GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES

PUBLIC WORKS DEPARTMENT
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OFFICE OF
THE COMMISSIONER

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MEMORANDUM

TO: Nelson Petty, Jr., P.E.
Commissioner

FROM: Michael Farrington
DBE Assistant Program Director

DATE: June 21, 2018

SUBJECT: **15% DBE GOAL FOR VITRAN Maintenance & Operations Facility (STX)**

Please find for your review and approval a DBE Participation Goal of Fifteen Percent (15%).

After discussions with the Division of Transportation, the attached pay items have been identified and agreed upon as jobs that can be successfully completed by our list of certified DBEs. The recommendation is based on past performances and or ready, willing and able DBE's.

Reviewed by:

Coral Megahy
Project Engineer

(/) Approved If ( ) Disapproved; Then _____ % Recommended

Nelson Petty, Jr., P.E.
Commissioner

6/25/18
Date

cc: Engineers – STX
DBE Staff – STT, STX
File

SPECIAL PROVISIONS

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

SELECTED DBE PROGRAM PROVISIONS

DISADVANTAGED BUSINESS PARTICIPATION IN USDOT ASSISTED CONTRACTS

OBJECTIVE:

The purpose of the DBE Program is to implement the provisions of 49 CFR Part 26, other pertinent regulations, and source legislation. The objectives are: (a) To ensure nondiscrimination in the award and administration of USDOT-assisted contracts in the USDOT's highway, transit, and airport financial assistance programs; (b) To create a level playing field on which DBEs can compete fairly for USDOT-assisted contracts; (c) To ensure that USDOT's DBE program is narrowly tailored in accordance with applicable law; (d) To ensure that only firms that fully meet the eligibility standards specified in 49 CFR Part 26 are permitted to participate as DBEs; (e) To help remove barriers to the participation of DBEs in USDOT-assisted contracts; (f) To assist the development of firms that can compete successfully in the marketplace outside the DBE program; and (g) To provide appropriate flexibility to recipients of Federal financial assistance in establishing and providing opportunities for DBEs.

AUTHORITY:

These Special Provisions are issued following guidelines found in 49 CFR Parts 23 (as amended) and 26, effective March 4, 1999, under authorities cited at 23 U.S.C. 324; 42 U.S.C. 2000d et seq.; 49 U.S.C. 1615, 47107, 47113, 47123; Executive Order 12138, 3 CFR, 1979 Comp. p. 393; Sec. 1101(b), Pub. L. 105-178, 112 Stat. 107, 113; and in accordance with other directives contained in the VIDPW's Disadvantaged Business Enterprise Program.

POLICY:

It is the policy of the VIDPW to encourage and support the DBE Program and its objectives to the maximum extent possible. This rule shall be circulated throughout the VIDPW, Construction Organizations, DBE and non-DBE business communities that perform work with the VIDPW and other interested parties.

The VIDPW and all recipients of USDOT-assisted contracts shall not discriminate on the basis of race, color, national origin or sex in the award and performance of any USDOT-assisted contract or in the administration of its DBE Program or the requirements of 49 CFR Part 26. The VIDPW and all recipients will further ensure that the VIDPW and/or all recipients of USDOT-assisted contracts shall not discriminate in the development, implementation and administration of the DBE Program. Implementation of the DBE Program by the VIDPW is a legal obligation and failure to carry out its terms shall be treated as a violation whereby sanctions may be imposed as provided for under Part 26.

No person shall be excluded from participation in or denied the benefits of, or otherwise discriminated against in connection with the award and performance of any contract covered by this DBE Program or 49 CFR Part 26 on the basis of race, color, sex or national origin.

In administering the DBE Program, the VIDPW shall not use criteria or methods that would have the effect of defeating or substantially impairing accomplishment of the objectives of the program with respect to individuals of a particular race, color, sex or national origin.

From time to time VIDPW shall receive interpretations from USDOT, which shall be binding on VIDPW, sub-recipients, and contractors.

DEFINITIONS:

COMMERCIALY USEFUL FUNCTION (CUF) - means that a DBE is responsible for execution of a distinct element of the work of a contract or subcontract and carries out its responsibilities by actually performing, managing and supervising the work involved, or provides professional services.

COMPLIANCE – means that a recipient has correctly implemented the requirements of this part.

CONTRACT – means a legally binding relationship obligating a seller to furnish supplies or services (including, but not limited to, construction and professional services) and the buyer to pay for them.

CONTRACT GOAL – means the percentage of DBE participation established by VIDPW, if required, for a USDOT- Assisted Contract.

CONTRACTOR – means one who participates, through a contract or subcontract (at any tier), in a USDOT-assisted highway, transit, or airport program.

DEPARTMENT – means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

DESIGN CONSULTANT – means an individual, firm or partnership who contracts with the VIDPW to provide services for engineering, surveying, environmental, hazardous materials, subsurface utility engineering, and other services, which require a rigorous, logical, science, based approach for data acquisition to be used in the development of VIDPW highway construction plans.

DISADVANTAGED BUSINESS ENTERPRISE OR DBE – means a for-profit small business concern that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and whose management and daily business operation are controlled by one or more of the socially and economically disadvantaged individuals who own it.

GOOD FAITH EFFORTS – means efforts to achieve a DBE goal or other requirement of the DBE Program, which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirements.

JOINT VENTURE – means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

NAICS – North American Industrial Classification System – replaces the Standard Industrial Classification (SIC) code designation, which best describes the primary business of a firm.

NONCOMPLIANCE – means that a recipient has not correctly implemented the requirements of 49 CFR Part 26.

CRO – means Civil Rights Office of the VIDPW.

OPERATING ADMINISTRATION (OA) – means any of the following parts of USDOT: the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA). The “Administrator” of any OA includes his or her designees.

DEFINITIONS (cont.):

OVER-CONCENTRATION – means a condition in which DBE firms are being utilized in certain types of work to the extent that non-DBEs are unduly burdened from participating in this same type of work.

PRIMARY INDUSTRY CLASSIFICATION – means the four-digit Standard Industrial Classification (SIC) Code designation that best describes the primary business of a firm. The SIC code designations are described in the standard Industry Classification Manual.

PRIMARY RECIPIENT – means a recipient to which USDOT financial assistance is given and passes some or all of it on to another recipient.

PROGRAM – means any undertaking on a recipient's part to use USDOT financial assistance, authorized by the laws to which this part applies.

RACE-CONSCIOUS MEASURE – means a program that is focused specifically on assisting only DBEs, including women-owned DBEs.

RACE-NEUTRAL MEASURE – means a program that is, or can be, used to assist all small businesses. For purposes of this part, race-neutral includes gender-neutrality.

READY, WILLING AND ABLE –means, for the purpose of setting annual DBE goals, in the context of a DBE or non-DBE business, that it has the necessary license to perform work on USDOT-assisted contracts in its home state, is not currently suspended or debarred, and has demonstrated its interest in performing work on USDOT-assisted contracts by submitting a bid, proposal, or quotation as a prospective prime contractor, subcontractor, supplier, trucker, consultant, or other relevant business entity, on a Virgin Islands USDOT-assisted contract within the current or two (2) previous federal fiscal years, or such shorter duration as established by the Department.

RECIPIENT – means any entity, public or private, to which USDOT financial assistance is extended, whether directly or through another recipient, through the programs of the FAA, FHWA or FTA or who has applied for such assistance.

SECRETARY – means the Secretary of the U. S. Department of Transportation or his/her designee.

REGULAR DEALER - means a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business, if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealer's own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers, manufacturer's representatives, or other persons who arrange or expedite transactions are not regular dealers.

SMALL BUSINESS ADMINISTRATION (SBA) – means the United States Small Business Administration.

SMALL BUSINESS CONCERN – means with respect to firms seeking to participate as DBEs in USDOT-assisted contracts, a small business concern as defined pursuant to section 3 of the Small Business Act

and Small Business Administration Regulations implementing it (13 CFR Part 121) that also does not exceed the cap on average annual gross receipts specified in 26.65(b).

SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUAL – means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –

Any individual whom the VIDPW finds to be socially and economically disadvantaged pursuant to its DBE certification procedure.

Any individual in the following groups, members of which are rebuttable presumed to be socially and economically disadvantaged:

(a) "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;

(b) "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

(c) "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

(d) "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;

(e) "Subcontinent Asian Americans," which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives islands, Nepal or Sri Lanka;

(f) Women; and

(g) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

STATE GOAL – means the VIDPW's determination, calculated annually as a percentage, of the level of DBE participation on Virgin Islands USDOT–Assisted Contracts, VIDPW expects absent the effects of discrimination.

USDOT-ASSISTED CONTRACT – means any contract between a recipient and a contractor (at any tier) funded in whole or in part with USDOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

VIDPW – means the Virgin Islands Department Public Works.

Pre-Bid and Demonstration of Good Faith Efforts (GFE's):

When the VIDPW has established a DBE contract goal on a USDOT-assisted individual project, it shall award the contract only to a bidder who meets the established goal or who makes good faith efforts to do so. The award of the contract will be conditioned on meeting the requirements of this section. The VIDPW shall determine whether a bidder has made good faith efforts if it documents either: that it can

meet the DBE contract goal by documenting that it has obtained commitments for sufficient participation by DBE firms; or by documenting that it made adequate good faith efforts to meet the DBE contract goal by showing that it took all necessary and reasonable steps, which by their scope, intensity, and appropriateness to the objective of meeting the goal, could reasonably be expected to obtain sufficient DBE participation, even if the bidder was not fully successful.

1. All bidders shall give written assurance in their bid proposal to meet the established DBE contract goal or propose a reduced goal. The bidder's written assurance will be considered binding. Failure to make and/or abide by such written assurance shall render a bid non-responsive.

2. All bidders must complete and sign the DBE Commitment Form A-585 (Appendix A) and the Bidders List of Quote's Form BL-DBE (Appendix B) and include them with the other required documents of the bidder's "Proposal Package" submitted at the time of the Bid Opening. If the contract involves the use of consultants then the bidder must complete the Offeror's List (Appendix C) and the Certification of Consultant or Offeror for DBE Annual State Goal forms (Appendix D) and submit them with the "Proposal Package". All listed DBE firm(s) must be certified by the DPW prior to submission of the DBE Commitment Form.

3. The information required on all forms must be accurate, complete in every detail and in final form at the time; it is submitted to the VIDPW and/or its Contracting Office (Department of Property & Procurement) at the Bid Opening. Failure to submit these forms in proper form and accuracy at the Bid Opening shall render the bid non-responsive. All bidders are required to list on the DBE Commitment Form A-585, the following information:
    a. The names of the DBE subcontractor(s) and/or material supplier(s) that will participate in the contract;
    b. Item number(s) & description of the work that the DBE will perform;
    c. The dollar amount of the participation for each item of work the DBE will perform;
    d. Written documentation of the bidder's commitment to use a DBE subcontractor/supplier whose participation it submits to meet the DBE contract goal.

4. If the apparent low bidder cannot meet the established DBE contract goal, and proposes a reduced DBE goal, the bidder shall document and submit its justification for not meeting the goal and its documented demonstration of good faith efforts at the time of the bid opening. This justification is a documented demonstration of good faith efforts by the bidder, which must, in the end, show that the contractor had actively and aggressively sought out DBEs to participate in the project. Mere *pro forma* efforts are not the necessary and reasonable steps that indicate good faith efforts. The VIDPW will consider the quality, quantity, and intensity of the different kinds of efforts that were made in trying to obtain DBE participation sufficient to meet the DBE contract goal. The following is a list of types of actions, which the VIDPW will consider as part of the bidder's good faith efforts to obtain DBE participation. This list is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive, as other factors or types of efforts may be relevant in appropriate cases. This demonstration should include, but not be limited to, the following:
    a. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow DBEs to respond to the solicitation. The bidder must determine with certainty if taking appropriate steps to follow up initial solicitations interests the DBEs.
    b. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

c. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

d. Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

   A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. In addition, the ability or desire of the prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

e. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor is standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

f. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

g. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

h. Effectively using the services of available minority/women community organizations; minority/women contractor's groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

5. In determining whether a bidder has made good faith efforts, the VIDPW may take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, the VIDPW may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, the VIDPW may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

6. The good faith efforts documentation required to justify the proposed goal shall be based on efforts made by the prime contractor from the date of Invitation For Bids to the date of the bid opening. The VIDPW will not consider any effort made by the prime contractor after bid opening.

7. Examples of actions which may not be acceptable as reasons for failure to meet the DBE goal:
   a. DBE unable to provide performance and/or payment bonds.
   b. Rejection of reasonable DBE bid based solely on price.
   c. DBE would not agree to perform all or most of the work of the contract.
   d. Union versus non-union status.
   e. Prime contractor normally would perform all or most of the work of the contract.

f. Solicitation by mail or telephone only.

8. If the bidder is able to demonstrate good faith efforts, the VIDPW may award the contract at the bidder's proposed DBE contract goal.

Pre-Bid and Demonstration of Good Faith Efforts (cont.)

9. If the VIDPW determines that the bidder is unable to demonstrate good faith efforts, the VIDPW will not award the contract, but shall provide to the bidder the opportunity for administrative reconsideration. As part of this reconsideration, the following guidelines apply:
   a. The bidder shall have the opportunity to provide written documentation or argument concerning the issue of whether the bidder met the DBE contract goal or made adequate good faith efforts to do so.
   b. The VIDPW's decision on reconsideration shall be made by an official who did not take part in the original determination that the bidder failed to meet the DBE contract goal or make adequate good faith efforts to do so.
   c. The bidder shall have the opportunity to meet in person with the VIDPW's reconsideration official to discuss the issue of whether it met the DBE contract goal or made adequate good faith efforts to do so.
   d. The VIDPW shall send a written decision on the reconsideration, explaining the basis for finding that the bidder did or did not meet the DBE contract goal or make adequate good faith efforts to do so.
   e. If the reconsideration decision finds that the bidder did meet the DBE contract goal or did make adequate good faith efforts to do so, the VIDPW may award the contract at the bidder's proposed DBE contract goal.
   f. If the reconsideration decision finds that bidder did not meet the DBE contract goal or did not make adequate good faith efforts to do so, the VIDPW will not award the contract to that bidder, but will notify the next lowest responsible bidder that its bid proposal, with all required documentation therein, is being considered for award of contract.
   g. The result of this reconsideration process is not administratively appeal able to the USDOT.

10. The DBE contract goal committed by the successful bidder will become the established DBE contract goal for the project as a contract requirement. If, at the completion of the project, the prime contractor fails to meet its commitment, it will be required to document and justify why it failed to meet this commitment. The Liquidated Damage Provision as stated below will apply if the contractor fails to demonstrate good faith efforts to meet the committed goal.

11. If the VIDPW lets for bid a "design-build" or "turnkey" contract, in which the VIDPW lets a master contract, or similar legally binding instrument, to a contractor, who in turn lets subsequent subcontracts for the work of the project, the VIDPW may establish a DBE contract goal for the project. The master contractor then establishes DBE contract goals, as appropriate, for the subcontracts it lets. The VIDPW shall maintain oversight of the master's contractor's activities to ensure that they are conducted consistent with the requirements of these Special Provisions, the VIDPW's DBE Program and 49 CFR Parts 23 (as amended) and 26.

12. The VIDPW requires that the successful bidder, or subsequently the prime contractor, not terminate for convenience a DBE subcontractor listed in DBE Commitment Form, or an approved substitute DBE firm, and then propose to perform the work of the terminated subcontract with its own forces or those of an affiliate, without the VIDPW's prior written consent. See the Termination / Substitution / Replacement of Listed DBE Firms provision below.

COUNTING DBE PARTICIPATION:

1. When a DBE participates in a contract, only the value of the work actually performed by the DBE will be counted.
   a. The entire amount of that portion of a construction contract or other contract that is performed by the DBE's own forces will be credited. Included are the costs of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).
   b. Credit will be allowed for the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a USDOT-assisted contract. Credit will be allowed for fees considered reasonable and not excessive as compared with fees customarily allowed for similar services.
   c. When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted only if the DBE's subcontractor is itself a certified DBE. Work that a DBE subcontracts to a non-DBE firm does not count.

2. When a DBE performs as a participant in a joint venture, credit for a portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces will be allowed.

3. Credit to a DBE contractor will be allowed only if the DBE is performing a commercially useful function on the contract.
   a. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, an evaluation will be made of the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing, and the DBE credit claimed for its performance of the work and other relevant factors.
   b. A DBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, an examination of similar transactions, particularly those in which DBEs do not participate, will be performed
   c. If a DBE does not perform or exercise responsibility for at least the percentage determined in the VIDPW Standard Specifications for Highway and Bridge Construction of the total cost of its contract with its own forces, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, it will be presumed that the DBE is not performing a commercially useful function.
   d. When a DBE is presumed not to be performing a commercially useful function as provided above, the DBE may present evidence to rebut this presumption. It may be determined that the firm is performing a commercially useful function given the type of work involved and normal industry practices.

e. Decisions concerning commercially useful function matters are not administratively appeal able to USDOT.

COUNTING DBE PARTICIPATION (cont).

4. The following factors will be used to determine whether a DBE trucking firm is performing a commercially useful function. The VIDPW shall evaluate the amount of work subcontracted, industry practices and other relevant factors:
   a. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purposes of counting DBE participation.
   b. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
   c. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
   d. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

   e. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.
   f. A lease arrangement or agreement shall indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks shall display the name and identification number of the DBE.
   g. Prior to beginning work on a contract, the DBE must submit valid lease agreements to the VIDPW on all leased trucks and written agreements with owner/operators. Whether the agreement is with an owner/operator or trucks hired from a trucking firm, the agreement must include the:
      1. Operator's Name;
      2. Social Security number;
      3. Federal Identification Number (FIN);
      4. Cab Card Number of the Truck;
      5. Description of the Truck and the Method of Payment.

5. The following factors are used in determining whether a DBE truck owner/operator will be credited:
   a. An Owner/Operator must own one (1) fully operational truck and operate it himself/herself for hire. The individual must possess a Commercial Driver's License and the truck must have a current registration and be properly licensed. If required, the firm must have the appropriate operating license and insurance. The individual must be an independent owner/operator and cannot be in an employee/employer relationship with a prime contractor.

   b. Owner/Operator trucks may be utilized by the prime contractor to meet a DBE goal and must be covered by a fully executed written agreement.

c. For each owner/operator to be credited, the contractor or subcontractor must submit to the VIDPW, a valid agreement that includes or has attached the following information:
   1. Owner/operator's name;
   2. Social Security Number;
   3. Copy of Vehicle registration receipt;
   4. Current Vehicle license number;
   5. Truck Number;
   6. Method of payment (hour, ton, load).
   7.

COUNTING DBE PARTICIPATION (cont).

d. The prime contractor may count towards its DBE participation, the total dollar value paid to an owner/operator for the haul. Payments to owner/operators must be certified to by the prime contractor prior to finalizing the project or as work progresses, as required by the VIDPW. If required, the owner must be shown on the prime contractor's certified payroll.

6. Expenditures with DBEs for Materials or Supplies:
   a. If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies may be counted. For the purposes of this paragraph, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
   b. If the materials or supplies are purchased from a DBE regular dealer, 60 percent of the cost of the materials or supplies may be counted.

   c. With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, only the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on the job site, provided the VIDPW determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. *No portion of the cost of the materials or supplies themselves may be counted toward DBE contract goals.*

7. All listed DBE firms must be certified by the VIDPW prior to the prime contractor's submission of the DBE Commitment Form A-585. If a firm is not currently certified as a DBE in accordance with approved certification standards at the time of the execution of the contract, the VIDPW may not count the firm's participation toward any DBE goals, except as provided for by the following, in regards the effects of removal of eligibility by the VIDPW:
   a. When a prime contractor has made a commitment to using the ineligible firm or the VIDPW has made a commitment to using a DBE prime contractor, but a subcontract or contract has not been executed before the issue of a de-certification notice, the ineligible firm will not count toward the contract goal or overall goal. The VIDPW shall direct the prime contractor to meet the contract goal with an eligible DBE firm or demonstrate that it has made good faith efforts to do so.
   b. If a prime contractor has executed a subcontract with the firm before the VIDPW has notified the firm of its ineligibility, the prime contractor may continue to use the firm on the contract and may continue to receive credit towards its DBE goal for the firm's work. In this case, or in a case where the VIDPW has let a prime contractor to the DBE that was later ruled ineligible, the portion of the ineligible firm's performance of the contract remaining after the VIDPW has issued the notice of its ineligibility shall not count toward the VIDPW's overall goal, but may count toward the contract goal.

c. Exception: If the DBE's ineligibility is caused solely by its having exceeded the size standard during its performance of the contract, the VIDPW may continue to count its participation on that contract toward overall and contract goals.

