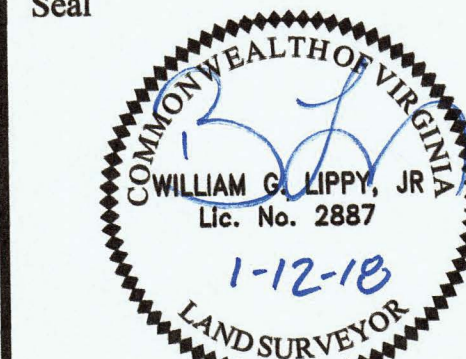
Sheet Title

Base Plan

Prepared by
RICE ASSOCIATES
LAND SURVEYING - MAPPING CONSULTANTS

10861 GASKINS WAY
MANASSAS, VIRGINIA 20109
(703) 968-3200
FAX (703) 968-2705
WWW.RICESURVEYS.COM

Seal



Approvals _____ Date _____

DEPARTMENT DIRECTOR _____

PLANNING AND DESIGN DIVISION CHIEF _____

DESIGN TEAM SUPERVISOR _____

PARK SERVICE AREA MANAGER _____

URBAN FORESTRY _____

Revisions _____ Date _____

Designed: _____
Drawn: KLT
Checked: LS/WGL

Filename: AC150006-2D Revised.dwg

Path: S:\project\AC150006\DWG

Plotted: Jan 11, 2018

Scale: 1" = 25'

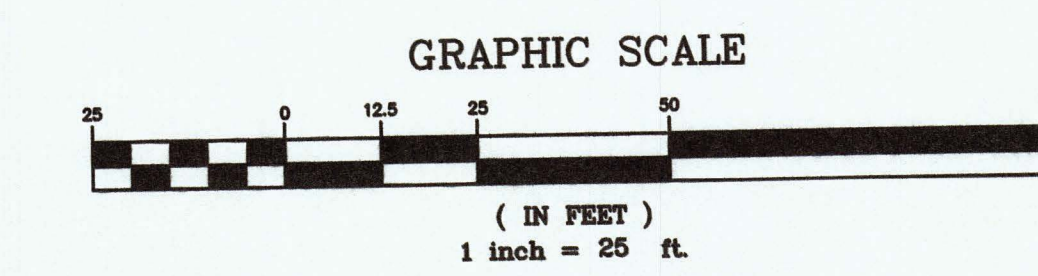
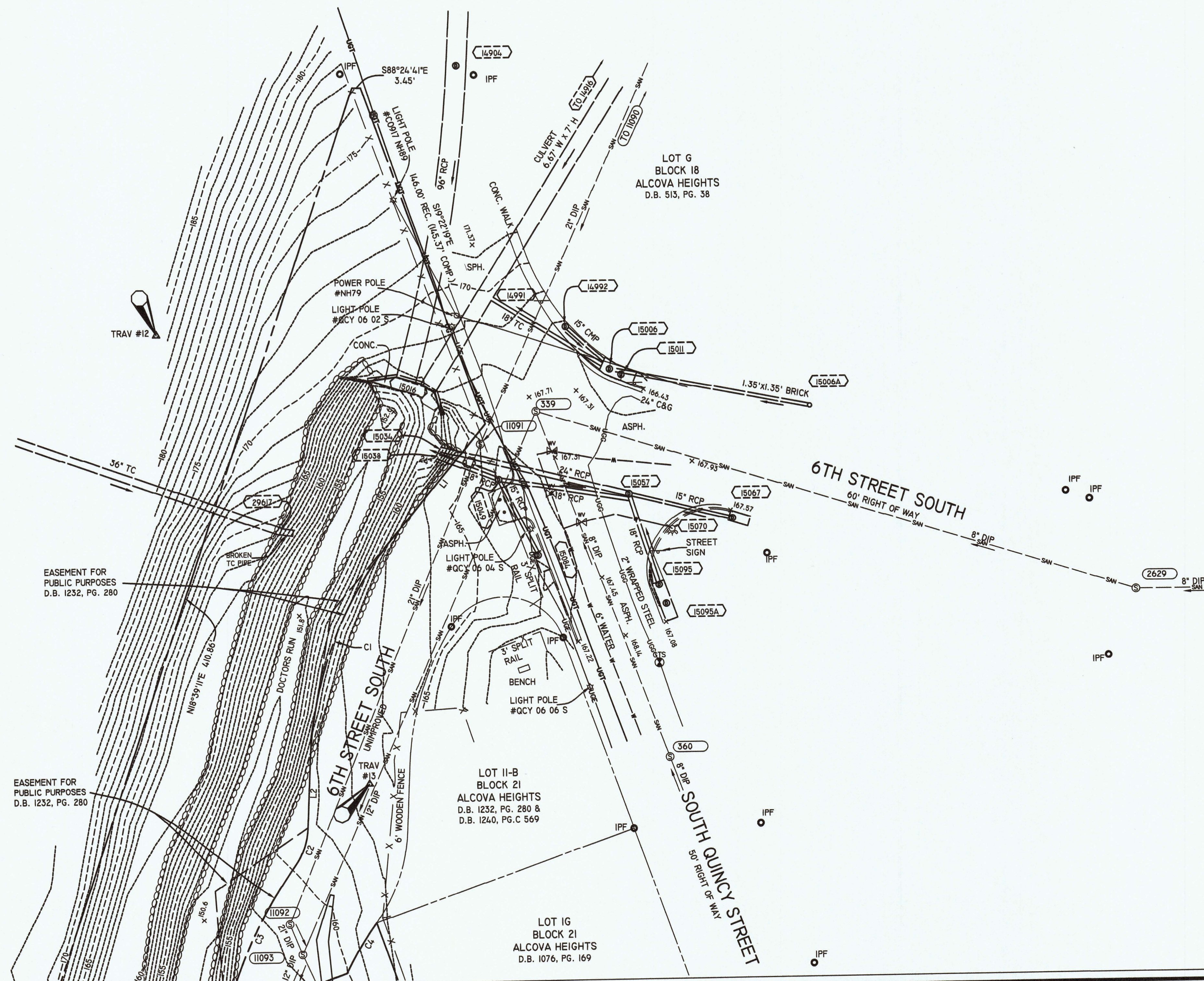
Date: JANUARY 11, 2018