8. The VIDPW may not count the dollar value of work performed under a contract with a firm, after it has ceased to be certified, toward the overall goal.

9. The VIDPW may not count the participation of a DBE subcontractor toward the prime contractor's DBE achievements or the overall goal until the amount being counted toward the goal has been paid to the DBE.

10. Over concentration shall be presumed to exist in a type of work, other than trucking work, when either of the following conditions have been met:

COUNTING DBE PARTICIPATION (cont).

a. More than 50% of the total number of firms ready, willing and able to perform such work are comprised of DBE firms, or
b. DBE firms earned more than 50% of the total Federal-aid dollars spent on such work during the previous federal fiscal year.

Over concentration shall be presumed to exist in trucking work when both the following conditions have been met:
a. More than 80% of the total number of firms ready, willing and able to perform such work are comprised of DBE firms and,
b. More than 80% of the total Federal-aid dollars spent on such work during the previous federal fiscal year was earned by DBE firms.

In the event a presumption of overconcentration arises pursuant to the aforementioned sections, VIDPW shall make further investigation to determine if the presumption of overconcentration in a type of work is rebutted by a review of the totality of the circumstances. Such review shall consider whether a false presumption of overconcentration is resulting from extraneous influences such as the geographic location of the work versus the geographic location of the DBE and non-DBE firms involved, the number and size of contracts giving rise to the appearance of overconcentration, and any other relevant factors affection DBE or non-DBE participation in the type of work.

If overconcentration in a type of work is deemed by VIDPW to exist, measures to address the overconcentration will be devised. These measures may include the use of incentives, technical assistance, business development programs, mentor-protégé programs and other appropriate measures designated to assist DBE's in performing work outside of the specific field in which it has been determined that non-DBEs are unduly burdened.

The VIDPW shall annually determine and document whether DBE firms are so over concentrated in a certain type of work as to unduly burden the opportunity of non-DBE firms to participate in that type of work.

No credit for the use of DBEs in the type of work for which overconcentration is determined by VIDPW to exist shall be given in the event a race-conscious DBE goal has been placed on a project. If VIDPW determines such reduced credit is required for a type of work on a project, VIDPW shall so notify prospective bidders in the Invitation For Bids.

TERMINATION / SUBSTITUTION / REPLACEMENT OF LISTED DBE FIRMS:

1. The VIDPW requires that the prime contractor not terminate for convenience a DBE subcontractor listed in the DBE Commitment Form A-585, or an approved substitute DBE firm, and then perform the work of the terminated subcontract with its own forces or those of an affiliate, without the VIDPW's prior written consent.
2. If a DBE subcontractor is terminated, or the DBE firm fails to complete its work on the contract for any reason, the VIDPW requires the prime contractor to make good faith efforts to find another certified DBE subcontractor to substitute for the original DBE firm. These good faith efforts shall be documented and directed at finding another certified DBE to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to count DBE participation.
3. If a DBE subcontractor is unwilling or unable to perform the work of the commitment made to the prime contractor, the prime contractor shall immediately notify in writing the VIDPW's project manager, and request to be relieved of the commitment to use the named DBE. The prime contractor shall include with this request a justification and the good faith efforts made in dealing with the named DBE.
4. If the prime contractor's request to be relieved is approved by the VIDPW, and a DBE contract goal shortfall exists, the prime contractor shall immediately attempt to obtain sufficient DBE participation by subcontracting with other certified DBEs.
5. If the prime contractor is unable to replace the committed DBE with another or other certified DBE firms, the prime contractor shall evaluate the remaining items of work and shall document and submit the good faith efforts made to subcontract work with certified DBEs or to purchase materials or supplies from certified DBE suppliers for such remaining items. The VIDPW may allow a DBE contract goal waiver, adjust the DBE goal accordingly as to submitted and accepted good faith efforts, or assess liquidated damages as may be appropriate, depending on the individual project's overall circumstances.

PROMPT PAYMENT MECHANISMS TO SUBCONTRACTORS:

To ensure that all obligations under contracts awarded to DBEs are met, the VIDPW will review the contractor's DBE involvement efforts during the performance of the contract. Prime contractors shall pay all subcontractors their respective subcontract amount by electronic transfer, if available, for VIDPW accepted work within ten (10) calendar days after the contractor receives payment for such work from the VIDPW. The contractor will be required to submit information as requested regarding all payments made to DBEs and non-DBEs within ten (10) calendar days after the contractor receives payment for such work. A prime contractor shall be required to fully document any alleged disputes with its subcontractors. The contractor shall ensure that all situations in which regularly scheduled payments are not made to subcontractors are reported to the VIDPW. If the prime contractor is found to be in violation or fails to abide by the prompt payment mechanisms, the VIDPW shall impose sanctions as stated under Penalties for Failure to Meet Overall Goals. The contractor shall further be required to release retainage payments to the subcontractors within thirty (30) calendar days of satisfactory completion of the entire subcontractor's work and final payment of such work by the VIDPW.

RACE-CONSCIOUS MEASURES PROGRAM FOR LIQUIDATED DAMAGES:

The VIDPW shall impose, where appropriate, liquidated damages provision regarding the VIDPW's DBE Program.

If at the completion of the project, the prime contractor has failed to meet the established or reduced DBE goal, or has not demonstrated good faith efforts and/or has not obtained a DBE contract goal waiver, the

prime contractor shall be assessed liquidated damages for the difference between the established or reduced DBE goal and the actual DBE participation achieved.

RECORD KEEPING REQUIREMENTS AND THE MONTHLY PRIME CONTRACTOR OR PRIME CONSULTANT PAYMENT INFORMATION FORM A-644 (Appendix E):

1. The prime contractor shall keep such records as necessary to ensure compliance with its DBE utilization obligations.

2. As requested, the prime contractor will submit all subcontracts and other financial transaction documentation executed with DBEs in such form, manner and content as prescribed by the VIDPW.

3. The prime contractor must retain all such records for at least three (3) years after project acceptance by the FHWA following the completion of the contract. These records shall be available for inspection by the VIDPW, the FHWA, the USDOT or other appropriately sanctioned Virgin Islands State Agencies or Federal Agencies or Departments.

4. The prime contractor's DBE liaison officer or designee shall complete the top half of Form A-644, Monthly Contractor DBE Participation, whether paid by the prime contractor or one of its subcontractors, and submit the form or its facsimile to the VIDPW's project manager or designee at the monthly estimate cutoff date.

5. The VIDPW will conduct, at a minimum, an annual audit on selected construction projects to verify actual participation reported on Form A-644 Monthly Contractor DBE Participation.

COMPLIANCE PROCEDURES:

Whenever the VIDPW believes the recipient or the contractor or any subcontractor or supplier on a USDOT-assisted contract may not be operating in compliance with the terms, conditions or requirements of this DBE Program, including but not limited to, encouraging fronting, brokering or the circumstance of a DBE not performing a commercially useful function as defined, the VIDPW will conduct an investigation. If it is found that the recipient or the contractor or any subcontractor or supplier is not in compliance with the DBE Program or these Special Provisions, the non-compliant party will be notified in writing by the VIDPW. A compliance conference to discuss the area(s) of non-compliance may be held between the VIDPW and the non-compliant party or parties. In the event that the non-compliant party or parties fails or refuses to perform in compliance with the DBE Program or these Special Provisions, a "Notice of Non-Compliance" will be transmitted. If the non-compliant party or parties corrects the deficiencies, the "Notice of Non-Compliance" will be rescinded and the party or parties will be notified as to compliance. If the deficiencies are not corrected, the VIDPW will initiate administrative action against the non-compliant party or parties, which may include but not be limited to;

1. Termination of the contract.
2. Withholding an appropriate percentage of partial payments. This appropriate percentage may be the amount of any proposed monetary sanction.
3. Initiation of appropriate debarment or de-certification proceedings.
4. Referral of any unlawful actions to the appropriate enforcement agencies.
5. Other actions as appropriate, at the discretion of the VIDPW.

Updated 10/05

APPENDIX A

DBE COMMITMENT FORM A-585

Form A-585
DBE A
Rev. 10/05

APPENDIX A

VIRGIN ISLANDS DEPARTMENT OF PUBLIC WORKS
Disadvantaged Business Enterprise (DBE) Program

DBE Commitment Form – A-585

(CONTRACT GOAL FOR DBE IN CONSTRUCTION)

Project Name: **Construction of VITRAN Maintenance & Operations Facility - STX**

Project No. VI-2016-004-00 **Project Goal** **20%**

DBE Subcontractor/Material Supplier_____

(Make copies and use one form for each subcontractor/or material supplier.)

Type or print legibly

Item No(s).	Description of Work (item, material, service)	Quantity	Price/Unit	Total Dollars
			GRAND TOTAL	

1. Total Amount of the Bid $_____
2. Contractors DBE Participation* ____% Dollar Estimate & Participation: $_____ or ___ % of line 1
3. Contractor's DBE Liaison Officer_____

*Must equal or exceed established goal indicated above or bid may be rendered non-responsive.

I will abide by the Disadvantaged Business Enterprise (DBE) goal set forth for this project and hereby submit the names of the DBE firms that will participate in this project. Substitution(s) will not be allowed without prior submission of written justification to the DBE Program Manager for approval. I understand that failure to meet the foal may result in Liquidated Damages for the difference between the DBE goal and the actual DBE participation achieved. **The DBE should retain copies of all quotes submitted.**

This statement is my assurance that _____ agrees to comply with the requirements of the
(Name of Contractor)
contract, and the Virgin Island Department of Public Works' Disadvantaged Business Enterprise Program, and all the requirements contained therein.

_____ Signature of Company Official

_____ Signature of Subcontractor/Material Supplier

_____ Date

_____

312345

NOTICE TO CONSTRUCTION CONTRACTORS

BIDDERS LIST OF QUOTERS FOR THE DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

In accordance with 49 CFR Part 26, the Department of Public Works will establish its Annual DBE goal using a Bidders List. The Bidders List will be a compilation of all quotes received by the Contractor during the advertising period. The Bidders List will be used to determine the relative availability of DBE's.

At the time the bid is submitted to the Contracting Officer/Department of Public Works, the Contractor shall list, on Form BLCC, the quotes received for the project, using additional sheets as necessary. The listing shall include EACH quoter's ***name, address, telephone number, age of firm, annual gross receipts of the firm and whether the quoter is a Virgin Islands certified DBE***. **FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL RENDER A BID NON-RESPONSIVE AND THE BID SHALL BE REJECTED.**

The term "quoter" shall include subcontractors and suppliers of materials with whom the Contractor contracts directly.

BIDDER / CONTRACTOR:_____

ADDRESS: _____

TELEPHONE No.: _____ **FAX No.:** _____

PROJECT NAME: _____

PROJECT N0.:_____

LISTING OF QUOTERS

Name_____ **Address**_____ _____ **Tel. No.**_____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to 1,000,000 { $1,000,000 to $5.000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ **Address**_____ _____ **Tel. No.**_____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ **Address**_____ _____ **Tel. No.**_____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11 –15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE

Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5.000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11 or more { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5.000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11 or more { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5,000,000 { $5,000,000 or more	{ DBE { Non-DBE
Name_____ Address_____ _____ Tel. No._____	**Age of Firm** { 1-2 yrs { 3-5 yrs { 6-10 yrs { 11-15 yrs { 16 or more	**Annual Gross Receipts** { $1000 to $100,000 { $100,000 to $500,000 { $500,000 to $1,000,000 { $1,000,000 to $5.000,000 { $5,000,000 or more	{ DBE { Non-DBE

VIRGIN ISLANDS
Department of Public Works
Disadvantaged Business Enterprise (DBE) Program

CERTIFICATION OF CONSULTANT OR OFFEROR FOR DBE ANNUAL STATE GOAL

I hereby certify that I am the _____
(Title)

and, duly authorized representative of _____
(Name of Firm)

whose address is _____, and

acknowledge and certify as follows:

(a) Understand that the Virgin Islands Department of Public Works Disadvantaged Business Enterprise (DBE) Program has an annual state goal, which this firm will seek to attain according to the DBE Program provisions.

(b) Agreed, as an express or implied condition for obtaining the contract, to comply by the provisions of Title 49 Code of the Federal Regulation Part 26 as it pertains to Disadvantaged Business Enterprise Program.

Except as here expressly stated (if any):

I acknowledge that this certificate is to be furnished to the Virgin Islands Department of Public Works Civil Rights / DBE Program Office, and the Federal Highway Administration, (if applicable), in connection with this contract involving participation of Federal-Aid funds (if applicable), and is subject to applicable State and Federal laws, both criminal and civil (if applicable).

_____ _____
Date **Signature**

_____
(Print Name)

VIRGIN ISLANDS
Department of Public Works

MONTHLY PRIME CONTRACTOR OR PRIME CONSULTANT PAYMENT INFORMATION

To Be Completed by Prime Contractor/Consultant: Project Phase One__; Two__; Three ___.
(Project Phasing does not apply to Construction Projects)

ITEM OR WORK DESCRIPTION	NAME OF SUBCONTRACTOR OR MATERIAL SUPPLIER	DBE YES/NO	ACTUAL PAYMENTS THIS PERIOD

IF ANY FIRM LISTED ABOVE IS A MATERIAL SUPPLIER, BUT NOT THE MANUFACTURER, THE CONTRACTOR MAY CREDIT ONLY 60% OF THE EXPENDITURE TO THE SUPPLIER FOR FINAL PAYMENT.

1. **Project Name:** _____
2. **Project No.**_____ **DBE Participation Annual Goal:**_____
3. **Contractor or Consultant:**_____ **Project Control No.**_____
4. **Reporting Period**_____ **THRU**_____ **Monthly Estimate No.**_____
5. **Original Contract Amount: $**_____
6. **Contract Dollar Paid to Date $**_____ **% Time used**_____

SUMMARY OF PAYMENT INFORMATION

a. Previous actual payments to DBEs		g. Previous actual payments to non DBEs	
b. Actual payment to DBEs this period		h. Actual payment to non DBEs this period	
c. Total actual payments to DBEs to date		i. Total actual payments to non DBEs to date	
d. Total actual payments to prime to date		j. Total actual payment to prime this period	
e. Total % of actual payments paid to DBEs to date		k. Total % of actual payments paid to non DBEs to date	
f. Total actual payments to Prime less Subs to date		i. Total actual payments to all Subs	

Name:_____ Telephone No._____

Title:_____

I certify that the above amount has been paid to the DBE Subcontractor / Material Supplier:

By: _____ _____
Signature Print Name/Title

Subscribed and sworn to before me this_____ day of _____ YEAR_____

NOTARY PUBLIC_____

My Commission Expires:_____

VIRGIN ISLANDS
UNIFORM CERTIFICATON
PROGRAM (UCP)



DBE DIRECTORY OF FIRMS

VIRGIN ISLANDS DEPARTMENT OF PUBLIC WORKS (VIDPW)
Nelson Petty, Jr., P.E. Commissioner Nominee
Tel: (340) 773-1290 Fax: (340) 778-8906 (St. Croix) Shelton.shulterbrandt@dpw.vi.gov
Tel: (340) 776-4844 Fax: (340) 777-8994 (St. Thomas) mfarrington_7@yahoo.com

VIRGIN ISLANDS PORT AUTHORITY (VIPA)
David Mapp, Executive Director
(340) 774-1629 (St. Thomas)
(340) 778-1012 (St. Croix)
www.viport.com

December 2017 Issue

The Disadvantaged Business Enterprise (DBE) Programs of the *Virgin Islands* of the *Virgin Islands Department of Public Works* and *Virgin Islands Port Authority* have prepared a **DBE DIRECTORY OF FIRMS**, containing information related to businesses owned and controlled by minorities and women currently certified with the Uniform Certification program.

The firms listed have met all certification standards set forth in the Code of Federal Regulation (CFR), Title 49 - Transportation. Contractors use the Directory as a basic resource for soliciting participation on Department of Transportation (DOT) - assisted projects. If a firm is not certified as a DBE, A contractor cannot receive credit toward achievement of the DBE participation goal by using the firm.

The Directory is widely disseminated to other government agencies, contractors and the general public. The information included in intended for reference only. The Directory is consistent with the DOT Regulation 49 CFR, Part 26.

ATTENTION

All previous issues of this directory are obsolete. Changes to firm information are **highlighted**. Any information duplicated or stored privately is the responsibility of the DBE firm. All DBE firms are encouraged to compare and update such information as new directories become available.

ATTENTION

The firms included in this Directory are certified as Disadvantaged Business Enterprise (DBE)s by the Virgin Islands Uniform Certification Program. Certification as a DBE does not pre-qualify a firm to bid on specific projects. It is the contractor's responsibility to ascertain the DBEs ability to perform on any given project.

ORGANIZATION OF DIRECTORY

This Directory is divided into three Sections:

Section I - DBE firms are indexed by page numbers and district

Section II - DBE firms are listed alphabetically with all pertaining information

Section III - DBE firms are categorized in the traditional contracting fields

UNIFIED CERTIFICATION PROGRAM

The Code of Federal Regulation (CFR) 49 Part 26, Subpart E § 26.51 (a) states all Department of Transportation (DOT) recipients in the state or territory must participate in a Unified Certification Program (UCP). The UCP intends to adhere to and embed the existing common application procedures to the uniform certification process to ensure reductions in administrative costs and provided more opportunities for small business concerns owned and controlled by DBE's. Any government agency certifying has the responsibility to ensure that these programs promote competitive viability of small disadvantaged concerns in the free market enterprise system; ensure that the certification process is in accordance with Federal Regulation 49 CFR, Part 23 and 26 in "narrowly tailoring requirements in increase effectiveness and reduce burdens', in providing a one-stop shop certification process. The **Virgin Islands Department of Public Works** will be lead agency to coordinate the establishment of the Unified Certification Program within the Territory. The **Virgin Islands Port Authority** is the other component of this agreement. The purpose of this UCP agreement is to identify reciprocal certification requirements of United States Department of Transportation (DOT) Regulation 49 CFR, Part 23 & 26. This UCP process agreement is intended to reduce the procedural burdens on applicants; fulfill the requirements of paperwork reduction; and reduces confusion caused by multiple and potentially conflicting outcomes in certification decisions. Such criteria shall include but not be limited to on-site visit, personal interviews, licenses, analysis of stock ownership listing of equipment, analysis of stocks capacity, listing of work completed, resume of principal owners, financial capacity, and type of work preferred (where applicable). The national standard application will be used in accordance with the final rule.

The purpose of this UCP agreement is to identify reciprocal certification requirements of United States Department of Transportation (DOT) Regulation 49 CFR, Part 23 & 26. This UCP process agreement is intended to reduce the procedural burdens on applicants; fulfill the requirements of paperwork reduction; and reduces confusion caused by multiple and potentially conflicting outcomes in certification decisions. Such criteria shall include but not be limited to on-site visit, personal interviews, licenses, analysis of stock ownership, listing of equipment, analysis of stocks capacity, listing of work completed, resume of principal owners, financial capacity, and type of work preferred (where applicable). The national standard application will be used in accordance with the final rule

2012 U.S. NAICS Titles

NAICS is the North American Industry Classification System. Federal procuring agencies, since October 1, 2000, must use the proper NAICS codes and sized standards in their procurement solicitations. They will use the NAICS code that best describes the principal purpose of the product or service they intend to acquire. How do you find you NAICS code? NAICS Association Lookup up naics.com. Simply enter your product or service in the description area and then locate your business area. Below are some of the more commonly used codes in the DBE Directory:

238350	Carpentry Contractor
237130	Alternative Energy
237310	Highway, Street and Bridge Construction
237990	Other Heavy and Civil Engineering Construction
238110	Poured Concrete Foundation and Structure Contractors
238120	Structural Steel and Precast Concrete Contractors
238140	Masonry Contractors
238190	Other Foundation, Structure and Building Exterior Contractors
238210	Electrical Contractors and Other Wiring Installation Contractors
238220	Plumbing, Heating and Air-Conditioning Contractors
238320	Painting (except roof) Contractors
238910	Site Preparation Contractors
238990	All Other Specialty Trade Contractors
324121	Asphalt Paving Mixture & Block Manufacturing
331419	(Welding Services)
333249	Other Industrial Machinery Manufacturing
423860	Transportation Equipment and Supplies (except Motor Vehicle) Merchant Wholesalers
424930	Flower, Nursery Stock and Florists' Supplies Merchant
444120	Used Car Dealers
444190	Other Building Material Dealers
454319	Other Fuel Dealers
483211	Inland Water Freight Transportation
484110	General Freight Trucking, Local
532412	(Heavy Equipment Rental)
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing
541310	Architectural Services
541320	Landscape Architectural Services
541330	Engineering Services
541611	Administrative Management & General Management Consulting Services
541618	Other Management Consulting Services
541720	Research & Development in the Social Sciences and Humanities
561110	Office Administrative Services
561612	Security Guard Services
561720	Janitorial Services
561730	Landscape Services
562111	Solid Waste Collection
562112	Hazardous Waste Collection
562998	All Other Miscellaneous Waste Management Services
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V.I. UCP Directory of DBE Firms

2N Corporation
58-4 Fortuna
*
P. O. Box 7404
St. Thomas, VI 00801
Phone: (340) 714-6444
Fax: (340) 777-7589
Mobile: (340) 643-3171
Email: epcarty@yahoo.net
Contact Person: Neil Carty, President
NAICS Code(s): 324121-ASPHALT PAVING MIXTURE & BLOCK MANUFACTURING
237310-HIGHWAY STREET AND BRIDGE CONSTRUCTION

A-9 Trucking Enterprises, Inc.
Estate Subbase
P. O. Box 2356
St. Thomas, VI 00803
Phone: (340) 776-1132
Fax: (340) 776-1131
Mobile: (340) 998-9539
Email: anineanytime@vipowernet.net
Contact Person: Jimez Ashby, President & Operations Manager
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL 562112 - HZRDS WST CLLCTN
532412 - HEAVY EQUIPMENT RENTAL 562111 - SOLID WASTE COLLECTION

A&J Cleaning Services, LLC
28 Mafolie Estate
*
P. O. Box 308215
St. Thomas, VI 00802
Phone: (340) 715-0234
Fax: None
Mobile: (340) 344-2174
Email: junneth2@gmail.com
Contact Person: Junnel Berry, Owner
NAICS Code(s): 561720 - JANITORIAL SERVICES

A&J Fencing
26 Mt. Pleasant
*
P. O. Box 10319
Kingshill, VI 00851
Phone: (340) 772-2541
Fax: (340) 772-2541
Other: (340) 690-5422
Email: None
Contact Person: Aloysius Jones, Owner
NAICS Code(s): 321999-FENCING, PREFABRICATED SECTIONS, WOOD MANUFACTURING
331222-CHAIN LINK FENCING, IRON OR STEEL
332618-CHAIN LINK FENCING AND FENCE GATES

A-Z General Contractors
182A Smithfield, F'sted
*
P. O. Box 2081
F'sted, VI 00841
Phone: (340) 719-7772
Fax: None
Other: (340) 277-8411
Email: eonco44@hotmail.com
Contact Person: Simeon Cobb, Owner
NAICS Code(s): 237310-HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Amedee's Dumptruck Service
#50 Williams Delight, F'sted
*
P. O. Box 1364, Kingshill
St. Croix, VI 00851
Phone: (340) 772-1858
Fax: None
Mobile: (340) 514-7541 (340) 513-9074
Email: None
Contact Person: Leon & Roger Amedee, Owners
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Angie Brewer & Associates, LC
9104 58th Drive East
*
9104 58th Drive East
Bradenton, FL 34202
Phone: (941) 757-4300
Fax: (866) 975-6748
Mobile: None
Email: ceo@angiebrewer.com Website: angiebrewer.com
Contact Person: Angie Brewer, CEO
NAICS Code(s): 541611 – ADMINISTRATIVE MGMT. & GENERAL MGMT. CONSULTING SERVICES
541618 – OTHER MGMT. CONSULTING SERVICES

Apex Construction Co., Inc.
Estate Thomas 6-1
*
P. O. Box 305048
St. Thomas, VI 00803
Phone: (340) 776-5180
Fax: (340) 775-7276
Mobile: (340) 690-2518
Email: apex1@viaccess.net
Contact Person: Joseph Hodge, President
NAICS Code(s): 237310-HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Autorize, LLC
5964 Southland Dr.
*
5964 Southland Dr.
Stone Mountain, GA 30087
Phone: (770) 312-5815
Fax: (888) 475-1086
Mobile: None
Email: billuef@bellsouth.net
Contact Person: Frank Billue, President
NAICS Code(s): 424692 – OTHER CHEMICAL & ALLIED PRODUCTS MERCH. WHLSLRS

Ay-Ay Ancient Builders, LLC
RR2 11303 Container Port, Kingshill
*
P. O. Box 3343, Frederiksted
St. Croix, VI 00841-3343
Phone: (340) 772-0987
Fax: (340) 712-2384
Mobile: (340) 332-9144
Email: bmevi@yahoo.com
Contact Person: Peter A. Calixte, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Bakah Construction
#132 Clifton Hill, C'sted
*
P. O. Box 5439, Kingshill
St. Croix, VI 00851
Phone: (340) 779-3661
Fax: (340) 779-3661
Mobile: (340) 771-4661
Email: rougierselectric@yahoo.com
Contact Person: Benjamin T. Rougier, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Balbo Corporation
12BA-2 Frydendahl
*
P. O. Box 9435
St. Thomas, VI 00801
Phone: (340) 775-7918
Fax: (34) 714-7948
Mobile: (340) 513-2384
Email: balbocorp@aol.com
Contact Person: Gerard Castor, Sr., President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Bannis Trucking
10H Nadir
*
P. O. Box 1193
St. Thomas, VI 00804
Phone: (340) 779-1667 or (340) 642-2781
Fax: None
Mobile: None
Email: None
Contact Person: Ophelia Bannis, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Bengoa International, Inc.
#7 Peter's Rest Shopping Center, Suite 7, C'sted
*
P. O. Box 7150, Sunny Isle
St. Croix, USVI 00823
Phone: (340) 778-3404
Fax: (340) 719-6013
Mobile: (340) 513-3223
Email: edgarbengoa@gmail.com
Contact Person: Edgar L. Bengoa, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
238220 - PLUMBING, HEATING & AIR CONDITIONING CONTRACTS

Big Lee Repair & Tile Co.
103 ABC Smith Bay
*
P. O. Box 9681
St. Thomas, VI 00801
Phone: (340) 775-7797
Fax: (340) 775-3590
Mobile: None
Email: None
Contact Person: Leroy Gordon, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Billue and Associates International, LLC
5964 Southland Dr.
*
5964 Southland Dr.
Stone Mountain, GA 30087
Phone: (770) 312-5815
Fax: (888) 475-1086
Mobile: None
Email: billuef@bellsouth.net
Contact Person: Frank Billue, President
NAICS Code(s): 541611 – ADMIN. MNGMNT. & GEN MNGMNT. CONSULTING SERVICES

Brockington & Associates, Inc.
6611 Bay Circle
*
6611 Bay Circle, Suite 220
Norcross, GA 30071
Phone: (770) 662-5807
Fax: (770) 662-5824
Mobile: (678) 638-4124
Email: andrewscarr@hotmail.com
Contact Person: Andrew Scarr, Operations Coordinator
NAICS Code(s): 541720 – Research & Development in the Social Sciences and Humanities

Brothers Construction, Inc.
30 Estate Cottage, C'sted
*
P. O. Box 194, Kingshill
St. Croix, VI 00851
Phone: (340) 778-5052
Fax: (340) 778-6625
Mobile: (340) 690-2959
Email: cromwell@islands.vi.com
Contact Person: Errol Cromwell, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Bruney's Incorporated dba Precise Builders
394 - 313 Hidden Valley
*
P. O. Box 6828
St. Thomas, VI 00804
Phone: (340) 775-2063
Fax: (340) 775-2063
Mobile: (340) 771-2378
Email: abruney@hotmail.com precisebuilders@hotmail.com
Contact Person: Alex Bruney, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238990 - ALL OTHER SPECIALTY TRADE CONTRACTORS
561730-LANDSCAPING SERVICE 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Bryan Chick Construction Services (BCCS)
2BA-4 West Caret Bay
*
2BA-4 West Caret Bay
St. Thomas, VI 00802
Phone: (340) 775-4957
Fax: (340) 775-3056
Mobile: (340) 690-0909
Email: bccs@viaccess.net
Contact Person: Glenda Singh, Managing Partner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
561730 - LANDSCAPING SERVICE

Bryan's Plants & Garden Supplies, Inc.
7945 Estate Dorothea
*
7945 Estate Dorothea
St. Thomas, VI 00802
Phone: (340) 774-1136
Fax: (340) 774-1138
Mobile: (340) 513-1243
Email: bryansplants@hotmail.com
Contact Person: Jackie Newburger, President
NAICS Code(s): 444210 - LAWN & GARDEN EQUIPMENT & SUPPLIES STORE
453998 - FLOWER SHOPS, ARTIFICIAL OR DRIED

CAP Engineering, LLC
164 Union Mt. Washington, C'sted
*
5002 Est. Tipperary, C'sted
St. Croix, VI 00820
Phone: None
Fax: None
Mobile: (340) 277-0810
Email: pascalc@capengineeringllc.com Website: www.capengineeringllc.com
Contact Person: Cara A. Pascal, Managing Member
NAICS Code(s): 541330 – ENGINEERING SERVICES

CMMC Trucking & Transportation
Estate Nadir #33130
*
P. O. Box 11614
St. Thomas, VI 00801
Phone: (340) 775-4888 or (340) 776-8311 ext 1050
Fax: (340) 714-6315
Mobile: (340) 513-1536
Email: sweetccb@yahoo.com clbrewley@srmedicalcenter.org
Contact Person: Carolyn C. Brewley, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Carino's Trucking & Water Supply, Inc.
#13 W Estate Bethlehem, F'sted
*
P. O. Box 2694, F'sted
St. Croix, VI 00841
Phone: (340) 778-3113
Fax: (340) 778-3226
Mobile: (340) 643-0588
Email: None
Contact Person: Anastacio Carino, President
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
532412-HEAVY EQUIPMENT RENTAL
238910-SITE PREPARATION CONTRACTORS

Charles Electrical Services, LLC.
18B-2 Lindberg Bay
*
P. O. Box 9624
St. Thomas, VI 00801
Phone: (340) 714-8066
Fax: (340) 714-8066
Mobile: (340) 998-8066
Email: charles@charleselectric.vi Website: www.charleselectricvi.com
Contact Person: Covey Charles, President
NAICS Code(s): 238210 - ELECTRICAL CONTRACTOR

Charles N. King, Jr.
6GA Peter's Rest, C'sted
*
P. O. Box 1138. C'sted
St. Croix, VI 00821
Phone: (340) 773-9525
Fax: (340) 773-3267
Mobile: (340) 643-9525
Email: deltaele@viaccess.net
Contact Person: Charles N. King, Jr., Owner
NAICS Code(s): 238210 - ELECTRICAL CONTRACTOR

Chitolie's Trucking Service
#2 & #4 Casava Gardens, C'sted
*
P O. Box 2738, Kingshill
St. Croix, VI 00851
Phone: (340) 719-9378
Fax: (340) 719-9378
Mobile: (340) 332-1555
Email: chitolietrucking@yahoo.com
Contact Person: Allan G. Chitolie, Owner
NAICS Code(s): 238910-SITE PREPARATION CONTRACTORS
454319 - OTHER FUEL DEALERS
532412 - HEAVY EQUIPMENT SERVICE RENTAL
484110 - GENERAL FREIGHT TRUCKING, LOCAL

Clean Stream Environmental Consulting, LLC.
17-3 Estate St. Peters
*
17-3 Estate St. Peters
St. Thomas, VI 00802
Phone: (206) 819-9908
Fax: (206) 367-2544
Other: None
Email: marystiehler@cleanstreamenviro.com Website: www.cleanstreamenviro.com
Contact Person: Mary Stiehler, Principle Geologist
NAICS Code(s): 541620 – ENVIRONMENTAL CONSULTING SERVICES

Commercial Security Services, Ltd. Inc.
70B Sub Base
*
P. O. Box 306840
St. Thomas, VI 00803
Phone: (340) 774-5000
Fax: (340) 774-3809
Other: (340) 718-4100
Email: css@islands.vi
Contact Person: Cheryl Brown, President
NAICS Code(s): 561612 - SECURITY GUARD SERVICES
541618 - OTHER MANAGEMENT CONSULTING SERVICES

Cool Signs, LLC
6100 Red Hook
*
6100 Red Hook Qtr C2-1
St. Thomas, VI 00802
Phone: (340) 775-0549
Fax: (340) 775-7152
Mobile: (340) 643-4459
Email: info@coolsignsvi.com
Contact Person: Jill Farley, Owner
NAICS Code(s): 541430 - GRAPHIC DESIGN SERVICE

Countryside Development, Inc. (dba Fergutrax Heavy Equipment)
#130 Grove Place, F'sted
*
P. O. Box 696, Kingshill
St. Thomas, VI 00851
Phone: (340) 692-6045
Fax: (340) 778-4206
Mobile: (340) 690-9392
Email: tach68@hotmail.com
Contact Person: Dwayne Fergus, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
238910 - SITE PREPARATION CONTRACTOR

D&B Trucking, LLC
35-I Whim
*
P O. Box 3498, F'sted
St. Croix, VI 00841
Phone: (340) 277-6892
Fax: None
Mobile: (340) 277-4646
Email: sheneba@msn.com
Contact Person: Dave Edwards, Sr., Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

DBE Consulting, LLC
3352 Oak Dr., Rockdale
*
2345 Wellborn Hills Ct.
Lithonia, Delcalk, GA 30058
Phone: (404) 966-3575
Fax: None
Mobile: None
Email: kimconsulting@gmail.com
Contact Person: Kimberly Griffin, CEO
NAICS Code(s): 541611 – ADMIN. MNGMNT. & GEN. MNGMNT. CONSULTING SERVICES

DMC Construction, Inc.
#35 King Street, C'sted
*
P. O. Box 503, Kingshill
St. Croix, VI 00851
Phone: (340) 719-0797 or (340) 692-5905
Fax: (340) 719-0797
Mobile: (340) 643-4649
Email: None
Contact Person: Masford Christmas, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDE CONSTRUCTION

Delta Electric & Construction Company, Inc.
#6-GB Peter's Rest, C'sted
*
P. O. Box 1138, C'sted
St. Croix, VI 00821
Phone: (340) 773-9525
Fax: (340) 773-3267
Mobile: (340) 643-9525
Email: deltaele@viaccess.net
Contact Person: Charles N. King, Jr. President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238210 - ELECTRICAL CONTRACTORS

ECTAB Services
8AA Estate Cottage
*
P. O. Box 5672, C'sted
St. Croix, VI 00823
Phone: (340) 773-6966
Fax: (340) 773-6966
Mobile: (340) 643-0548
Email: None
Contact Person: Eusebio Christian, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238990 - ALL OTHER SPECIALTY TRADE CONTRACTORS
484110 - GENERAL FREIGHT TRUCKING, LOCAL

Eagle Construction
2A New Street
*
P. O. Box 8650, C'sted
St. Croix, VI 00823
Phone: None
Fax: None
Mobile: (340) 227-2293
Email: None
Contact Person: Eduardo Martin Sr., owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Earth Designs, Inc.
2E-7 Caret Bay
*
P. O. 1235
St. Thomas, VI 00804
Phone: (340) 344-7199
Fax:
Mobile:
Email: nchapmanvi@yahoo.com
Contact Person: Elnora Chapman, President
NAICS Code(s): 561730 – LANDSCAPING SERVICES

Electrical Services International, LLC
3616 SW 90th Ave.
*
3616 SW 90th Ave.
Miramar, FL 33025
Phone: (678) 522-0445
Fax: None
Mobile: None
Email: d.r.donovan@att.net
Contact Person: Dale Donovan, Owner
NAICS Code(s): 541611 – ADMIN MGMT. & GEN. MGMT. CONSULTING SVS.
541618 – OTHER MGMT CONSULTING SVS.
541990 – ALL OTHER PROF., SCIENTIFIC & TECH. SVS.

Eleven Construction, LLC
10C Estate Cottage, C'sted
*
10C Estate Cottage, C'sted
St. Croix, VI 00820
Phone: (340) 713-1100
Fax: (340) 718-8061
Mobile: (323) 229-7862 (340) 514-2003
Email: patrick.vivot@gmail.com
Contact Person: Patrick Vivot, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Eric's Construction
24-1 Estate Hope
*
P. O. Box 306693
St. Thomas, VI 00803-6693
Phone: (340) 777-9875 or (340) 776-2801
Fax: (340) 777-9875
Mobile: None
Email: None
Contact Person: Eric LeBlanc, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Family Trucking
Subbase 21
*
P. O. Box 11863
St. Thomas, VI 00801
Phone: None
Fax: (340) 777-8320
Mobile: (340) 690-2819
Email: familytruckingvi@hotmail.com
Contact Person: Roger Green, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
561730 - LANDSCAPING SERVICES

First Rate Painting & Maintenance
Plot 90 Williams Delight
*
P. O. Box 5067, Kingshill
St. Croix, VI 00851
Phone: (340) 773-0444
Fax: None
Mobile: (340) 227-1357
Email: None
Contact Person: Marco Blackman, Owner
NAICS Code(s): 235320 - PAINTING (EXCEPT ROOF) CONTRACTORS

Fleming Trucking
#148-141 Est. Tutu
*
#148-141 Est. Tutu
St. Thomas, VI 00802
Phone: (340) 775-9420
Fax: (340) 775-9420
Mobile: (340) 690-4361
Email: roydefleming@hotmail.com
Contact Person: Geoffrey R. Fleming, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Fortress Electrical Corp.
114 Sub Base
*
P. O. Box 10188
St. Thomas, VI 00801
Phone: (340) 776-2962
Fax: (340) 776-0042
Mobile: None
Email: None
Contact Person: Audain Brown, President
NAICS Code(s): 238210 - ELECTRICAL CONTRACTORS

Four Star Construction, LLC
#1 44 Contant
*
P. O. Box 301792
St. Thomas, VI 00803
Phone: (340) 777-3911 or (340) 776-7744
Fax: None
Mobile: (340) 690-2118
Email: fourstarconstruction4@yahoo.com
Contact Person: Roystin David, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Francis #1 Masonry Service
50-A-2 Estate Lindberg Bay St.
*
P. O. Box 503295
St. Thomas, VI 00805
Phone: (340) 775-9925
Fax: None
Mobile: (340) 626-8361
Email: None
Contact Person: Ferdinand Francis, owner
NAICS Code(s): 238140 - MASONRY CONTRACTOR

Galaxy Trucking
#351 Mount Pleasant, F'sted
*
P. O. Box 2867, Kingshill
St. Croix, VI 00851
Phone: (340) 718-6616
Fax: None
Mobile: (340) 513-2520
Email: None
Contact Person: Mikey Joseph, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Grade-All Heavy Equipment, Inc.
#33 Sub Base
*
8168 Crown Bay marina, Suite 310 PMB 373
St. Thomas, VI 00802
Phone: (340) 776-3355
Fax: (340) 774-1300
Mobile: (340) 513-1275
Email: encastro@gradeall.com
Contact Person: Eric Castro, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL

Great Grounds Enterprises
#2 Estate Wintberg
*
P. O. Box 9073
St. Thomas, VI 00801
Phone: (340) 775-2220
Fax: None
Mobile: None
Email: ottley@viaccess.net
Contact Person: Anthony Ottley, Owner
NAICS Code(s): 561730 - LANDSCAPE SERVICES