Sheet

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LINE TABLE			
LABEL	BEARING	DIST. (REC.)	DIST. (COMP.)
L1	S39°38'19"W	57.36'	58.06'
L2	S02°41'59"W	27.29'	
L3	N70°34'29"E	51.78'	
L4	S26°44'42"W	51.67'	
L5	S09°56'49"W	80.01'	
L6	S51°11'59"W	127.83'	
L7	N68°56'06"E	30.10'	
L8	S68°56'06"W	66.35'	
L9	S24°42'06"W	50.29'	
L10	N66°57'54"E	16.21'	

CURVE TABLE						
CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD	DELTA	TANGENT
C1	152.87'	98.56'	S21°10'18"W	96.86'	36°56'20"	51.06'
C2	28.67'	16.61'	N19°18'00"E	16.38'	33°12'03"	8.55'
C3	180.76'	67.67'	S25°10'33"W	67.28'	21°27'10"	34.24'
C4	140.76'	23.63'	S31°05'59"W	23.60'	9°36'58"	11.84'



Project Name and Location

PLAT SHOWING
TOPOGRAPHIC SURVEY
ON THE PROPERTY OF
COUNTY BOARD OF ARLINGTON,
VIRGINIA

ALCOVA HEIGHTS PARK

901 S. GEORGE MASON DRIVE

Arlington, Virginia

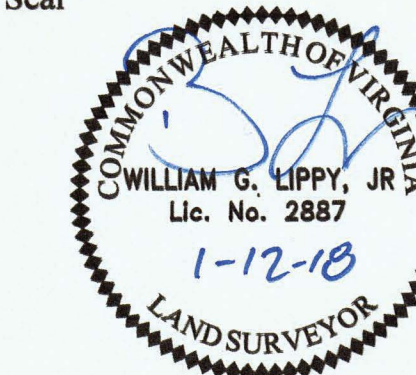
Sheet Title

Base Plan

Prepared by
RICE ASSOCIATES
LAND SURVEYING - MAPPING CONSULTANTS

10661 GASKINS WAY
MANASSAS, VIRGINIA 20109
(703) 968-3200
FAX (703) 968-2705
WWW.RICESURVEYS.COM

Seal



Approvals Date

DEPARTMENT DIRECTOR

PLANNING AND DESIGN DIVISION CHIEF

DESIGN TEAM SUPERVISOR

PARK SERVICE AREA MANAGER

URBAN FORESTRY

Revisions Date

Designed: KLT
Drawn: LS/WGL
Checked: LS/WGL

Filename: AC150006-2D Revised.dwg

Path:

Plotted: Jan 11, 2018

Scale: 1" = 25'