Hammerhead Construction, LLC
1B Gasverks Gade
*
6100 Leeward Way #14
St. Thomas, VI 00802
Phone: (340) 244-4844
Fax: None
Mobile: None
Email: None
Contact Person: Stephen Rivera, Owner
NAICS Code(s): 238350 - CARPENTRY CONTRACTORS
238140 - MASONRY CONTRACTOR 238320 – PAINT CONTRACTOR
331419 – INSTALLATION OF FENCES 561730 – LANDSCAPING SERVICES

Heights Construction
489 Frangipani, C'sted
*
P. O. Box 1818, Kingshill
St. Croix, VI 00851
Phone: (340) 779-3763
Fax: (340) 779-3381
Mobile: (340) 513-3051
Email: julswanston@yahoo.com
Contact Person: Elroy Swanston, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Huggins Trucking
19-2-51 Smith Bay
*
P. O. Box 11341
St. Thomas, VI 00801
Phone: (340) 715-1099
Fax: (340) 7796920
Mobile: (340) 643-5696
Email: None
Contact Person: Reynold L. Huggins, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Hunt Trucking
#223 Estate Cottage, F'sted
*
P. O. Box 5362, Kingshill
St. Croix, VI 00851
Phone: (340) 692-0043
Fax: (340) 692-0043
Mobile: (340) 690-2908
Email: None
Contact Person: John Hunt, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Instrument & Control Systems, Inc.
109 Estate Castle Coakley
*
P. O. Box 1860, Kingshill
St. Croix, VI 00851
Phone: (340) 778-7475
Fax: (340) 778-7823
Mobile: None
Email: ldiaz@icsvi.com
Contact Person: Leonard Diaz, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238210 - ELECTRICAL CONTRACTORS

JLR Construction & Maintenance, Inc.
15-A Lubdberg Bay
*
105H Whim, F'sted
St. Croix, VI 00840
Phone: (340) 778-0047
Fax: (340) 778-0047
Mobile: (340) 344-1966
Email: jlrcomaint@viaccess.net
Contact Person: Jose L. Rodriquez, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

JNO's Construction & Maintenance
#97 Mon Bijou, C'sted
*
P. O. Box 4588, Kingshill
St. Croix, VI 00851
Phone: (340) 778-0127
Fax: (340) 779-3535
Mobile: (340) 226-6026
Email: None
Contact Person: Mervyn George, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

JRL Heavy Equipment
#6D Upper Love, F'sted
*
P. O. Box 4275, Kingshill
St. Croix, VI 00851
Phone: (340) 692-6025
Fax: None
Mobile: (340) 642-0219
Email: None
Contact Person: Joseph Lestrade, Owner
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
484110 - GENERAL FREIGHT TRUCKING, LOCAL

Jeremiah Felicien (dba Felicien Trucking)
195 Estate St. Georges, F'sted
*
P. O. Box 5272, Kingshill
St. Croix, VI 00851
Phone: None
Fax: None
Mobile: None
Email: None
Contact Person: Jeremiah Felicien, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Jerome R. Matthews formerly Billy & Jerome Matthews Construction
125C & BD Estate Whim, F'sted
*
P. O. Box 5218, Kingshill
St. Croix, VI 00851
Phone: (340) 692-5638
Fax: (340) 692-5638
Mobile: (340) 474-9699
Email: None
Contact Person: Jerome Matthews, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238220 – PLUMBING, HEATING & AIR CONDITIONING CONTRACTORS
561730 – LANDSCAPING SERVICES

Joe's Carpentry
128 Estate Ruby, C'sted
*
PO Box 7381, C'sted
St. Croix, VI 00823
Phone: (340) 719-8890
Fax: None
Mobile: (340) 227-5790
Email: rwsylvesterj@hotmail.com
Contact Person: Roosevelt S. Joseph, Owner
NAICs Code(s): 238350 – CARPENTR Y CONTRACTORS

LA Vega Enterprise, LLC
355 Estate Wintberg
*
P. O. Box 8046
St. Thomas, VI 00801
Phone: None
Fax: None
Mobile: (340) 513-7331
Email: None
Contact Person: Alexandra Carmona, Owner
NAICS Code(s): 238350 - CARPENTRY CONTRACTORS 532412 - HEAVY EQUIPMENT RENTAL
238140 - MASONRY CONTRACTOR 484110 - GENERAL FREIGHT TRUCKING, LOCAL
562111 – SOLID WASTE COLLECTION

LA View, LLC dba Asencios Construction
14A Nore Gade
*
P. O. Box 379
St. Thomas, VI 00802
Phone: (340) 774-0888
Fax: (770) 234-4271
Mobile: (340) 643-4739
Email: infor@ascenciosconstruction.com
Contact Person: Helen E. Lupo, Interior Designer
NAICS Code(s): 238350 - CARPENTRY CONTRACTORS
238140 - MASONRY CONTRACTOR
238320 - PAINTING CONTRACTORS

LB Construction
46-7 Estate Frydenhoj
*
P. O. Box 301932
St. Thomas, VI 00803
Phone: (340) 775-6782
Fax: (340) 715-3697
Mobile: None
Email: None
Contact Person: Ludence Turnbull, Owner
NAICS Code(s): 237310 -HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Labour Construction
2105 Bonne Esperance
*
2105 Bonne Esperance
St. Thomas, VI 00802
Phone: (340) 715-0085
Fax: None
Mobile: None
Email: None
Contact Person: Ericson Revan, Owner
NAICS Code(s): 237310 -HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Lake's Trucking, Equipment Rental & Road Striping
16AJ Estate Calquohoun, F'sted
*
P. O. Box 465, Kingshill
St. Croix, VI 00851
Phone: (340) 778-1422
Fax: (340) 778-1422
Mobile: (340) 626-3314 or (340) 626-3312
Email: lakesheavyequipment@yahoo.com
Contact Person: George E. Lake, Sr., Owner
NAICS Code(s): 238990 - ALL OTHER SPECIALTY TRADE CONTRACTORS
238910 - SITE PREPARATION CONTRACTOR
484110 - GENERAL FREIGHT TRUCKING, LOCAL
532412 - HEAVY EQUIPMENT RENTAL

Laurencin Backhoe & Towing Service
#19 Estate Plessen, F'sted
*
P. O. Box 6745, C'sted
St. Croix, VI 00823
Phone: (340) 772-3364
Fax: None
Mobile: (340) 473-8264
Email: None
Contact Person: Laurence Laurencin, Owner
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
488410 - MOTOR VEHICLE TOWING

Lucien George Construction
#173C-82 Anna's Retreat
*
P. O. Box 10005
St. Thomas, VI 00801
Phone: None
Fax: None
Mobile: (340) 998-3869
Email: None
Contact Person: Lucien George, Owner
NAICS Code(s): 238140 – MASONRY CONTRACTOR

M & M Supply Co., Inc.
#13 Crown Bay
*
P. O. Box 55
St. Thomas, VI 00804
Phone: (340) 776-2953
Fax: (340) 776-5344
Mobile: (340) 690-9836
Email: mmsupplyco@yahoo.com
Contact Person: Mervin Fleming, Owner
NAICS Code(s): 424690 - OTHER CHEMICAL AND ALLIED PRODUCTS MERCHANTS WHOLESALERS

M3COM, LLC
#210 Strand Street, F'sted
*
#210 Strand Street, Ste. 1, F'sted
St. Croix, VI 00840
Phone: (340) 244-7770
Fax: (703) 7269277
Mobile: (703) 264-1700
Email: freitas@m3comva.com
Contact Person: Jeffery Freitas, Co-Owner
NAICS Code(s): 517911 – TELECOMMUNICATIONS RESELLERS

Marco St. Croix, Inc.
222 & 223, Kingshill
*
P. O. Box 5678, C'sted
St. Croix, VI 00823
Phone: (340) 778-1035
Fax: (340) 719-0580
Mobile: (340) 771-7000
Email: marcostcroix@gmail.com
Contact Person: Shawn Baptiste, President
NAICS Code(s): 483211 - INLAND WATER FREIGHT TRANSPORTATION
484110 - GENERAL FREIGHT TRUCKING, LOCAL
532412 - HEAVY EQUIPMENT RENTAL
561730 - LANDSCAPING SERVICES
562111 - SOLID WASTE COLLECTION
238910 – SITE PREPARATION CONTRACTORS

Master Pavement Line Corporation
Complejo Industrial Maria L. Arcelay, Mayaguez
*
P. O. Box 6534
Mayaguez, PR 00681
Phone: (787) 254-5463
Fax: (787) 255-5463
Mobile: (787) 646-1841
Email: masterpavementline@hotmail.com
Contact Person: Carlos D. Acosta Martin, President
NAICS Code(s): 238990 - ALL OTHER SPECIALTY TRADE CONTRACTOR

Mickey's Construction
#134 Clifton Hill, C'sted
*
P. O. Box 4113, Kingshill
St. Croix, VI 00851
Phone: (340) 773-8379
Fax: (340) 778-1100
Mobile: (340) 643-5576
Email: None
Contact Person: Elrose Richards, Owner
NAICS Code(s): 237310 -HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Mirko M. Restovic (dba Restovic Engineering)
#10 Estate Turner Hole, C'sted
*
4069 Judith Fancy, C'sted
St. Croix, VI 00820
Phone: None
Fax: (208) 361-3101
Mobile: (340) 332-2937 or (340) 227-7854
Email: mmrestovic@gmail.com
Contact Person: Mirko M. Restovic, President
NAICS Code(s): 541330 - ENGINEERING SERVICES

Mo Mulching, LLC
4I Catherine's Rest, C'sted
*
P.O. Box 9041 Catherine's Rest, C'sted
St. Croix, VI 00820
Phone: None
Fax: None
Mobile: (340) 513-3015
Email: emaynard340@gmail.com
Contact Person: Ellerton Maynard, Owner/Managing Member
NAICS Code(s): 541320 – Landscape Architectural Services

Moses Equipment
#38 Cottage, C'sted
*
P.O. Box 2612, F'sted
St. Croix, VI 00841
Phone: (340) 513-4181
Fax: None
Mobile: (340) 643-0104
Email: mosesequip@gmail.com
Contact Person: Melvyn Moses, Owner
NAICS Code(s): 5324132 – HEAVY EQUIPMENT RENTAL

NR Electric
4100 Sion Farm, Suite #3, C'sted
*
P. O. Box 1779, Kingshill
St. Croix, VI 00851
Phone: (340) 773-4266 or (340) 719-3031
Fax: (340) 719-5890
Mobile: (340) 514-7122
Email: nrelectric@hotmail.com
Contact Person: Neil Ruan, Owner
NAICS Code(s): 238210 - ELECTRICAL CONTRACTORS

NAITHRAM Ragbir (dba Ragbir Trucking)
#75 Peter's Rest, C'sted
*
#75 Peter's Rest, C'sted
St. Croix, VI 00820
Phone: (340) 773-6496
Fax: None
Mobile: None
Email: None
Contact Person: Naithram Ragibir, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Navarro Landscaping & Yard Maintenance
#22 Estate Calquohoun, C'sted
*
P. O. Box 496, Kingshill
St. Croix, VI 00851
Phone: (340) 778-9180
Fax: None
Mobile: (340) 643-3035
Email: None
Contact Person: Francisco Navarro, Owner
NAICS Code(s): 561730 - LANDSCAPE SERVICES

Neon Construction, Inc.
22 - 30 Estate Contant
*
P. O. Box 11063
St. Thomas, VI 00801
Phone: (340) 776-8833
Fax: (340) 714-1875
Mobile: (340) 344-6692
Email: None
Contact Person: Pedrito L. George, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Netwave Unlimited Services, LLC
#112 Estate Ruby, C'sted
*
P. O. Box 6645, C'sted
St. Croix, VI 00823-6645
Phone: (340) 513-9338
Fax: None
Mobile: (340) 514-0956
Email: ltorres@netwaveunlimited.com Web: www.netwaveservices.com
Contact Person: Luis R. Torres, Director of Operations
NAICS Code(s): 238210 – ELECTRICAL CONTRACTORS & OTHER WIRING INSTALLATION CONTRACTORS

New Wave Development, LLC
#89 Peters Rest, C'sted
*
P. O. Box 5529, C'sted
St. Croix, VI 00820
Phone: (340) 778-9283
Fax: (340) 778-8741
Mobile: (340) 244-7012
Email: newwavedevelopment@gmail.com
Contact Person: Jayson Cintron, General Manager
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
541320 - LANDSCAPE ARCHITECTURAL SERVICES

Nico's Landscaping & Trucking
13GA Estate Bethlehem
*
P. O. Box 2147, F'sted
St. Croix, VI 00841
Phone: None
Fax: None
Mobile: (954) 501-5543
Email: nicostrucking@gmail.com
Contact Person: Nicodemus Felicien, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
541320 - LANDSCAPE ARCHITECTURAL SERVICES

Northwest Construction & Maintenance, Inc.
2D La Grande Princesse
*
P. O. Box 2017, Kingshill
St. Croix, VI 00851
Phone: (340) 718-5007
Fax: (340) 718-5887
Mobile: (340) 643-0501
Email: dove008@yahoo.com
Contact Person: Curtis Prevost, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
236118 – RESIDENTIAL REMODELERS 532412 – HEAVY EQUIP. RENTAL

ORTALIS PROPERTIES, LLC
3004 Estate Altona
*
3004 Estate Altona, Ste. 12
St. Thomas, VI 00802
Phone: (340) 774-4056
Fax: (340) 774-3336
Mobile: (340) 344-5234
Email: bizoffice@ortalisproperties.com
Contact Person: Marian Prescod, Managing Director
NAICS Code(s): 327999 – ALL OTHER MISCELLANEOUS NONMETALLIC MINERAL PRODUCT MNFCT.

Paradise Waste, Inc. (dba GT Trucking & Car Sales)
#129 Castle Coakley, C'sted
*
P. O. Box 302, C'sted
St. Croix, VI 00821
Phone: (340) 778-6090
Fax: (340) 778-7700
Mobile: (340) 626-6399
Email: viwaste@yahoo.com
Contact Person: Gary Thomas, President
NAICS Code(s): 441120 - USED CAR SALES 484110 - GENERAL FREIGHT TRUCKING, LOCAL
562111 - SOLID WASTE COLLECTION
541320 - LANDSCAPE ARCHITECTURAL SERVICE
811310- COMMERCIAL & INDUSTRIAL MACHINERY & EQUIP. REPAIR & MAINT.

Paris Dump Truck Service, LLC
#5GA Pastory
*
P. O. Box 1594
St. John, VI 00831
Phone: (340) 774-0725
Fax: (340) 774-0725
Mobile: (340) 690-5405 or (340) 642-3018
Email: parisvi@powernet.net
Contact Person: Alrich Paris, President
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Parson's Landscaping & Lawn Care
232 B Estate Glynn
*
P. O. Box 841, Kingshill
St. Croix, VI 00851
Phone: (340) 719-6085
Fax: None
Mobile: (340) 998-0160
Email: johnparsonslandscaping@gmail.com
Contact Person: Lestor Parsons, Owner
NAICS Code(s): 238350 – FINISH CARPENTRY CONTRACTOR 561720 – JANITORIAL SERVICES
236118 – RESIDENTIAL REMODELERS 561730 – LANDSCAPING SERVICES
238320 – PAINTING AND WALL COVERING CONTRACTORS

Patrick Charles Enterprises, Inc.
#124 Sub Base
*
P. O. Box 308358
St. Thomas, VI 00803
Phone: (340) 774-4539 or (340) 777-9919
Fax: (340) 777-4987
Mobile: (340) 690-0984
Email: bobby123@island.vi
Contact Person: Patrick Charles, President
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL 324121 -ASPHALT PAVING
541330 -ENGINEERING SERVICES 561730 -LANDSCAPING SERVICES
238910 - SITE PREPARATION CONTRACTOR 532412 - HEAVY EQUIPMENT RENTAL

Patrick Senhouse (dba Patrick Senhouse Trucking)
#3A3 Estate Calquohoun, F'sted
*
P. O. Box 7045, C'sted
St. Croix, VI 00823
Phone: (340) 719-1420
Fax: None
Mobile: (340) 690-4163
Email: psenhouse@yahoo.com
Contact Person: Patrick Senhouse, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Peters Electric
#14 Frydendahl
*
P. O. Box 597
St. Thomas, VI 00804
Phone: None
Fax: None
Mobile: (340) 771-3867
Email: None
Contact Person: Cardinal Peters, Owner
NAICS Code(s): 238210 - ELECTRICAL CONTRACTORS AND OTHER WIRE INST. CONTRACTOR

Peter Gilles (dba Original Trucking)
#149 Estate St. Georges, F'sted
*
P. O. Box 2588, F'sted
St. Croix, VI 0040
Phone: (340) 719-2125
Fax: None
Mobile: (3400 332-7544 or (340) 771-8063
Email: original34@hotmail.com
Contact Person: Gilles Peter, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Philadelphia Suppliers, Inc.
1704 Commenrce Dr.
*
100 Captains Row #203
Chelsea, MA 02150
Phone: (800) 742-6550
Fax: (800) 742-0407
Mobile: None
Email: philysuppliers@earthlink.net
Contact Person: Karen Alexander, President
NAICS Code(s): 238120-STRUCTURAL STEEL & PRECAST CONCRETE CONTRACTORS

Plant Depot, Inc.
26 Charlotte Amalie
*
P. O. Box 503087
St. Thomas, VI 00805
Phone: (340) 775-6668
Fax: (340) 775-6667
Mobile: (340) 998-8746
Email: nchapmanvi@yahoo.com
Contact Person: James Templeton, President
NAICS Code(s): 561730 - LANDSCAPING SERVICES
424930 - FLOWER NURSERY STOCK AND FLORISTS SUPPIES MERCHANT

Powell Construction
106 Anna's Fancy
*
P. O. Box 773
St. Thomas, VI 00802
Phone: (340) 774-2649
Fax: None
Mobile: (340) 244-6900
Email: None
Contact Person: Leborne Powell, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

REG Services, LLC
8D Estate Cottage
*
P.O. Box 1931
Kingshill, VI 00851
Phone: (340) 227-6797
Fax: None
Mobile: None
Email: robertgoerger@sbcglobal.net
Contact Person: Robert Goerger, President
NAICS Code(s): 492210 – MESSENGER SERVICES

RENDCO, Inc.
#1408 Fourth Street
*
#1408 Fourth Street
St. Thomas, VI 00802
Phone: (340) 777-9394
Fax: (340) 776-0439
Mobile: (340) 771-1728
Email: None
Contact Person: Philbert Edwards, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL 238910 - SITE PREPARATION CONTRACTOR

Rawlins Heavy Equipment, Inc.
143A-32 Anna's Retreat
*
P. O. Box 7452
St. Thomas, VI 00801
Phone: (340) 775-1011
Fax: (340) 775-1011
Mobile: None
Email: None
Contact Person: Casper Rawlins, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL 238910 - SITE PREP CONT

RAYCON MECHNICAL, LLC
#8D Estate Cottage
*
P. O. Box 600, Kingshill
St. Croix, VI 00851
Phone: (340) 719-2645
Fax: (340) 719-2640
Mobile: None
Email: raycon20@hotmail.com
Contact Person: Eris Walker, CEO
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
238210 - ELECTRICAL CONTRACTOR 562122 - HAZARDOUS WASTE COLLECTION
561730 - LANDSCAPING SERVICES
811412 - APPLIANCE REPAIR AND MAINTENANCE
562998 - ALL OTHER MISCELLANEOUS WASTE MANAGEMENT SERVICES

Retep Masonry
#40D Estate Whim, F'sted
*
P. O. Box 2226, Kingshill
St. Croix, VI 00851
Phone: (340) 778-3154
Fax: (340) 778-3154
Mobile: (340) 626-8846
Email: None
Contact Person: Peter Joseph, Owner
NAICS Code(s): 238140 - MASONRY CONTRACTOR