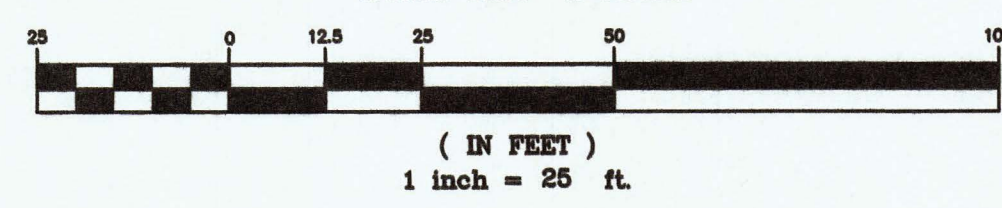
Date: JANUARY 11, 2018

Sheet
58 of 68



UNITED STATES OF AMERICA
D.B. 631, PG. 480

GRAPHIC SCALE



MATCH LINE SHEET 3

MATCH LINE SHEET 4

LOT 8-E
BLOCK 21
ALCOVA HEIGHTS
D.B. 1525, PG. 185

LOT 9-D
BLOCK 21
ALCOVA HEIGHTS
D.B. 1525, PG. 185

LOT 10D
BLOCK 21
ALCOVA HEIGHTS
D.B. 477, PG. 428



DEPARTMENT OF PARKS,
RECREATION AND
CULTURAL RESOURCES

Park Development Division
2100 Clarendon Boulevard, Suite 414
Arlington, VA 22201
Phone: 703.228.7928
Fax: 703.228.3328

Project Name and Location

PLAT SHOWING
TOPOGRAPHIC SURVEY
ON THE PROPERTY OF
COUNTY BOARD OF ARLINGTON,
VIRGINIA

ALCOVA HEIGHTS PARK

901 S. GEORGE MASON DRIVE

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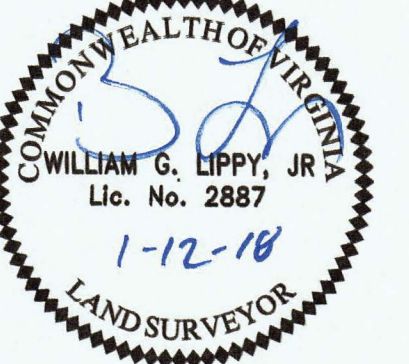
Sheet Title

Base Plan

Prepared by
RICE ASSOCIATES
LAND SURVEYING · MAPPING CONSULTANTS

10861 GASKINS WAY
MANASSAS, VIRGINIA 20108
(703) 999-3200
FAX (703) 999-2705
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Seal



Approvals Date

DEPARTMENT DIRECTOR

PLANNING AND DESIGN DIVISION CHIEF

DESIGN TEAM SUPERVISOR

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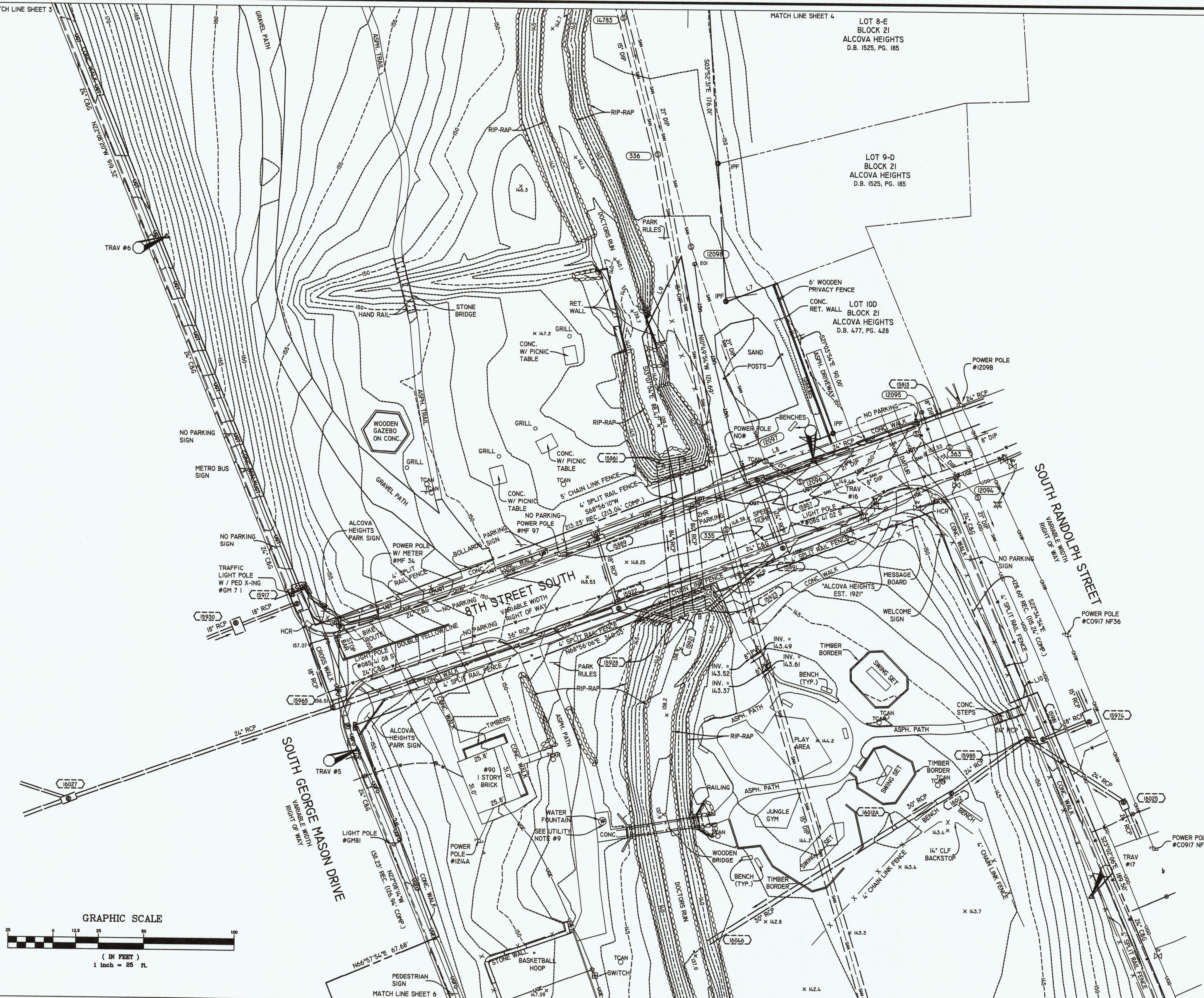
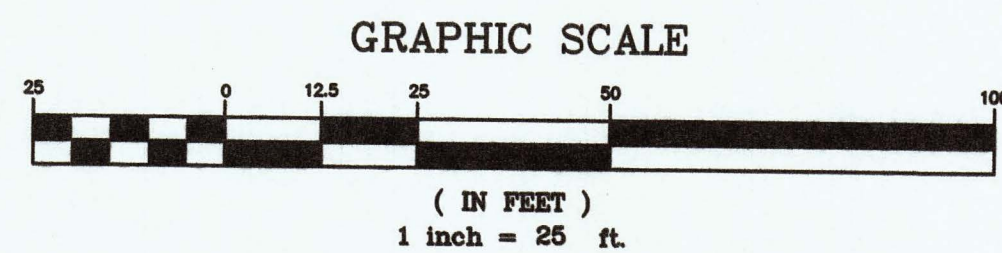
Plotted: Jan 11, 2018

Scale: 1" = 25'