Ri-Tech Construction, LLC
#148-30 Estate Tutu
*
P. O. Box 307056
St. Thomas, VI 00803
Phone: (340) 201-1736
Fax: None
Mobile: None
Email: None
Contact Person: Vernon Caracciolo, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Riley Electric, LLC
#2-3E Estate Bovoni
*
P. O. Box 302906
St. Thomas, VI 00803
Phone: (340) 777-4539
Fax: (340) 779-4539
Mobile: (340) 643-1498
Email: rileyelectric@yahoo.com
Contact Person: Augustus Riley, President
NAICS Code(s): 238210 - ELECTRICAL CONTRACTOR

Ronald A. Marie
#9 Clifton Hill
*
P. O. Box 5183, C'sted
St. Croix, USVI 00823
Phone: (340) 778-1002
Fax: None
Mobile: (340) 227-4484
Email: None
Contact Person: Ronald A. Marie, Owner
NAICS Code(s): 235510 - CARPENTRY CONTRACTOR

Roses Construction Co.
#238 Anna's Retreat
*
P. O. Box 9554
St. Thomas, VI 00801
Phone: (340) 775-1527
Fax: None
Mobile: (340) 626-4555
Email: None
Contact Person: Hilroy Joseph, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Rougier's Electric
#132 Clifton Hill
*
P. O. Box 5439, Kingshill
St. Croix, USVI 00851
Phone: (340) 779-366
Fax: (340) 779-3661
Mobile: (340) 642-4649
Email: rougierselectric@yahoo.com
Contact Person: Benjamin T. Rougier, Owner
NAICS Code(s): 238210 - ELECTRICAL CONTRACTOR

Ruler's Equipment & Construction
B12-13 Bovoni
*
P. O. Box 8895
St. Thomas, VI 00801
Phone: (340) 774-9319
Fax: None
Mobile: (340) 642-6925
Email: None
Contact Person: Edmund Charles, Owner
NAICS Code(s): 532490 – HEAVY EQUIPMENT RENTAL

Rumina Construction Mgmt. (formerly Franklyn Victor Maint.)
#290 Hospital Ground
*
P. O. Box 308034
St. Thomas, VI 00803
Phone: (340) 514-2788
Fax: None
Mobile: None
Email: None
Contact Person: Franklyn Victor, Owner
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

SF General Maintenance Services, LLC
#114 Estate Humbug, C'sted
*
P. O. Box 1036, C'sted
St. Croix, VI 00821
Phone: (340) 773-1656
Fax: (340) 773-1656
Mobile: (340) 690-3360
Email: sinclair3360@yahoo.com
Contact Person: Sinclair Fleming, Owner/Manager
NAICS Code(s): 238320 – PAINTING AND WALL COVERING CONTRACTORS
561720 – JANITORIAL SERVICES 561730 – LANDSCAPING SERVICE

SLX INFRASTRUCTURE, LLC
1039 Bell Street
*
1039 Bell Street
Toms River, NJ 08753
Phone: (732) 801-4909
Fax: (732) 377-8612
Mobile: NONE
Email: bgrant@slxinf.com Website: www.slxinf.com
Contact Person: Brian Grant, Principal
NAICS Code(s): 423320 – BRICK, STONE AND RELATED CONSTR. MTRL. MRCHT. WHLSLS.
423390 – OTHER CONST MTRL MRCHT 541310 – ARCHITECHURAL, ENGINEERING & RLTD SVCS
541330 – ENGINEERING SVCS. 541360 – GEOPHYSICAL SRVYNG & MPPNG SVCS

Shadows AS, LLC
162 Subbase
*
P. O. Box 303115
St. Thomas, VI 00803
Phone: (340) 777-5638
Fax: (340) 888-633-7557
Mobile: (340) 998-7565
Email: shadowsvi@hotmail.com
Contact Person: Arun Keshap, Owner
NAICS Code(s): 333249 - OTHER INDUSTRIAL MACHINERY MANUFACTURING

Shel's Trucking & Delivery
394 - 258 Anna's Retreat
*
P. O. Box 12193
St. Thomas, VI 00801
Phone: (340) 775-0643 or (340) 776-7760
Fax: None
Mobile: None
Email: None
Contact Person: Sheldon Benjamin, Sr., Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Skenny Landscaping & Maintenance Services
660-41 Strawberry Hill, C'sted
*
P. O. Box 2955, F'sted
St. Croix, VI 00841
Phone: (340) 778-1877
Fax: None
Mobile: (340) 277-4893
Email: miss_sylvester@yahoo.com
Contact Person: Skenny David Sylvester, Owner
NAICS Code(s): 541320 - LANDSCAPE ARCHITECTURAL SERVICES

Stone Masonry, LLC
30 Susannaberg #17A
*
5000 Estate Enighed PMB 20
St. Thomas, VI 008030
Phone: (340) 774-0442
Fax: (340) 774-0442
Mobile: (340) 690-9524
Email: brentsquires@gmail.com
Contact Person: Brent Squires, President
NAICS Code(s): 238140 - MASONRY CONTRACTORS

TR Quality Construction & Development, LLC
28 Contant
*
P. O. Box 722
St. Thomas, VI 00804
Phone:
Fax:
Mobile: (340) 201-8856
Email: trqualityconstruction@hotmail.com
Contact Person: Trevor Ryan, President
NAICS Code(s): 238140 - MASONRY CONTRACTORS

T. Willie Rental
14-R 3&4 Estate Thomas
*
P. O. Box 3564
St. Thomas, VI 00803
Phone: (340) 774-9643
Fax: None
Mobile: (340) 344-3265
Email: None
Contact Person: Thomas Willie, Owner
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL

Tang How Brothers, Inc.
#24-25 Estate Cottage, C'sted
P. O. Box 6209, Sunny Isles
St. Croix, VI 00823
Phone: (340) 778-8428
Fax: (340) 778-6670
Mobile: (340) 277-3726
Email: thbinc@viaccess.net Web: www.tanghow.com
Contact Person: Lincoln Tang How, President
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
331419 - WELDING SERVICES

Tempaire International, Inc.
210-3A Altona
*
P. O. Box 304882
St. Thomas, VI 00803
Phone: (340) 774-4820 or (340) 774-4041
Fax: (340) 774-1547
Mobile: (340) 998-2486
Email: tempaire@vipowernet.net
Contact Person: Joseph Kelly, President
NAICS Code(s): 238220 - PLUMBING, HEATING & AIR CONDITIONING CONTRACTORS

Terence Bryan (dba Bryan's Heavy Equipment Rental)
#37 Morning Star, Kingshill
P. O. Box 2420, Kingshill
St. Croix, VI 00851
Phone: (340) 718-3185
Fax: None
Mobile: (340) 227-2641
Email: bryant_61@yahoo.com
Contact Person: Terence Bryan, President
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
532412 - HEAVY EQUIPMENT RENTAL
238910 - SITE PREPARATION CONTRACTOR

Thomas Trucking
9D-5 St. Joseph & Rosendahl
*
P. O. Box 982, F'sted
St. Croix, VI 00841
Phone: (340) 777-6124
Fax: (340) 777-6124
Mobile: (340) 277-5417
Email: bmrfamily@gmail.com
Contact Person: Thrisha Byron
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

Tip Top Construction, Inc.
5064 Mt. Welcome, C'sted
P. O. Box 24933, Gallows Bay
St. Croix, VI 00824-4672
Phone: (340) 773-5252
Fax: (340) 773-8191
Mobile: None
Email: Deborah@tiptopvi.com
Contact Person: Percy J. Hollins, Jr., President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION
532412 - HEAVY EQUIPMENT RENTAL
238910 - SITE PREPARATION CONTRACTOR

Tommy's Trucking Service
#18 Estate Plessen, F'sted
P. O. Box 4971, Kingshill
St. Croix, VI 00851
Phone: None
Fax: None
Mobile: (340) 201-5162
Email: tommya_cat@hotmail.com
Contact Person: Tommy Augustin, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
532412 - HEAVY EQUIPMENT RENTAL

Triple-A Training & Security Services
#431 Mt. Pleasant, F'sted
P. O. Box 6402, Sunny Isles
St. Croix, VI 00823
Phone: (340) 514-5049
Fax: (340) 692-7768
Mobile: (340) 513-7193
Email: triple_a100@hotmail.com
Contact Person: Anderson Poleon, Sr., Owner/CEO
NAICS Code(s): 541690 - OTHER SCIENTIFIC & TECHNICAL CONSULTING SERVICES

Triple 7 Construction
33-50 Estate Nadir
P. O. Box 12151
St. Thomas, VI 00801
Phone: None
Fax: None
Mobile: (340) 998-1227
Email: tripleseven@yahoo.com
Contact Person: James Martin, Owner
NAICS Code(s): 238140 - MASONRY CONTRACTOR
238350 - CARPENTRY CONRACTOR

Uncle Nev Construction, Inc.
#27 Estate Whim
P. O. Box 1462, F'sted
St. Croix, VI 00841
Phone: (340) 772-4890
Fax: (340) 719-3981
Mobile: (340) 690-6606
Email: None
Contact Person: Neville Anthony, President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONSTRUCTION

Universal Trucking
4-12 Estate Dorothea
*
P. O. Box 306892
St. Thomas, VI 00803
Phone: None
Fax: None
Mobile: (340) 201-6695
Email: trippleseven@yahoo.com
Contact Person: Rudell Fahie, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL

V. I. Equipment Rental & Construction, Inc.
#14 Estate Mandahl
P. O. Box 9560
St. Thomas, VI 00801
Phone: (340) 775-4633
Fax: (340) 775-4199
Mobile: (340) 513-7335 or (340) 513-7336
Email: eberry@vipowernet.net
Contact Person: Elsie Berry, Vice President
NAICS Code(s): 237310 - HIGHWAY, STREET AND BRIDGE CONTRUCTION
238910 - SITE PREPARATION CONTRACTOR
532412 - HEAVY EQUIPMENT RENTAL

V. I. Quality Control Services, LLC
#20B Anna's Retreat
*
P. O. Box 502911
St. Thomas, VI 00805
Phone: (340) 344-4717
Fax: (340) 775-2016
Mobile: None
Email: viqcservices@gmail.com
Contact Person: Julio King II, President
NAICS Code(s): 238992 – ALL OTHER SPEACIALTY SERVICES

V.I. Solar Depot, LLC
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3001H Estate Little Princesse, C'sted
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237130 - ALTERNATIVE ENERGY

Victor Jean Baptiste
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Mobile: (340) 6905223 or (340) 244-0387
Email: None
Contact Person: Victor Jean Baptiste, Owner
NAICS Code(s): 484110 - GENERAL FREIGHT TRUCKING, LOCAL
238140 – MASONRY CONTRACTORS 238350 – CARPENTRY CONTRACTORS

Virgin Global Technology
59 King's Wharf
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59 King's Wharf
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Contact Person: Fernando Cabret III, Director of Operations
NAICS Code(s): 238210 - ELECTRICAL CONTRACTORS AND OTHER WIRING INSTALLATION CONTRACTORS

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St. Croix, VI 00820
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Contact Person: Patrick Vivot, Owner
NAICS Code(s): 532412 - HEAVY EQUIPMENT RENTAL
484110 - GENERAL FREIGHT TRUCKING, LOCAL

Voneto Trucking & Equipment Service (Neto's Trucking Service)
6 - 14 Estate Contant
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Water King & Trucking Services, LLC
#33 Contant
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St. Thomas, VI 00805
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Mobile: None
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NAICS Code(s): 238110 – POURED CONCRETE FOUNDATION AND STRUCTURE CONTRACTORS
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484110 - GENERAL FREIGHT TRUCKING, LOCAL

Wilson Construction
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Email: None
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532412 - HEAVY EQUIPMENT RENTAL
238910 - SITE PREPARATION CONTRACTORS

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BUY AMERICA CERTIFICATION

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7.
https://www.transit.dot.gov/regulations-and-guidance/buy-america/appendix-c-buy-america-waivers

The bidder or offeror must submit to the appropriate Buy America certification (below) with its bid or offer on FTA funded projects. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 C.F.R. part 661.

Date: _____
Signature: _____
Company: _____
Name: _____
Title: _____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____
Signature: _____
Company: _____
Name: _____
Title: _____

American Recovery and Reinvestment Act of 2009, Section 1605 – Buy American (100% Domestic Content of items below)	Federal Aviation Administration (FAA) 49 U.S.C. § 50101 – Buy American (see discretionary *waiver* when 60% Domestic Content of items below)	Federal Highway Administration (FHWA) 23 U.S.C. § 313 – Buy America; 23 C.F.R. § 635.410 (100% Domestic Content of items below)	Federal Railroad Administration (FRA) High Speed Rail Program 49 U.S.C. Chapters 244, 246; § 24405 – Buy America (100% Domestic Content of items below)	National Railroad Passenger Corporation (AMTRAK) 49 U.S.C. § 24305	Federal Transit Administration (FTA) 49 U.S.C. § 5323(j); 49 C.F.R. Part 661 (Buy America Requirements); (See 60% Domestic Content for *buses and other Rolling Stock*)
Buy American The Recovery Act prohibits use of recovery funds for a project for the construction, alteration, maintenance, or repair of a public building or public work unless all of the iron, steel, and manufactured goods used in the project are produced in the United States. Waivers The head of the Federal department or agency finds that: (1) It would be inconsistent with the public interest; (2) Iron, steel, and the relevant manufactured goods are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) Inclusion of iron, steel, or manufactured goods produced in the United States will increase the cost of the overall project by more than 25 percent. Other *There are provisions in the Recovery Act for the Federal Aviation Administration, Federal Transit Administration, Federal Railroad Administration, and Federal Highway Administration to apply their own grant requirements, including Buy America(n).* All waivers have to be posted in Federal Register. U.S. international obligations (World Trade Organization Government Procurement Agreement, U.S. Free Trade Agreements, U.S.-EC Exchange of Letters [May 15, 1995], and Canada-U.S. Agreement on Government Procurement) apply.	Buy American The FAA will not obligate any funds authorized to be appropriated for any project unless steel and manufactured products used in such projects are produced in the United States. Waivers The Administrator has delegated authority to grant waivers to this requirement to Director of Acquisition and Contracting; Regional Administrators; and Center Directors upon finding that compliance with the Act would: (1) It would be inconsistent with the public interest; (2) The steel and goods produced in the United States are not produced in a sufficient and reasonably available amount or are not of a satisfactory quality; (3) When procuring a facility or equipment under the Airport and Airway Improvement Act of 1982: (A) the cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components of the facility or equipment; and (B) final assembly of the facility or equipment has occurred in the United States; or (4) Including domestic material will increase the cost of the overall project by more than 25 percent. Other Labor costs involved in final assembly are not included in calculating the cost of components. U.S. international obligations (World Trade Organization Government Procurement Agreement, U.S. Free Trade Agreements, U.S.-EC Exchange of Letters [May 15, 1995], and Canada-U.S. Agreement on Government Procurement) do not apply.	Buy America The Secretary of Transportation shall not obligate any funds unless steel, iron, and manufactured products used in such project are produced in the United States. Applies to iron and steel products and their coatings that are to be permanently incorporated into the project. The FHWA, in its 1983 rulemaking, determined that Buy America did not apply to raw materials and waived its application to manufactured products, although in the statute, based on the public interest. Lack of adequate domestic supply resulted in a 1995 nationwide waiver for iron ore, pig iron, and reduced/processed/pelletized iron ore. In 1994, a nationwide waiver for specific ferryboat parts came into effect. Waivers The Secretary of Transportation may waive the requirement if the Secretary finds that: (1) It would be inconsistent with the public interest; (2) Such materials and products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or (3) Inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent (this is a standing waiver codified in regulations when alternate bidding procedures are used). Other Labor costs involved in final assembly are not included in calculating the cost of components. All waivers have to be posted in Federal Register. All proposed waivers are first posted on the FHWA's website for a 15-day comment period prior to publishing the final decision in the Federal Register. U.S. international obligations (World Trade Organization Government Procurement Agreement, U.S. Free Trade Agreements, U.S.-EC Exchange of Letters [May 15, 1995], and Canada-U.S. Agreement on Government Procurement) do not apply.	Buy America The Secretary of Transportation may obligate funds for a project only if the steel, iron, and manufactured goods used in the project are produced in the United States. Waivers The Secretary of Transportation may waive the requirement if the Secretary finds that: (1) It would be inconsistent with the public interest; (2) The steel, iron, and goods produced in the United States are not produced in a sufficient and reasonably available amount or are not of a satisfactory quality; (3) Rolling stock or power train equipment cannot be bought and delivered in the United States within a reasonable time; or (4) Including domestic material will increase the cost of the overall project by more than 25 percent. Other The requirements only apply to projects for which the costs exceed $100,000. Labor costs involved in final assembly are not included in calculating the cost of components. All waivers have to be posted in Federal Register. U.S. international obligations (World Trade Organization Government Procurement Agreement, U.S. Free Trade Agreements, U.S.-EC Exchange of Letters [May 15, 1995], and Canada-U.S. Agreement on Government Procurement) do not apply.	Domestic Buying Preferences Amtrak shall buy only: (A) unmanufactured articles, material, and supplies mined or produced in the United States; or (B) manufactured articles, material, and supplies manufactured in the United States substantially from articles, material, and supplies mined, produced, or manufactured in the United States. Waivers The Secretary may exempt Amtrak from this subsection if the Secretary decides that: (A) for particular articles, material, or supplies-- (i) the requirements are inconsistent with the public interest; (ii) the cost of imposing those requirements is unreasonable; or (iii) the articles, material, or supplies, or the articles, material, or supplies from which they are manufactured, are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and are not of a satisfactory quality; or (B) rolling stock or power train equipment cannot be bought and delivered in the United States within a reasonable time. Other The requirements apply only when the cost of those articles, material, or supplies bought is at least $1 million.	Buy America No funds may be obligated by FTA for a grantee project unless all iron, steel, and manufactured products used in the project are produced in the United States. Waivers The Administrator may waive the general requirements if the Administrator finds that: (1) It would be inconsistent with the public interest; (2) The materials for which a waiver is requested are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; (3) The inclusion of a domestic item or domestic material will increase the cost of the contract between the grantee and its supplier of that item or material by more than 25 percent. Rolling stock procurements (a) The Buy America provisions do not apply to the procurement of buses and other rolling stock (including train control, communication, and traction power equipment), if the cost of components produced in the United States is more than 60 percent of the cost of all components and final assembly takes place in the United States. Other Labor costs involved in final assembly are not included in calculating the cost of components. Post only "public interest" waivers in Federal Register. U.S. international obligations (World Trade Organization Government Procurement Agreement, U.S. Free Trade Agreements, U.S.-EC Exchange of Letters [May 15, 1995], and Canada-U.S. Agreement on Government Procurement) do not apply.

FTA Certification Regarding Lobbying

(49 CFR Part 20)

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding $100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq*.)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.
This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.]

The Contractor, , certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.,* apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official	**Date**
Title of Contractor's Authorized Official	

GEOTECHNICAL INVESTIGATION REPORT
PROPOSED FUEL STORAGE TANK
VITRAN MAINTENANCE FACILITY
ST CROIX, USVI
(VTE18-01.1050)

Prepared for

VI Department of Public Works
6002 Anna's Hope
Christiansted, VI 00820

Attention: Coral Megahy
Project Engineer

Submitted By

VITEST ENGINEERS, LLC
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VITEST Engineers
Civil Engineering, Geotechnical Engineering,
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February 8, 2018

VI Department of Public Works
6002 Anna's Hope
Christiansted, VI 00820

Attention: Coral Megahy
Project Engineer

Subject: GEOTECHNICAL INVESTIGATION REPORT, PROPOSED FUEL STORAGE AREA, VITRAN MAINTENANCE FACILITY, ST CROIX, USVI (VTE17-01.1037)

Dear Ms. Megahy:

VITEST Engineers has completed a geotechnical investigation in the area of the proposed fuel storage tanks for the VITRAN maintenance facility in Anna's Hope on St Croix, USVI.

The proposed storage structure can be constructed on the site, provided that adequate site preparation and foundation design are performed. Our evaluation of the subsurface conditions indicate that the structure can be supported on a shallow foundation.

The attached report provides details on the subsurface conditions, evaluation of the site suitability and recommendations for foundation support design. VITEST Engineers should be retained to inspect the foundation installation to verify that it meets with the recommendations presented in this report.

We appreciate the opportunity to provide our services on this project and trust that the data and recommendations are clear and understandable. Should there be any questions on the report content or if we can be of further assistance, please call.

Very truly yours,

VITEST Engineers
Improving the Quality of Island Life

Donald S. Law

_____
Donald S. Law, P.E., MBA
President
VI Registration No. 1088E

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APPENDIX A
Location Plan and Soil Profile – Sheet 1
Soil Classification Chart

INTRODUCTION

VITEST Engineers conducted a geotechnical investigation for the proposed Fuel Storage structure at the proposed VITRAN Maintenance Facility on St Croix, USVI. This report presents the scope of work performed and the findings of the investigation. We also present our evaluation of the site conditions and suitability for the proposed development, together with recommendations for site preparation and foundation design.

PROJECT DESCRIPTION

The project site is located at Department of Public works on Route 70 in Estate Anna's Hope. It is planned to construct a new VITRAN Maintenance facility in the southwest portion of the property. The development will include an operations building, bus wash building, tire storage building, new fueling station and paved parking areas. The fueling station will include above ground storage tanks on the south side of the site. The tanks will be installed on a concrete containment area founded on the existing subgrade. The location of the fuel storage area is depicted on the Location Plan on Sheet 1 attached to this report.

The structural loads exerted by the fuel storage tanks were not available at the time of this report. However, based upon our experience with similar structures, we anticipate that the foundation will be lightly to moderately loaded.

PURPOSE AND SCOPE

The purpose of conducting the geotechnical investigation was to explore the subsurface soil and groundwater table conditions in the area of the proposed fuel storage tanks and provide an evaluation of the suitability of the site and recommendations for the design of the tank foundations. In order to accomplish this task, we drilled and sampled one (1) Standard Penetration Test boring to a depth of 25 feet below the ground surface. The approximate location of the boring is shown on the Location Plan on Sheet 1. The soils encountered in the borings are presented in the form of a Soil Profile on Sheet 1.

SUBSURFACE EXPLORATION

Drilling Methods

The Standard Penetration Test boring was drilled and sampled in general accordance with the procedures of ASTM D-1586 using the open-hole rotary drilling method. Soil samples and corresponding SPT penetration resistance (N values) were obtained throughout the profile using a split-barrel sampler driven by a 140-pound hammer, falling 30 inches.

The soil samples recovered from the borings were visually examined in the field with representative samples sealed in airtight containers and transported to our laboratory for further soil classification by a geotechnical engineer.

LABORATORY INSPECTION AND TESTING

The soil samples were classified in accordance with the Unified Soil Classification System (USCS), ASTM D-2288. The laboratory test results and the classification of the soils samples are indicated in the soil profiles in Sheet 2 attached to the report. The soil descriptions and the symbols used in the USCS system are shown on the Legend on these sheets and on Figure 1 in this report.

EVALUATION OF SUBSURFACE CONDITIONS

USDA SCS Soil Survey

The soils in the vicinity of Estate Anna's were mapped by the USDA Soil Conservation Service and published in the Natural Resources Conservation Service (NRCS) Reports. This survey reports that the soil type over the majority of the project site is comprised of Sion Clay, 2 to 5 percent slopes, rarely flooded (SiB). A brief description of these soils is presented below.

Sion Clay (SiB) is mainly found on side slopes and valley floors of alkaline marine uplands. Sion and similar soils make up of 85 percent of the mapped area. The soil is well drained and the permeability is moderate. The depth to seasonal high-water table is greater than 6 feet and is rarely flood. It is non-stony and has a moderate potential for erosion. It is in Hydrologic Soil Group B.

Soil Stratigraphy

The general stratigraphy at the boring location is relatively consistent. The profile contains fill material with concrete rubble in the upper 1 to 2 feet below the prevailing grade. The underlying soil is a Light Grayish-Brown clay to approximately 22 feet, followed by a Light Brown silty clay to the termination depth of 25 feet.

A more detailed description of the soils encountered is presented on Sheet 1. Please note that, although the boring logs indicate distinct strata breaks, the actual transition between the soil layers may be gradual.

The SPT below counts (N-values) were recorded during drilling. These values are presented adjacent to the soil profile and represent the relative density of the in-place soils. The soils encountered are in a loose to medium stiff condition. The N-values recorded during drilling ranged from 4 to 12 per foot (bpf).

Groundwater Conditions

The ground water table was measured in the borehole at more than 24 hours after drilling. The stabilized water table was measured 15 feet below the ground surface. The groundwater level will fluctuate in response to rainfall conditions and will attain its highest level at the end of the rainy season. Based upon the soil types encountered and the site setting, we estimate that the normal seasonal high groundwater table will be 10 feet or deeper below the existing ground surface elevation.

ENGINEERING EVALUATIONS AND RECOMMENDATIONS

General Discussion

The surface soil is a fill material with concrete rubble. The underlying soil is comprised of clay and silty clay to 25 feet deep. This material is in a loose to medium stiff consistency and has a moderate shrink/swell potential. Significant soil improvement and foundation design considerations will be needed for the proposed structure in this area of the site. We believe that the site can be made suitable for support of the Fuel Storage tanks. Recommendations for foundation design and foundation-related site preparation are presented in the following subsections.

Earthwork Considerations

Clearing and Grubbing - The construction area should be cleared and grubbed to remove all existing vegetation, topsoil, buildings, construction debris, and other unsuitable materials buried under the ground surface. These operations should be completed to a minimum distance of 5.0 feet beyond the limits of the construction area. The depth of grubbing and stripping should be determined in the field based on visual observations and proper judgement. The spoil generated during these operations should be removed from the site and disposed of as directed by the owner.

Site Grading - On this project, the ground water table is relatively deep and is not expected to affect the grading plan. However, the final elevations of the site should be such that there is positive drainage way from foundations and finished floor areas. During construction, the area should be graded to direct surface runoff away from the structures and temporary excavations.

Excavation - Temporary side slopes of excavations above the water table may stand near vertical for short periods. Side slopes of excavations to 10 feet should be laid back at 2 Horizontal to 1 Vertical or flatter. Side walls of excavation deeper than 10 feet should be protected by a method designed by a registered engineer. The contractor should follow all recent OSHA safety requirements for excavation.

Suitable Fill - Suitable structural fill required for foundation support should be comprised of clean, non-plastic granular material containing less than 15 percent passing the U.S. No. 200 Sieve. The fill should be free of topsoil, roots, organic material, rocks larger than 3 inches, debris, trash or other objectionable material that may be compressible, degradable or which cannot be compacted properly. The soils on site can be made suitable for backfill if properly screened to remove undesirable particles.

Fill Placement and Compaction - The fill should be placed in relatively level lifts, dried or wetted as needed, and then compacted to a minimum density of 95 percent of the Modified Proctor Maximum dry density (ASTM D 1557) unless otherwise specified. The lifts should not exceed 12 inches in loose thickness if compaction is performed by a heavy vibratory roller and 6 inches if an approved hand-operated compaction

plate is used. Vibratory rollers should not be used in a vibratory mode within 75 feet of any existing structures without vibration monitoring.

Foundation Support

Foundation Loading Conditions - The structural data was not available at the time of this report. Light to moderate loads are anticipated for the proposed structure. The following recommendations must be reviewed when the building loads are finalized.

Subgrade Improvement – We recommend that the rubble encountered near the surface be over excavated and removed from the area. The loose subsurface soil should be improved to provide adequate support for the foundation. We recommend that existing soil below the fuel tank structure footprint be excavated to a minimum of 5 feet below the bottom of the fuel tank slab. The excavated material should be replaced with structural fill and compacted as recommended above.

Net Allowable Bearing Pressure - Provided that the foundation soils are prepared as recommended, the structure can be supported on a shallow foundation. Shallow foundations can be designed using a net allowable bearing pressure of 2500 pounds per square foot or less. The foundation should have a minimum embedment depth of 24 inches as measured from the bottom of the foundation to the lowest adjacent finished grade.

Structural Mat Foundation – Because of the loose clayey soil conditions encountered to the depth of 25 feet, we recommend that a structural mat foundation be used to support the fuel tanks at the site. A mat foundation will provide reduced applied pressure on the supporting soil because of the larger area used and will also reduce the differential settlements that could result from the nonhomogeneous behavior of the underlying soils. The perimeter of the mat may be designed with a thickened area beneath concentrated loads. The structural mat should be designed for an allowable uniform soil pressure of 2500 pounds per square foot (psf) or less. The minimum structural mat thickness should not be less than 12 inches and designed with sufficient reinforcement. The base of the mat foundation should be founded at an embedment depth to provide adequate support against uplift force and overturning moments. Mat foundations designed

as beams on an elastic foundation, will require the soil subgrade modulus for design. Where mat foundations bear on compacted soils as recommended above, the subgrade may be assumed to have a subgrade modulus on the order of 200 pounds per cubic inch (pci).

Seismic Considerations - Since the Island of St Croix is subjected to occasional earthquake forces, the building should be designed to account for lateral earthquake forces. Liquefaction of the subgrade soils is a concern for buildings foundations in earthquake zones. However, liquefaction is a concern when the foundation soils are predominantly loose, saturated sand deposits. The groundwater table at the subject site is expected to remain deeper than 10 feet. Also, the underlying soils are clayey and in a loose condition. As a result, we anticipate that the liquefaction potential is moderate to high.

The site class was evaluated using the Standard Penetration Test N-Values and the site class definitions of the International Building Code (IBC) and the National Earthquake Hazard Reduction Program (NEHRP). Based upon the consistency of the soil profile, we estimate that the site can be categorized as Site Class E.

Foundation Settlement - Provided that the subgrade soils are prepared as recommended and with the foundation designed and constructed as recommended, we anticipate the total foundation settlements will be one inch or less. The differential settlements that occur between adjacent unequally loaded areas are not expected to exceed one half inch.

Uplift Resistance - Uplift resistance for the foundation will be provided by the dead loads applied on the footings and by soil backfill placed above the footings. Soil resistance may be calculated as the weight of soil backfill above the footing plus the shearing resistance along the vertical face of the soil prism. Alternatively, it may be calculated as the weight of the soil prism defined by a diagonal line drawn from the top of the footing to the ground surface at an angle of 30 degrees to the vertical. Additional uplift resistance, if needed, can be realized by increasing the footing weight, the embedment depth or by anchoring the footings. A minimum factor of safety of 1.5 should be used against uplift.

Lateral Resistance: Lateral forces applied to foundations may be resisted by the passive pressure mobilized on the buried face of the footing and by friction along the base of the footings. The passive pressure produced by compacted granular backfill can be taken as that equivalent to the pressure exerted by a fluid weighing 480 pcf above the water table and 280 pcf below the water table.

A coefficient of friction of 0.45 may be used for calculating the frictional resistance along the base of cast-in-place concrete footings. Additional lateral resistance may be realized by designing the retaining wall footings with a "key" at the base and mobilizing the passive resistance along the vertical face of the key.

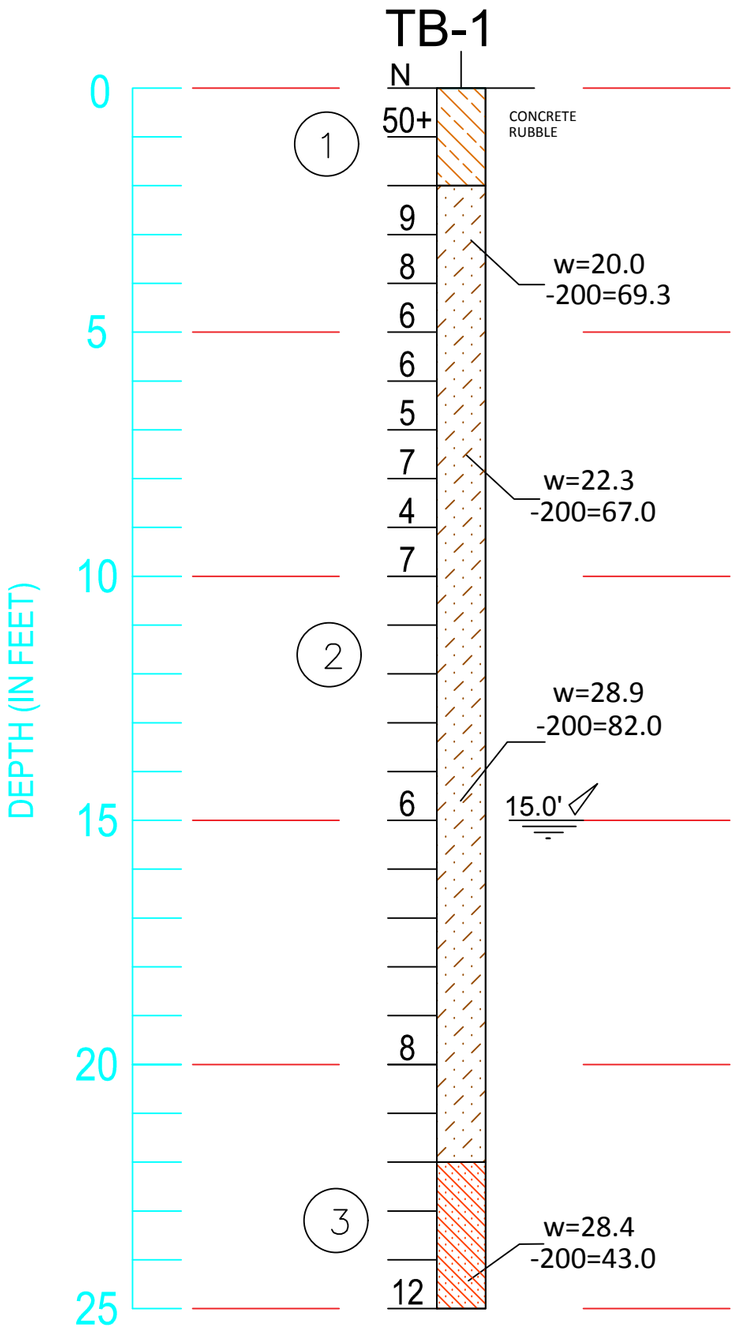
The values presented presume that the footings are surrounded by well-compacted, suitable granular soil with a moist unit weight of approximately 125 pcf and that the footings can withstand small movements on the order of 1/4 inch. A factor of safety of at least 1.5 is also recommended in the design.

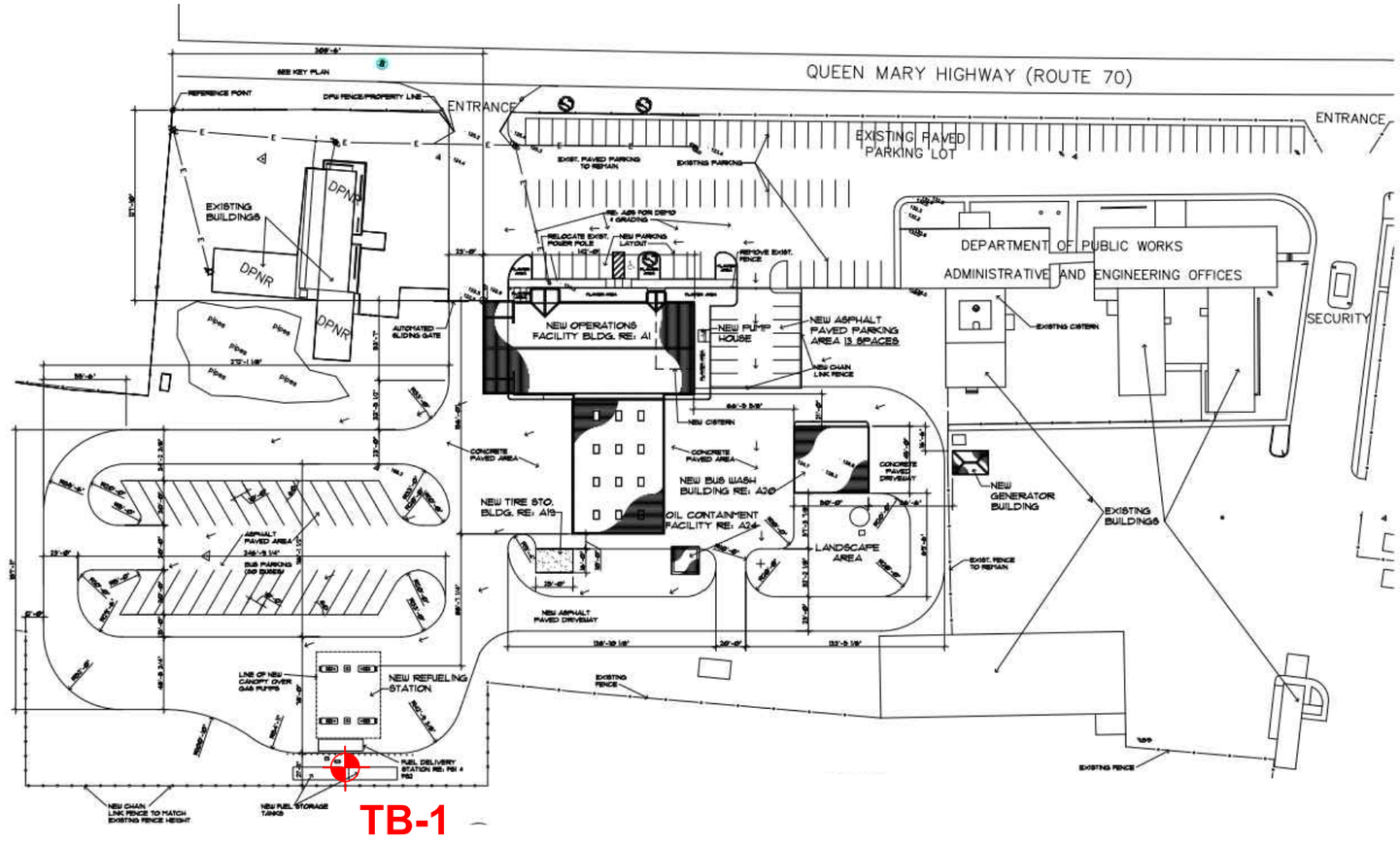
LIMITATIONS

This report was prepared in accordance with commonly accepted geotechnical engineering practices for the exclusive use of our client only for the subject project. No other warranty, expressed or implied, is made. The analyses and recommendations presented herein were based on the results of our subsurface exploration, available information about the subject site and the proposed site improvements. In addition, the exploration does not address deep geological activity. If significant changes in the final site grades, changes in building locations, or foundation loads other than those described herein, or if subsurface conditions different from those encountered in the borings become evident prior to, or during, site preparation or construction, VITEST Engineers should be immediately notified so that we may review and, if necessary, modify our analyses and recommendations.