Date: JANUARY 11, 2018

Sheet

60 of 68



TREE #	SIZE	SPECIES	CRZ RADIUS	NOTE
1	8"	ASH	8'	
2	10"	ASH	10'	
3	4"	MAPLE	8'	
4	3"	DECIDUOUS	8'	
5	8"	ASH	8'	
6	10"	OAK	10'	
7	8"	OAK	8'	
8	8"	DEAD	8'	
9	10"	DEAD	10'	TRIPLE
10	15"	LOCUST	15'	
11	34"	POPLAR	34'	
12	5"	OAK	8'	
13	4"	DEAD	8'	
14	2"	MAPLE	8'	
15	10"	DEAD	10'	
16	10"	DEAD	10'	
17	8"	DEAD	8'	
18	3"	OAK	8'	
19	4"	OAK	8'	
20	5"	OAK	8'	
21	5"	OAK	8'	
22	12"	DEAD	12'	
23	12"	MAPLE	12'	
24	22"	POPLAR	22'	
25	5"	OAK	8'	
26	5"	CHERRY	8'	
27	5"	CHERRY	8'	
28	2"	CHERRY	8'	
29	24"	POPLAR	24'	
30	4"	DEAD	8'	
31	4"	ASH	8'	TWIN
32	6"	DEAD	8'	
33	10"	DEAD	10'	
34	31"	MAPLE	31'	
35	4"	DEAD	8'	
36	11"	ASH	11'	
37	12"	ASH	12'	
38	3"	ASH	8'	
39	20"	MAPLE	20'	
40	24"	POPLAR	24'	
41	18"	MAPLE	18'	
42	26"	POPLAR	26'	
43	10"	MAPLE	10'	
44	24"	MAPLE	24'	
45	12"	OAK	10'	
46	10"	OAK	10'	
47	11"	OAK	11'	
48	4"	HOLLY	8'	
49	6"	ASH	8'	
50	18"	ASH	18'	
51	3"	CHERRY	8'	TWIN
52	10"	ASH	10'	TWIN
53	12"	POPLAR	12'	
54	8"	OAK	8'	
55	15"	OAK	15'	TWIN
56	36"	MAPLE	36'	
57	12"	MAPLE	12'	
58	18"	MAPLE	18'	
59	10"	POPLAR	10'	
60	28"	POPLAR	28'	TRIPLE
61	10"	OAK	10'	
62	4"	BEECH	8'	
63	2"	MAPLE	8'	QUAD
64	10"	CATALPA	10'	
65	12"	ASH	12'	
66	2"	ASH	8'	
67	12"	DEAD	12'	
68	2"	CHERRY	8'	
69	22"	MAPLE	22'	
70	15"	POPLAR	15'	
71	24"	SYCAMORE	24'	
72	2"	POPLAR	8'	
73	18"	ASH	18'	
74	2"	SYCAMORE	8'	
75	2"	POPLAR	8'	
76	6"	CRAPE MYRTLE	8'	
77	4"	CRAPE MYRTLE	8'	
78	3"	CRAPE MYRTLE	8'	
79	15"	MAPLE	15'	
80	28"	OAK	28'	TWIN
81	12"	OAK	12'	
82	18"	CHERRY	18'	
83	2"	ASH	8'	
84	20"	SYCAMORE	20'	
85	18"	POPLAR	18'	
86	6"	HOLLY	8'	TWIN
87	10"	HICKORY	10'	
88	21"	WALNUT	21'	
89	28"	OAK	28'	
90	24"	OAK	24'	
91	10"	HICKORY	10'	
92	15"	HICKORY	15'	
93	10"	HICKORY	10'	
94	30"	HICKORY	30'	TWIN
95	10"	OAK	10'	
96	12"	HICKORY	12'	TRIPLE
97	36"	OAK	36'	
98	18"	ASH	18'	
99	22"	ASH	22'	
100	28"	ASH	28'	
101	10"	ASH	10'	
102	3"	DEAD	8'	
103	8"	SYCAMORE	8'	
104	4"	DEAD	8'	
105	4"	DEAD	8'	TWIN
106	4"	DEAD	8'	
107	3"	OAK	8'	
108	15"	OAK	15'	
109	2"	OAK	8'	
110	34"	POPLAR	34'	
111	20"	POPLAR	20'	TWIN
112	10"	ASH	10'	
113	2"	ASH	8'	
114	2"	CHERRY	8'	
115	20"	POPLAR	20'	
116	36"	POPLAR	36'	
117	32"	POPLAR	32'	
118	26"	POPLAR	26'	
119	18"	POPLAR	18'	
120	18"	POPLAR	18'	