APPENDIX A

SOIL PROFILE





BORING LOCATION PLAN

TB-1 ⊕ APPROXIMATE LOCATION OF STANDARD PENETRATION BORINGS

LEGEND

1	GRAYISH-BROWN CLAY AND CONCRETE RUBBLE (FILL)
2	LIGHT GRAYISH BROWN CLAY (CH)
3	LIGHT BROWN SILTY CLAY (SC)
15.0'	DEPTH TO GROUNDWATER TABLE MEASURED ON 02/06/18
N	N-VALUE (BLOW COUNTS PER FOOT, BPF)
W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT PASSING THE NO. 200 SIEVE

GEOTECHNICAL INVESTIGATION

FUEL STORAGE TANK

VITRAN MAINTENENCE FACILITY

ANNA'S HOPE, ST CROIX, USVI

VITEST ENGINEERS

Civil Engineering, Geotechnical Engineering, Materials Testing, Environmental Services

Scale:	NTS	Approved by:	DSL
Date:	02-08-2018	Project No.:	VTE18-01.1050
Drawn by:	DSL	SHEET:	1 OF 1

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS	TYPICAL DESCRIPTION
COARSE GRAINED SOILS (More than 50 % larger than #200 sieve)	GRAVEL AND GRAVELLY SOILS (More than 50% of coarse fraction retained on #40 sieve)	CLEAN GRAVELS (Little or no Fines)	GW	Well-graded gravels, gravel-sand mixtures, little to no fines
			GP	Poorly graded gravels, gravel-sand mixtures, Little to no Fines
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SAND AND SANDY SOILS (More than 50% of coarse fraction Passing #4 sieve)	CLEAN SANDS (Little or no Fines)	SW	Well-graded sands, gravelly sands, little to no fines
			SP	Poorly graded sands, gravelly sands little to no fines
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sand, sand-silt mixtures
			SC	Clayey sands sand-clay mixtures
FINE GRAINED SOILS (More than 50 % Smaller than #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sand or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays,silty clays Lean Clays
			OL	Organic silts and Organic Silty Clays of Low Plasticity
	SILTS AND CLAYS (Liquid Limit greater than 50)		MH	Inorganic silts, Micaceous or Diatomaceous Fine sandy or Silty soils, Elastic Silts
			CH	Inorganic clays of High Plasticity
			OH	Organic Clays of medium to high Plasticity
HIGHLY ORGANIC SOILS			PT	Peat, Humus, Swamp soils with high organic contents

RELATIVE DENSITY vs N-Value

COHESIONLESS SOILS	
DENSITY	N-value (bpf)
Very Loose	0 to 5
Loose	10 to 30
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	over 50

CONSISTENCY vs N-Value

COHESIVE SOILS	
Consistency	N-Value (bpf)
Very Soft	0 to 2
Soft	2 to 4
Medium Stiff	4 to 8
Stiff	8 to 15
Very Stiff	15 to 30
Hard	Over 30

SITE CLASS

Site Class	Soil Profile
A	Hard Rock
B	Rock
C	Very Dense Soil and Soft Rock
D	Stiff Soil Profile
E	Soft Soil Profile
F	Requires Further Site Evaluation



PUBLIC WORKS DEPARTMENT
ST. CROIX
VIRGIN ISLANDS

C. Megahy

GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES

PUBLIC WORKS DEPARTMENT
6002 Estate Anna's Hope
Christiansted, St. Croix, V.I. 00820-4428

DIVISION OF ENGINEERING

Tel: (340) 773-1290
Fax: (340)773-6865

PROJECT:	VITRAN Maintenance & Operations Facility	**PAGE 1 OF 1**
DATE:	Tuesday, July 10, 2017	
PREPARED BY:	Coral Megahy	

Scope of Work - VITRAN Facility Construction - Anna's Hope, St. Croix, USVI

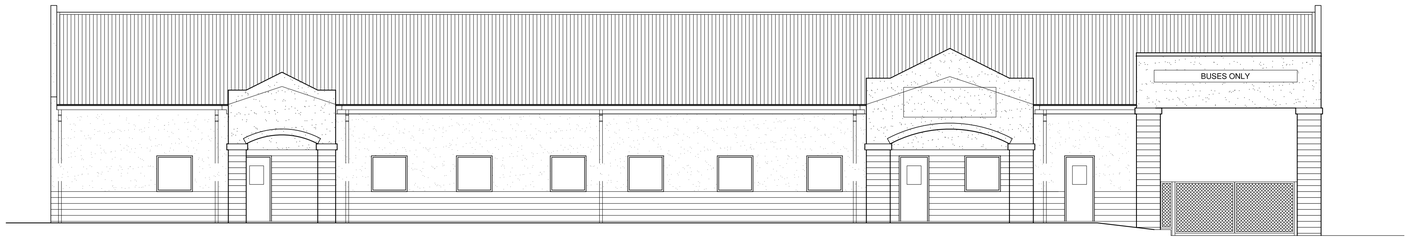
ITEM	DESCRIPTION OF WORK	QTY.	UNITS	UNIT PRICE	COST
1	Excavation & Grading	1	Lump Sum		
2	Paving	1	Lump Sum		
3	Site Utilities	1	Lump Sum		
4	Site structures, fences & gates	1	Lump Sum		
5	Demolition	1	Lump Sum		
6	Concrete	1	Lump Sum		
7	Steel Buildings & steel joists	1	Lump Sum		
8	Gutters & Downspouts	1	Lump Sum		
9	Carpentry	1	Lump Sum		
10	Masonry	1	Lump Sum		
11	Metal Roofing	1	Lump Sum		
12	Drywall Partitions & Framing	1	Lump Sum		
13	Insulation	1	Lump Sum		
14	Windows, skylights, & louvers	1	Lump Sum		
15	Doors & Hardware	1	Lump Sum		
16	Plaster & Trim	1	Lump Sum		
17	Ceilings	1	Lump Sum		
18	Cabinetry	1	Lump Sum		
19	Wall Tile	1	Lump Sum		
20	Accessories	1	Lump Sum		
21	Safety & Security equipment	1	Lump Sum		
22	Painting & Coatings	1	Lump Sum		
23	Flooring	1	Lump Sum		
24	Plumbing	1	Lump Sum		
25	Electrical (power, data, security, fire alarm)	1	Lump Sum		
26	Mechanical	1	Lump Sum		
27	Landscaping	1	Lump Sum		
28	General Conditions	1	Lump Sum		
29	Overhead & Profit	1	Lump Sum		
			TOTAL ==========>		

Total Cost of Project is _____

Licensed Contractor _____

DURATION - 18 CALENDAR MONTHS

NOTE: The undersigned Contractor acknowledges that the quantities included on the Bid Sheet are estimated values. It is the Contractor's responsibility to ascertain that the required material and quanties are included in the Bid Sheet in the event that there is a descrepency between what the Contractor estimates is required to complete said project. Any descrepancies in values or material required must be identified at the time of the Pre-Bid meeting. Once the contract is executed, the Contractor will be required to complete the project based on selected bidder's contractual agreement cost.



VITRAN MAINTENANCE AND OPERATIONS FACILITY

V.I. DEPARTMENT OF PUBLIC WORKS

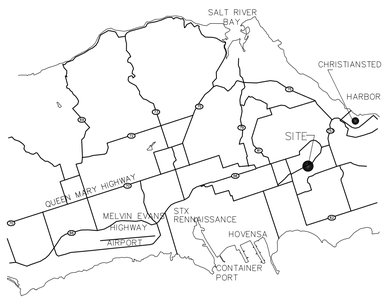
ESTATE ANNA'S HOPE ST. CROIX, U.S.V.I.

CONSTRUCTION DOCUMENTS

Steven E. Hutchins Architects Inc.

ARCHITECT

6-30-2017



LOCATION MAP

PROJECT INFORMATION

BUILDING CODE: 2015 IBC

BUILDING 1 (OPERATION FACILITY BUILDING)
- OCCUPANCY CLASSIFICATION: (MIXED) GROUP B & GROUP S-1
- BUILDING AREA: 12,300 SQ. FT.
- NUMBER OF STORIES: 1
- CONSTRUCTION TYPE: V-B
- ALLOWABLE AREA (TABLE 503): 9,000 SQ. FT.
- ALLOWABLE INCREASE DUE TO FRONTAGE: 4,770 SQ. FT.
- TOTAL ALLOWABLE AREA: 13,770 SQ. FT.

BUILDING 2 (BUS WASH BUILDING)
- OCCUPANCY CLASSIFICATION: GROUP B
- BUILDING AREA: 2,250 SQ. FT.
- NUMBER OF STORIES: 1
- CONSTRUCTION TYPE: V-B
- ALLOWABLE AREA (TABLE 503): 9,000 SQ. FT.

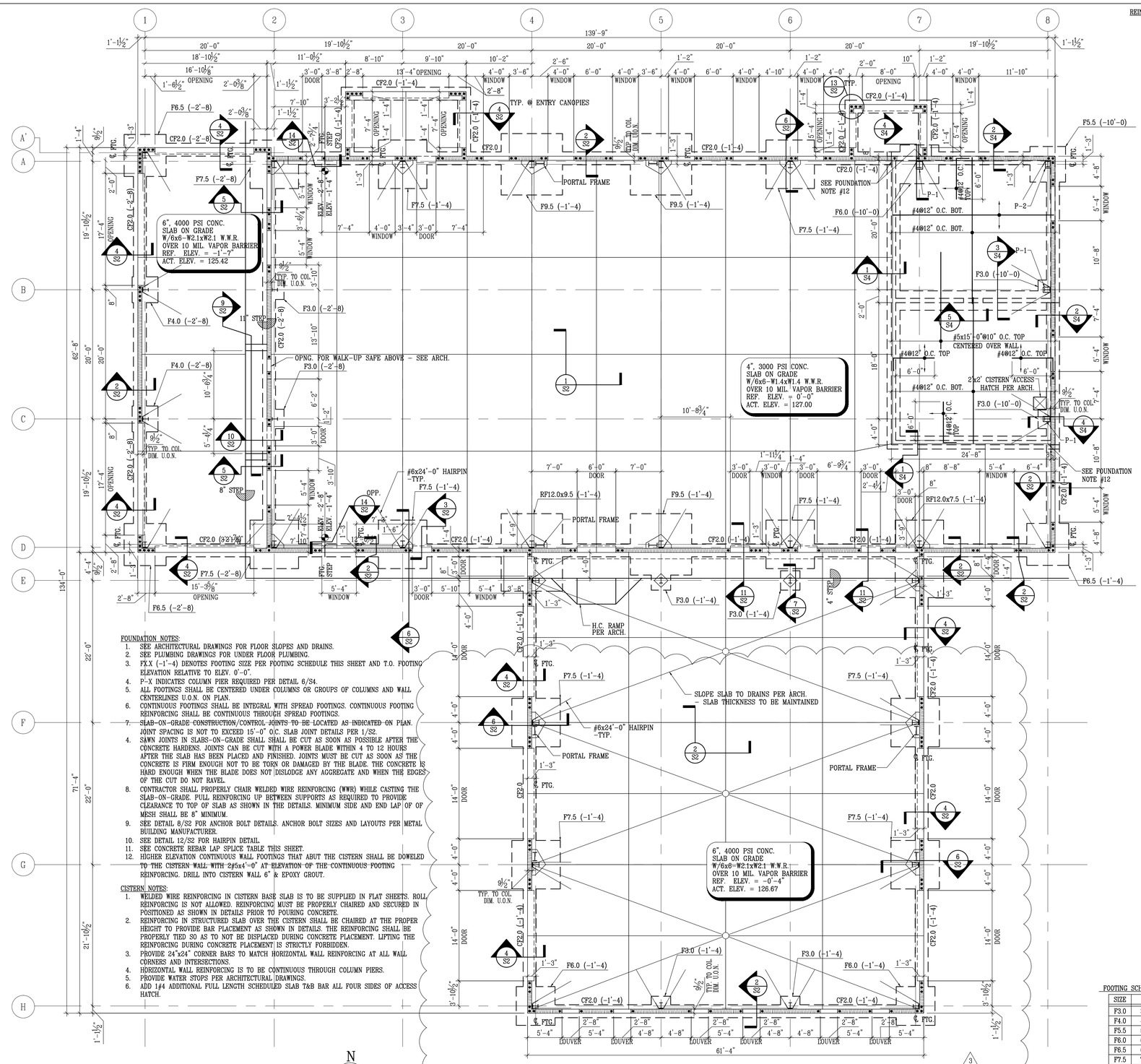
BUILDING 3 (TIRE STORAGE BUILDING)
- OCCUPANCY CLASSIFICATION: GROUP S-1
- BUILDING AREA: 400 SQ. FT.
- NUMBER OF STORIES: 1
- CONSTRUCTION TYPE: V-B
- ALLOWABLE AREA (TABLE 503): 9,000 SQ. FT.

DRAWING INDEX

	00	COVER SHEET
STRUCTURAL	S1	OPERATIONS FACILITY BUILDING/ FOUNDATION PLAN & ROOF PLAN
	S2	OPERATIONS FACILITY BUILDING/ STRUCTURAL DETAILS
	S3	OPERATIONS FACILITY BUILDING/ STRUCTURAL DETAILS
	S4	CISTERN DETAILS
ARCHITECTURAL	A0	SITE PLAN, KEY SITE PLAN, GENERAL NOTES AND LEGEND
	A01	SITE DETAILS, H.C. PARKING, WALKWAYS & GEN. PARKING ENLARGED PARKING
	A02	SITE DETAILS
	A03	SITE UTILITY PLAN
	A04	SITE DETAILS
	A05	SITE GRADING & PAVING
	A1	OPERATIONS FACILITY BUILDING FLOOR PLAN
	A2	OPERATIONS FACILITY BUILDING EXTERIOR ELEVATIONS
	A3	OPERATIONS FACILITY BUILDING SECTIONS
	A4	OPERATIONS FACILITY BUILDING WALL SECTIONS
	A5	OPERATIONS FACILITY BUILDING WALL SECTIONS
	A6	OPERATIONS FACILITY BUILDING WALL SECTIONS
	A7	OPERATIONS FACILITY BUILDING ROOF PLAN
	A8	OPERATIONS FACILITY BUILDING ROOF FRAMING PLAN
	A9	ROOF DETAILS
	A10	ENTRY CANOPIES PLAN, ELEVS. ENLARGED PLANS & DETAILS
	A11	EXTERIOR DETAILS, PARTIAL PLANS & ELEVATIONS SECTION ELEVATIONS & DETAILS
	A11.1	INTERIOR COLUMN ENCLOSURE DETAILS
	A12	WINDOW TYPES, SCHEDULE & DETAILS
	A13	DOOR TYPES, SCHEDULE & DETAILS
	A14	OPERATIONS FACILITY BLDG. ENLARGED PLANS & INTERIOR ELEVATIONS WALL SECTION
	A15	OPERATIONS FACILITY BLDG. ENLARGED PLANS & INT. ELEVS.
	A16	TYP. RESTROOM ENLARGED PLAN & INTERIOR ELEVATIONS AND ACCESSORIES SCHEDULES
	A17	RESTROOMS ENLARGED PLANS AND INTERIOR ELEVATIONS AND ACCESSORIES SCHEDULES
	A18	OPERATIONS FACILITY BLDG. REFLECTED CEILING PLAN
	A19	TIRE STORAGE PLANS, EXT. ELEVATIONS, BLDG. SECTIONS WALL SECTIONS & DETAILS
	A20	BUS WASH PLANS, EXTERIOR ELEVATIONS AND BLDG. SECTIONS
	A21	BUS WASH WALL SECTIONS AND DETAILS
	A22	GENERATOR BUILDING PLANS, EXTERIOR ELEVATIONS SECTION, NOTES, DETAIL & CONNECTOR SCHEDULE
	A23	PUMP HOUSE FLOOR PLAN, FOUNDATION & ROOF PLAN, ELEVS. SECTION, DETAIL AND SCHEDULES
	A24	OIL CONTAINMENT BLDG PLANS ELEVATIONS, SECTIONS, DETAILS AND SCHEDULE
MECHANICAL	M1	MECHANICAL SCHEDULES AND NOTES
	M2	MECHANICAL FLOOR PLANS
	M3	MECHANICAL DETAILS
	M4	MECHANICAL FLOOR PLAN
	M5	MECHANICAL DETAILS
ELECTRICAL	E1	OPERATIONS FACILITY ELECTRICAL SITE PLAN/ PHOTOMETRIC PLAN
	E2	OPERATIONS FACILITY ELECTRICAL RCP PLAN
	E3	OPERATIONS FACILITY ELECTRICAL NOTES AND SCHEDULES
	E3.1	OPERATIONS FACILITY ELECTRICAL NOTES AND SCHEDULES
	E4	OPERATIONS FACILITY ELECTRICAL LEGEND AND DETAILS
	E5	OPERATIONS FACILITY ELECTRICAL LIGHTING PLAN
	E5.1	SERVICE BUILDINGS ELECTRICAL POWER/LIGHTING PLANS
	E6	OPERATIONS FACILITY ELECTRICAL POWER PLAN
	E7	OPERATIONS FACILITY ELECTRICAL FIRE ALARM PLAN MAIN BLDG.
PLUMBING	P1	PLUMBING SCHEDULES, LEGEND, DETAILS AND NOTES
	P2	OPERATIONS FACILITY BLDG. PLUMBING FLOOR PLAN
	P3	ENLARGED PLUMBING PLANS AND RISER DIAGRAMS
	P4	BUS WASH FACILITY, Sseptic TANK, DRAINFIELD PLANS, NOTES AND DETAILS
	P5	DOMESTIC WATER SITE PIPING PLAN AND DETAILS
FIRE PROTECTION	FP1	FIRE PROTECTION SITE PLAN, DESIGN NOTES AND DETAILS
	FP2	FIRE PROTECTION PLAN

3 REVISION-3 : DATE: 5-22-2018
REMOVED FS1, FS2 FUEL STATION SHEETS FROM THE INDEX

3



FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FOUNDATION NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR FLOOR SLOPES AND DRAINS.
2. SEE PLUMBING DRAWINGS FOR UNDER FLOOR PLUMBING.
3. F(.X (-1'-4) DENOTES FOOTING SIZE PER FOOTING SCHEDULE THIS SHEET AND T.O. FOOTING ELEVATION RELATIVE TO ELEV. 0'-0".
4. P-X INDICATES COLUMN PIER REQUIRED PER DETAIL 6/S4.
5. ALL FOOTINGS SHALL BE CENTERED UNDER COLUMNS OR GROUPS OF COLUMNS AND WALL CENTERLINES U.O.N. ON PLAN.
6. CONTINUOUS FOOTINGS SHALL BE INTEGRAL WITH SPREAD FOOTINGS. CONTINUOUS FOOTING REINFORCING SHALL BE CONTINUOUS THROUGH SPREAD FOOTINGS.
7. SLAB-ON-GRADE CONSTRUCTION/CONTROL JOINTS TO BE LOCATED AS INDICATED ON PLAN. JOINT SPACING IS NOT TO EXCEED 15'-0" O/C. SLAB JOINT DETAILS PER 1/S2.
4. SAWN JOINTS IN SLABS-ON-GRADE SHALL SHALL BE CUT AS SOON AS POSSIBLE AFTER THE CONCRETE HARDENS. JOINTS CAN BE CUT WITH A POWER BLADE WITHIN 4 TO 12 HOURS AFTER THE SLAB HAS BEEN PLACED AND FINISHED. JOINTS MUST BE CUT AS SOON AS THE CONCRETE IS FIRM ENOUGH NOT TO BE TORN OR DAMAGED BY THE BLADE. THE CONCRETE IS HARD ENOUGH WHEN THE BLADE DOES NOT DISLODGE ANY AGGREGATE AND WHEN THE EDGES OF THE CUT DO NOT RAVEL.
8. CONTRACTOR SHALL PROPERLY CHAIR WELDED WIRE REINFORCING (WWR) WHILE CASTING THE SLAB-ON-GRADE. PULL REINFORCING UP BETWEEN SUPPORTS AS REQUIRED TO PROVIDE CLEARANCE TO TOP OF SLAB AS SHOWN IN THE DETAILS. MINIMUM SIDE AND END LAP OF OF MESH SHALL BE 8" MINIMUM.
9. SEE DETAIL 8/S2 FOR ANCHOR BOLT DETAILS. ANCHOR BOLT SIZES AND LAYOUTS PER METAL BUILDING MANUFACTURER.
10. SEE DETAIL 12/S2 FOR HAIRPIN DETAIL.
11. SEE CONCRETE REBAR LAP SPLICE TABLE THIS SHEET.
12. HIGHER ELEVATION CONTINUOUS WALL FOOTINGS THAT ABUT THE CISTERN SHALL BE DOWELED TO THE CISTERN WALL WITH 2#5x4'-0" AT ELEVATION OF THE CONTINUOUS FOOTING REINFORCING. DRILL INTO CISTERN WALL 6" & EPOXY GROUT.

CISTERN NOTES:

1. WELDED WIRE REINFORCING IN CISTERN BASE SLAB IS TO BE SUPPLIED IN FLAT SHEETS. ROLL REINFORCING IS NOT ALLOWED. REINFORCING MUST BE PROPERLY CHAIRED AND SECURED IN POSITIONED AS SHOWN IN DETAILS PRIOR TO POURING CONCRETE.
2. REINFORCING IN STRUCTURED SLAB OVER THE CISTERN SHALL BE CHAIRED AT THE PROPER HEIGHT TO PROVIDE BAR PLACEMENT AS SHOWN IN DETAILS. THE REINFORCING SHALL BE PROPERLY TIED SO AS TO NOT BE DISPLACED DURING CONCRETE PLACEMENT. LIFTING THE REINFORCING DURING CONCRETE PLACEMENT IS STRICTLY FORBIDDEN.
3. PROVIDE 24"x24" CORNER BARS TO MATCH HORIZONTAL WALL REINFORCING AT ALL WALL CORNERS AND INTERSECTIONS.
4. HORIZONTAL WALL REINFORCING IS TO BE CONTINUOUS THROUGH COLUMN PIERS.
5. PROVIDE WATER STOPS PER ARCHITECTURAL DRAWINGS.
6. ADD 1#4 ADDITIONAL FULL LENGTH SCHEDULED SLAB T&B BAR ALL FOUR SIDES OF ACCESS HATCH.