TREE #	SIZE	SPECIES	CRZ RADIUS	NOTE
121	8"	CHERRY	8'	
122	8"	SYCAMORE	8'	
123	11"	ASH	11'	
124	3"	SYCAMORE	8'	
125	10"	MULBERRY	10'	TWIN
126	2"	CATALPA	8'	
127	3"	LOCUST	8'	
128	3"	LOCUST	8'	
129	3"	LOCUST	8'	
130	2"	POPLAR	8'	
131	34"	OAK	36'	
132	12"	ASH	12'	
133	3"	CHERRY	8'	
134	8"	BOXWOOD	8'	
135	3"	ASH	8'	
136	10"	POPLAR	20'	
137	2"	HOLLY	8'	
138	5"	ASH	8'	
139	18"	LOCUST	18'	
140	8"	MAPLE	8'	
141	12"	ASH	12'	
142	2"	ASH	8'	
143	6"	ASH	8'	
144	8"	DEAD	8'	
145	4"	MAPLE	8'	
146	2"	SYCAMORE	8'	
147	4"	MAPLE	8'	
148	18"	ASH	18'	
149	15"	MAPLE	15'	
150	10"	MAPLE	10'	
151	28"	MAPLE	28'	
152	4"	DEAD	8'	
153	2"	MULBERRY	8'	TWIN
154	3"	MULBERRY	8'	
155	30"	OAK	30'	
156	15"	MULBERRY	15'	
157	18"	MAPLE	18'	
158	18"	MAPLE	18'	
159	28"	POPLAR	28'	
160	8"	SILK	8'	TWIN
161	3"	HOLLY	8'	
162	10"	CHERRY	10'	
163	15"	POPLAR	15'	
164	24"	MAPLE	24'	
165	18"	POPLAR	18'	
166	24"	OAK	24'	
167	10"	ASH	10'	
168	30"	POPLAR	30'	
169	10"	ASH	10'	
170	18"	ASH	18'	
171	10"	ASH	10'	
172	3"	CATALPA	8'	
173	15"	MAPLE	15'	
174	18"	SYCAMORE	18'	
175	17"	WALNUT	17'	
176	18"	WALNUT	18'	
177	36"	OAK	36'	
178	48"	OAK	48'	
179	12"	MAPLE	12'	
180	15"	MAPLE	15'	
181	12"	MAPLE	12'	
182	4"	MAPLE	8'	
183	9"	ASH	9'	
184	18"	MAPLE	18'	
185	28"	MAPLE	28'	
186	18"	MAPLE	18'	
187	12"	ASH	12'	
188	27"	POPLAR	27'	
189	22"	MAPLE	8'	
190	10"	MAPLE	10'	
191	15"	MAPLE	15'	
192	34"	OAK	34'	
193	6"	DOGWOOD	8'	
194	18"	MAPLE	18'	
195	12"	DOGWOOD	12'	
196	2"	OAK	8'	
197	22"	OAK	22'	
198	30"	OAK	30'	
199	41"	OAK	41'	TWIN
200	51"	OAK	24'	
201	24"	OAK	24'	
202	24"	PINE	24'	
203	8"	CHERRY	8'	TWIN
204	15"	PINE	15'	
205	2"	OAK	8'	TWIN
206	24"	OAK	24'	
207	36"	OAK	36'	
208	24"	OAK	24'	
209	15"	PINE	15'	
210	10"	OAK	10'	
211	18"	PINE	18'	
212	12"	ASH	12'	
213	24"	OAK	24'	
214	12"	OAK	12'	
215	36"	OAK	36'	
216	24"	OAK	24'	
217	24"	OAK	24'	
218	15"	OAK	15'	
219	20"	OAK	20'	
220	10"	DEAD	10'	
221	12"	CHERRY	12'	
222	20"	OAK	20'	
223	6"	DOGWOOD	8'	
224	36"	OAK	36'	
225	18"	OAK	18'	
226	18"	OAK	18'	
227	18"	OAK	18'	QUAD
228	12"	ASH	12'	
229	9"	ASH	9'	
230	3"	ASH	8'	
231	2"	ASH	8'	
232	18"	OAK	18'	
233	18"	OAK	18'	
234	18"	POPLAR	18'	
235	18"	POPLAR	18'	
236	2"	OAK	8'	
237	18"	DEAD	18'	
238	20"	POPLAR	20'	
239	17"	POPLAR	17'	
240	17"	MAPLE	17'	

TREE #	SIZE	SPECIES	CRZ RADIUS	NOTE
241	12"	DEAD	12'	
242	10"	MAPLE	10'	
243	17"	POPLAR	17'	
244	42"	POPLAR	42'	
245	15"	MAPLE	15'	
246	18"	POPLAR	18'	
247	2"	MAPLE	8'	
248	3"	MAPLE	8'	
249	10"	ASH	10'	
250	12"	DEAD	12'	
251	10"	ASH	10'	
252	12"	CHERRY	12'	
253	2"	DEAD	8'	
254	10"	ASH	10'	
255	8"	MAPLE	8'	
256	15"	MAPLE	15'	
257	10"	DEAD	10'	
258	15"	ASH	15'	
259	17"	POPLAR	17'	
260	15"	ASH	15'	
261	6"	ASH	8'	
262	22"	POPLAR	22'	
263	6"	CHERRY	8'	
264	21"	OAK	21'	
265	10"	ASH	10'	
266	4"	CHERRY	8'	
267	6"	ASH	8'	
268	6"	ASH	8'	
269	15"	CHERRY	15'	
270	26"	POPLAR	26'	
271	10"	POPLAR	10'	
272	2"	ASH	8'	
273	7"	ASH	8'	
274	9"	CHERRY	9'	TWIN
275	8"	CHERRY	8'	
276	3"	MAPLE	8'	
277	3"	ASH	8'	
278	10"	ASH	10'	
279	2"	ASH	8'	TWIN
280	8"	CHERRY	8'	
281	10"	ASH	10'	
282	12"	ASH	12'	
283	10"	CATALPA	10'	
284	4"	CHERRY	8'	
285	10"	DEAD	10'	
286	18"	SYCAMORE	18'	
287	10"	ASH	10'	
288	3"	ASH	8'	
289	24"	DEAD	24'	
290	4"	CHERRY	8'	
291	22"	MULBERRY	22'	
292	30"	POPLAR	30'	
293	18"	MAPLE	18'	
294	8"	POPLAR	8'	
295	11"	POPLAR	11'	
296	5"	POPLAR	8'	
297	3"	CATALPA	8'	
298	3"	CATALPA	8'	
299	8"	DEAD	8'	
300	24"	PINE	24'	
301	6"	LOCUST	8'	
302	2"	LOCUST	8'	TWIN
303	4"	ASH	8'	
304	12"	ASH	12'	
305	8"	ASH	8'	
306	9"	ASH	9'	
307	18"	SYCAMORE	18'	
308	18"	MAPLE	18'	
309	5"	MAPLE	8'	
310	3"	ASH	8'	
311	48"	OAK	48'	
312	22"	OAK	22'	
313	15"	ASH	15'	
314	12"	OAK	12'	
315	18"	OAK	18'	TWIN
316	4"	CATALPA	8'	
317	4"	CATALPA	8'	
318	7"	ASH	8'	
319	41"	CATALPA	8'	
320	41"	CRAPE MYRTLE	8'	
321	4"	CRAPE MYRTLE	8'	TWIN
322	8"	CATALPA	8'	
323	9"	MAPLE	9'	
324	18"	MAPLE	18'	
325	10"	MAPLE	10'	TWIN
326	18"	MAPLE	18'	
327	18"	MAPLE	18'	
328	8			

TREE TABLE (CONT.)				
TREE #	SIZE	SPECIES	CRZ RADIUS	NOTE
961	5'	HOLLY	8'	
962	4'	CHERRY	8'	
963	18'	POPLAR	18'	
964	18'	MAPLE	18'	
965	30'	POPLAR	30'	TWIN
966	15'	ASH	15'	
967	12'	DEAD	12'	
968	3'	DEAD	8'	
969	2'	MAPLE	8'	
970	18'	OAK	18'	
971	12'	OAK	12'	
972	6'	ASH	8'	
973	13'	LOCUST	13'	
974	13'	OAK	13'	
975	8'	CHERRY	8'	
976	12'	DEAD	12'	
977	18'	OAK	18'	
978	5'	LOCUST	8'	
979	15'	LOCUST	15'	
980	8'	ASH	8'	
981	8'	ASH	8'	
982	18'	LOCUST	18'	
983	8'	DEAD	8'	
984	13'	LOCUST	13'	
985	15'	LOCUST	15'	
986	8'	ASH	8'	
987	12'	LOCUST	12'	
988	4'	CHERRY	8'	
989	8'	ASH	8'	
990	13'	LOCUST	13'	
991	2'	MAPLE	8'	
992	8'	CATALPA	8'	
993	12'	ASH	12'	
994	4'	SYCAMORE	8'	
995	15'	SYCAMORE	15'	
996	20'	SYCAMORE	20'	
997	10'	LOCUST	10'	
998	18'	SYCAMORE	18'	
999	6'	ASH	8'	
1000	6'	ASH	8'	
1001	7'	SYCAMORE	8'	
1002	2'	ASH	8'	
1003	2'	SYCAMORE	8'	
1004	3'	SYCAMORE	8'	
1005	4'	ASH	8'	
1006	4'	MAPLE	8'	
1007	10'	ASH	10'	
1008	8'	ASH	8'	
1009	12'	ASH	12'	
1010	2'	CHERRY	8'	
1011	4'	SYCAMORE	8'	
1012	15'	SYCAMORE	15'	
1013	10'	OAK	10'	
1014	10'	ASH	10'	
1015	12'	ASH	12'	
1016	4'	ASH	8'	
1017	3'	ASH	8'	
1018	4'	ASH	8'	
1019	12'	ASH	12'	
1020	12'	ASH	12'	
1021	10'	ASH	10'	
1022	15'	ASH	15'	
1023	3'	DEAD	8'	
1024	6'	ASH	8'	
1025	5'	ASH	8'	
1026	6'	DEAD	8'	
1027	10'	ASH	10'	
1028	10'	ASH	10'	
1029	2'	SYCAMORE	8'	
1030	10'	DEAD	10'	
1031	12'	ASH	12'	
1032	3'	ASH	8'	
1033	12'	ASH	12'	
1034	2'	CHERRY	8'	
1035	10'	ASH	10'	
1036	12'	DEAD	12'	
1037	8'	OAK	8'	
1038	12'	ASH	12'	
1039	5'	ASH	8'	
1040	8'	ASH	8'	
1041	3'	ASH	8'	
1042	10'	ASH	10'	TWIN
1043	8'	ASH	8'	
1044	13'	ASH	13'	
1045	10'	ASH	10'	
1046	15'	SYCAMORE	15'	
1047	10'	SYCAMORE	10'	
1048	3'	SYCAMORE	8'	
1049	12'	ASH	12'	
1050	3'	ASH	8'	
1051	11'	SYCAMORE	11'	
1052	3'	SYCAMORE	8'	
1053	3'	ASH	8'	
1054	15'	OAK	15'	TWIN
1055	4'	MAPLE	8'	
1056	3'	SYCAMORE	8'	
1057	3'	SYCAMORE	8'	
1058	4'	DEAD	8'	
1059	10'	SYCAMORE	10'	
1060	10'	SYCAMORE	10'	
1061	21'	OAK	21'	
1062	3'	ASH	8'	
1063	3'	DEAD	8'	
1064	6'	ASH	8'	
1065	15'	DEAD	15'	
1066	15'	OAK	15'	
1067	15'	OAK	15'	
1068	18'	OAK	18'	
1069	3'	OAK	8'	
1070	15'	OAK	15'	
1071	8'	OAK	8'	
1072	12'	OAK	12'	
1073	10'	DEAD	10'	
1074	3'	CHERRY	8'	
1075	2'	CHERRY	8'	
1076	10'	CATALPA	10'	
1077	10'	CATALPA	10'	
1078	12'	MAPLE	12'	
1079	5'	CRAPE MYRTLE	8'	
1080	3'	DECIDUOUS	8'	

TREE TABLE (CONT.)				
TREE #	SIZE	SPECIES	CRZ RADIUS	NOTE
1081	3'	DECIDUOUS	8'	TRIPLE
1082	2'	DECIDUOUS	8'	
1083	32'	LOCUST	32'	
1084	12'	DEAD	12'	
1085	8'	OAK	8'	
1086	10'	OAK	10'	
1087	4'	OAK	8'	
1088	12'	LOCUST	12'	TWIN
1089	6'	CATALPA	8'	
1090	4'	OAK	8'	
1091	3'	CHERRY	8'	QUAD
1092	2'	OAK	8'	
1093	5'	OAK	8'	
1094	5'	OAK	8'	
1095	12'	DEAD	12'	
1096	12'	OAK	12'	
1097	6'	OAK	8'	
1098	4'	OAK	8'	
1099	5'	OAK	8'	
1100	3'	CHERRY	8'	QUAD
1101	12'	OAK	12'	
1102	6'	CHERRY	8'	
1103	10'	OAK	10'	
1104	8'	SYCAMORE	8'	
1105	6'	CATALPA	8'	
1106	8'	CATALPA	8'	
1107	6'	OAK	8'	
1108	4'	OAK	8'	
1109	10'	DEAD	10'	
1110	4'	ASH	8'	
1111	12'	MAPLE	12'	
1112	4'	DEAD	8'	
1113	12'	SHAMEL ASH	12'	
1114	6'	CHERRY	8'	
1115	6'	ASH	8'	
1116	4'	ASH	8'	
1117	6'	ASH	8'	



DEPARTMENT OF PARKS,
RECREATION AND
CULTURAL RESOURCES

Park Development Division
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Project Name and Location

PLAT SHOWING
TOPOGRAPHIC SURVEY
ON THE PROPERTY OF
COUNTY BOARD OF ARLINGTON,
VIRGINIA

ALCOVA HEIGHTS PARK

901 S. GEORGE MASON DRIVE

Arlington, Virginia

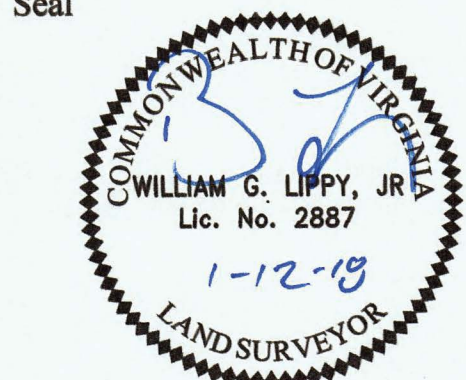
Sheet Title

Base Plan

Prepared by
RICE ASSOCIATES
LAND SURVEYING - MAPPING CONSULTANTS

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(703) 968-3200
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Seal



Approvals Date

DEPARTMENT DIRECTOR

PLANNING AND DESIGN DIVISION CHIEF

DESIGN TEAM SUPERVISOR

PARK SERVICE AREA MANAGER

URBAN FORESTRY

Revisions Date

Designed:
Drawn: KLT
Checked: LS / WGL

Filename: AC150006-2D Revised.dwg

Path:

S:\project\AC150006\DWG

Plotted: Jan 11, 2018

Scale: 1" = 25'

Date: JANUARY 11, 2018

Sheet

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