NOTE: WINDOW AND DOOR SIZES SHOWN ARE NOMINAL. CONFIRM MASONRY ROUGH OPENING REQUIRED BASED ON UNITS PURCHASED. MAINTAIN CENTER OF WINDOW AND DOOR LOCATIONS.

REINFORCED MASONRY NOTES

A. ALL MASONRY CONSTRUCTION SHALL COMPLY WITH ACI 530-13 "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES AND ACI 530.1-13 "SPECIFICATIONS FOR MASONRY STRUCTURES".
B. ALL VERTICAL WALL REINFORCING BARS ARE TO BE DOWELED TO THE FOUNDATION AS SHOWN IN DETAILS. LAP VERTICAL REINFORCING WITH WIRE TIES AS FOLLOWS:
   #6 BARS - 40" MINIMUM LAP
C. WHERE THE FOLLOWING CONDITIONS ARE MET, PLACE GROUT IN LIFTS NOT EXCEEDING 12'-0":
   a. THE MASONRY HAS CURED FOR AT LEAST FOUR HOURS.
   b. GROUT SLUMP IS MAINTAINED BETWEEN 10 AND 11 INCHES.
   c. NO INTERMEDIATE BOND BEAMS ARE PLACED BETWEEN THE TOP AND THE BOTTOM OF THE POUR HEIGHT.
   OTHERWISE, PLACE GROUT IN LIFTS NOT EXCEEDING 5'-0". PROVIDE CLEANOUTS IN THE BOTTOM COURSE OF MASONRY FOR EACH GROUT POUR WHEN THE GROUT POUR HEIGHT EXCEEDS 5 FEET. DO NOT BEGIN PLACEMENT OF GROUT UNTIL ALIGNMENT OF CELLS IS INSPECTED AND APPROVED BY THE CONTRACTOR.
D. CONSOLIDATE GROUT AT THE TIME OF PLACEMENT. CONSOLIDATE GROUT POURS 12" OR LESS IN HEIGHT BY MECHANICAL VIBRATION OR BY PUDDLING. CONSOLIDATE GROUT POURS EXCEEDING 12" IN HEIGHT BY MECHANICAL VIBRATION, AND RECONSOLIDATE BY MECHANICAL VIBRATION AFTER INITIAL WATER LOSS AND SETTLEMENT HAS OCCURRED.
E. ALL CELLS OF ALL CMU WALLS BELOW FINISHED FLOOR SHALL BE FILLED SOLID.
F. PROVIDE #9 GALVANIZED HORIZONTAL JOINT REINFORCING IN WALLS AT 16" O.C. VERTICALLY UNLESS OTHERWISE NOTED. LAP JOINT REINFORCEMENT 12" MINIMUM.
G. PROVIDE VERTICAL CONTROL JOINTS AT 24'-0" O.C. MAXIMUM. SEE CONTROL JOINT DETAIL 11/S3.
H. PROVIDE HORIZONTAL JOINT REINFORCEMENT AT 32" O.C. ACROSS VERTICAL CONTROL JOINTS IN WALLS. TOP AND BOTTOM REINFORCEMENT IN BOND/TIE BEAMS SHALL BE CONTINUOUS ACROSS CONTROL JOINTS.
I. PROVIDE VERTICAL REINFORCING IN CMU WALLS AS FOLLOWS:
   a. PROVIDE FILLED CELLS WITH 1-#6 VERTICAL AT LOCATIONS SHOWN ON PLAN THUS ● FOR FULL STORY HEIGHT.
   b. PROVIDE 3-#6 BARS VERTICAL MINIMUM AT ALL CORNERS, 2-#6 VERTICAL AT INTERSECTIONS AND 1-#6 EACH SIDE OF CONTROL JOINTS FOR FULL HEIGHT OF WALL. SEE DETS. 9 & 10/S3.
   c. ADDITIONALLY, PROVIDE 1-#6@32" O.C. IN VERTICAL FILLED CELLS BETWEEN REINFORCED CELLS DESCRIBED ABOVE, FOR FULL HEIGHT OF WALL.
J. CENTER ALL VERTICAL REINFORCING AT CENTER OF THE WALL THICKNESS, WITHIN A TOLERANCE OF PLUS/MINUS ½". VERTICAL REINFORCEMENT SHALL BE HELD IN POSITION TO PREVENT DISPLACEMENT BEYOND THE TOLERANCE ALLOWED.
K. ALL REINFORCED HOLLOW UNIT MASONRY SHALL BE BUILT TO PRESERVE THE UNOBSTRUCTED VERTICAL CONTINUITY OF THE CELL TO BE FILLED. WALL FACES AND CROSS WEBS FORMING SUCH CELLS TO BE FILLED SHALL BE FULLY BEDDED IN MORTAR TO PREVENT LEAKAGE OF GROUT. ALL HEAD (OR END) JOINTS SHALL BE SOLIDLY FILLED WITH MORTAR FOR A DISTANCE IN FROM THE FACE OF THE WALL OR UNIT NOT LESS THAN THE THICKNESS OF THE LONGITUDINAL FACE SHELLS.
L. VERICAL CELLS TO BE FILLED SHALL AVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED, CONTINUOUS, VERTICAL CELL MEASURING NOT LESS THAN 3" X 3".
M. WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER, HORIZONTAL CONSTRUCTION JOINTS SHALL BE FORMED BY STOPPING THE POUR OF GROUT LESS THAN ½" BELOW THE TOP OF THE UPPERMOST UNIT GROUTED.
N. WHERE LINTELS BEAR ON MASONRY WALLS, THEY SHALL BEAR ON EITHER A BOND BEAM COURSE OR CORES GROUTED SOLID, ALL LINTELS SHALL HAVE AT LEAST 8" OF BEARING AT EACH END UNLESS OTHERWISE NOTED. SEE MASONRY LINTEL SCHEDULE ON SHEET S3.
O. FILL ALL CELLS BELOW GRADE SOLID.
P. PROVIDE AND INSTALL BRACING THAT WILL ASSURE STABILITY OF MASONRY DURING CONSTRUCTION.

METAL BUILDING NOTES:

A. PROVIDE WIDE-FLANGE GIRTS FOR MASONRY WALL SUPPORT AS FOLLOWS. ALL ELEVATIONS ARE IN REFERENCE TO OFFICE FINISHED FLOOR ELEVATION 0'-0":
   a. GRIDS A & D FROM GRID 2 TO GRID 8 - ELEVATION +11'-4".
   b. GRIDS A' & D FROM GRID 1 TO GRID 2 - ELEVATION +13'-8".
   c. GRID 1 FROM GRID A' TO D - ELEVATION +11'-0", AND FROM GRID B TO GRID C ONLY - ELEVATION +17'-4".
   d. GRIDS 2 & 8 FROM GRID A TO GRID D - ELEVATION +11'-4", AND FROM GRID B TO GRID C ONLY - ELEVATION +17'-4".
   e. GRID 4 FROM GRID E TO GRID J - ELEVATION +19'-4".
   f. GRIDS 4 & 7 FROM GRID D TO GRID E - ELEVATION +11'-4".
   g. GRID 7 FROM GRID E TO GRID J - ELEVATION +22'-0".
   h. GRID J FOR GRID 4 TO GRID 7 - ELEVATION +10'-8", AND FROM GRID 5 TO GRID 7 ONLY - ELEVATION +16'-8".
B. MASONRY CONNECTION TO WIDE-FLANGE GIRTS NEAR EAVE PER DETAILS 1, 6, AND 7/S3. CONNECT MASONRY TO LOWER WIDE-FLANGE GIRTS PER DETAILS 14 & 15/S3.
C. PROVIDE STANDARD GIRTS AT HIGH METAL WALL AT GRID E AS REQUIRED.
D. ANCHOR BOLT EMBEDMENT REQUIRED FOR VARIOUS SIZE ANCHOR BOLTS PER DETAIL 8/S2. SEE METAL BUILDING DRAWINGS FOR ANCHOR BOLT LAYOUTS AND SIZES REQUIRED.
E. METAL BUILDING DESIGN IS TO ACCOUNT FOR THE FOLLOWING SPECIAL LOADS, IN ADDITION TO COLLATERAL LOADS SPECIFIED IN SHEET S2 NOTES:
   a. 2000 LB. HOIST IN BUS MAINTENANCE AREA - SEE ARCHITECTURAL DRAWINGS.
   b. MAKE STRUCTURAL DESIGN ALLOWANCES FOR POSSIBLE SOLAR PANEL INSTALLATIONS IN FUTURE DEVELOPMENT PHASE AT BUS MAINTENANCE ROOF. SOLAR PANEL INFORMATION TO BE PROVIDED BY OWNER.
   c. MECHANICAL AIR HANDLING UNITS - SEE MECHANICAL DRAWINGS.
F. METAL BUILDING COLUMN SETBACKS FROM OUTSIDE FACE OF CMU AS SHOWN MUST BE MAINTAINED.

TENSION LAP SPLICE LENGTHS, Ld (IN)
GRADE 60 UNCOATED BARS
3000 PSI; NORMAL WEIGHT CONCRETE

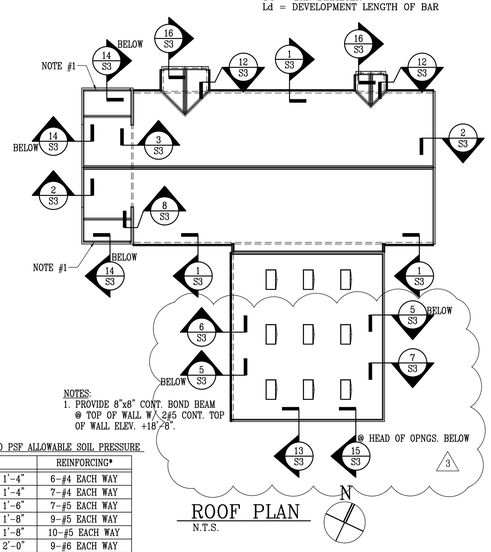
BAR SIZE	LAP LENGTH PER SPACING AND COVER CASE			
	CASE 1		CASE 2	
	•TOP BARS	OTHER BARS	•TOP BARS	OTHER BARS
#3	28	22	42	32
#4	37	29	56	43
#5	47	36	70	54
#6	56	43	84	64
#7	81	63	122	94
#8	93	72	139	107

CASE 1:
CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN Db, CLEAR COVER NOT LESS THAN Db, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN THE CODE MINIMUM.
OR
CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2 Db AND CLEAR COVER NOT LESS THAN Db.

CASE 2:
ALL OTHER CASES.

• TOP BARS:
HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 IN. OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OF SPLICE.

Db = BAR DIAMETER
Ld = DEVELOPMENT LENGTH OF BAR



ROOF PLAN

N.T.S.

FOOTING SCHEDULE FOR 2000 PSF ALLOWABLE SOIL PRESSURE

SIZE	MARK	REINFORCING•
F3.0	3'-0" x 3'-0" x 1'-4"	6-#4 EACH WAY
F4.0	4'-0" x 4'-0" x 1'-4"	7-#4 EACH WAY
F5.5	5'-6" x 5'-6" x 1'-6"	7-#5 EACH WAY
F6.0	6'-0" x 6'-0" x 1'-8"	9-#5 EACH WAY
F6.5	6'-6" x 6'-6" x 1'-8"	10-#5 EACH WAY
F7.5	7'-6" x 7'-6" x 2'-0"	9-#6 EACH WAY
F9.5	9'-6" x 9'-6" x 2'-0"	9-#7 EACH WAY
CF2.0	2'-0" x 1'-0" x CONT.	2-#5 CONT. w/#3@36" TRANS.
RF12.0 x7.5	12'-0" x 7'-6" x 2'-0"	9#6 LW BOT. 15#6 SW BOT.
RF12.0 x9.5	12'-0" x 7'-6" x 2'-0"	9#7 LW BOT. 11#7 SW BOT.

• BOTTOM ONLY REINF. U.O.N.

IMPORTANT NOTE: FOOTING SIZES & ANCHOR BOLTS ARE PRELIMINARY AND MUST BE REVIEWED AND REVISED AS REQUIRED BASED ON FINAL METAL BUILDING REACTIONS.

3 REVISION-3: DATE: 5-29-2018
REMOVED 2ND 22'-0" MAINTENANCE BAY FROM THE NORTH AND SHIFTED EVERYTHING SOUTH OF THAT 22'-0" NORTH.

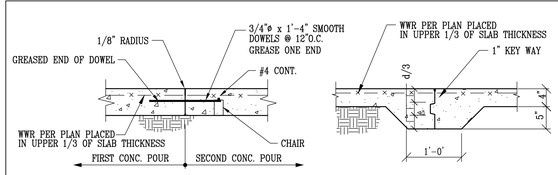
Steven E. Hutchins AIA Architects, Inc.
P.O. BOX 223493
CHRISTIANSTED, ST. CROIX
U.S. VIRGIN ISLANDS 00822
340-778-8898 FAX 340-778-7754

PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING

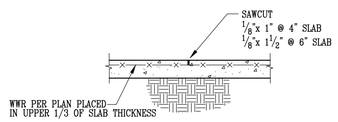
DATE: 08-04-17
DRAWN BY: RPH

SHEET NUMBER:
S1



NOTE:
REMOVE #4 BAR PRIOR TO SECOND CONCRETE POUR.

CONSTRUCTION JT. @ 4" SLAB

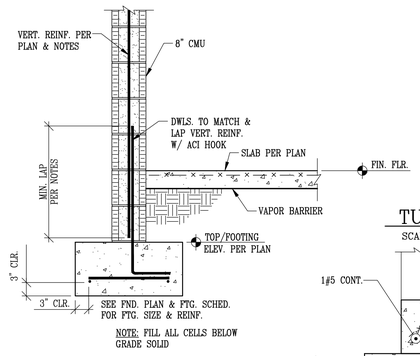


CONTROL JT.

CONSTRUCTION JT. @ 6" SLAB

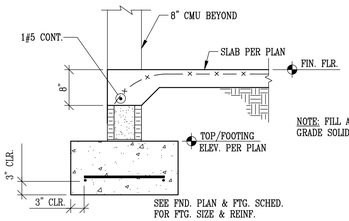
NOTE:
ALL SLAB JOINTS SHOWN ON PLAN ARE EITHER CONSTR. JOINTS OR CONTROL JOINTS, BASED ON LAYOUT OF SLAB POURS. SLABS TO BE STRIP POURED WITH CONSTR. JOINT EA. SIDE. ALL OTHER JOINTS TO BE SAWCUT CONTROL JOINTS.

SLAB JOINT DETAILS (1/S2)
SCALE: 3/4" = 1'-0"



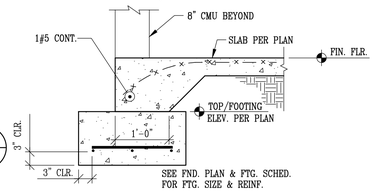
NOTE: FILL ALL CELLS BELOW GRADE SOLID

EXT. CMU FOOTING (2/S2)
SCALE: 3/4" = 1'-0"

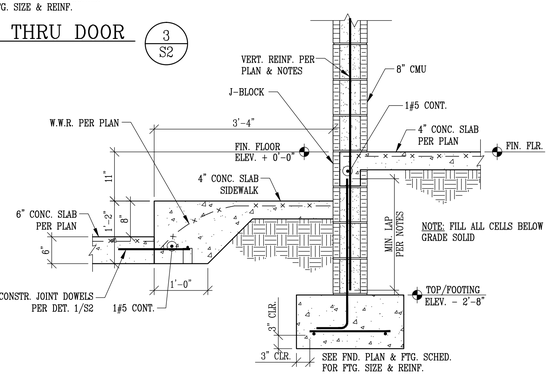


NOTE: FILL ALL CELLS BELOW GRADE SOLID

TURNED DOWN SLAB EDGE THRU DOOR (3/S2)
SCALE: 3/4" = 1'-0"

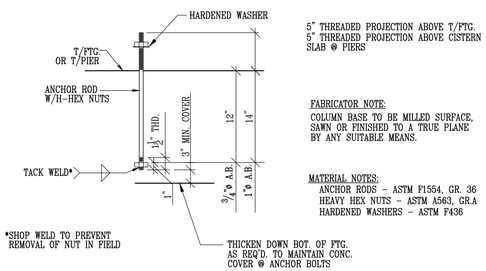


TURNED DOWN SLAB EDGE (4/S2)
SCALE: 3/4" = 1'-0"



NOTE: FILL ALL CELLS BELOW GRADE SOLID

TURNED DOWN SLAB EDGE @ STEP (5/S2)
SCALE: 3/4" = 1'-0"



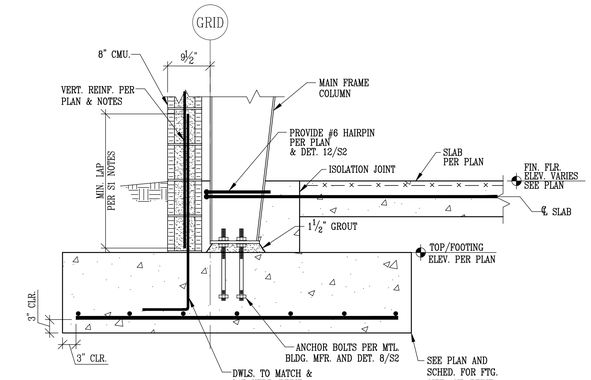
5" THREADED PROJECTION ABOVE T/FTG.
5" THREADED PROJECTION ABOVE CISTERN SLAB @ PIERS

FABRICATOR NOTE:
COLUMN BASE TO BE MILLED SURFACE, SAWN OR FINISHED TO A TRUE PLANE BY ANY SUITABLE MEANS.

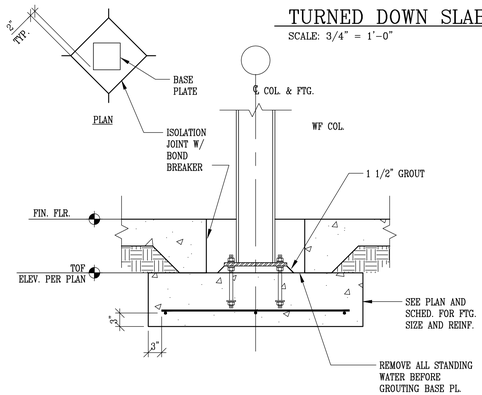
MATERIAL NOTES:
ANCHOR RODS - ASTM F1554, GR. 36
HEAVY HEX NUTS - ASTM A563, GR.A
HARDENED WASHERS - ASTM F436

*SHOP WELD TO PREVENT REMOVAL OF NUT IN FIELD

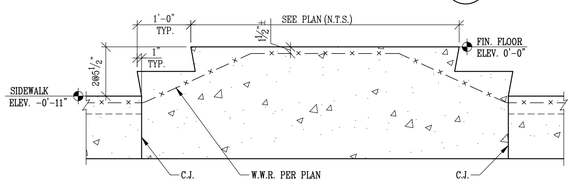
ANCHOR BOLT DETAIL (8/S2)
SCALE: 3/4" = 1'-0"



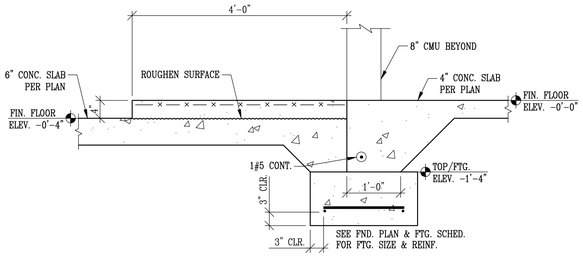
FOOTING @ MAIN FRAME COLUMN (6/S2)
SCALE: 3/4" = 1'-0"



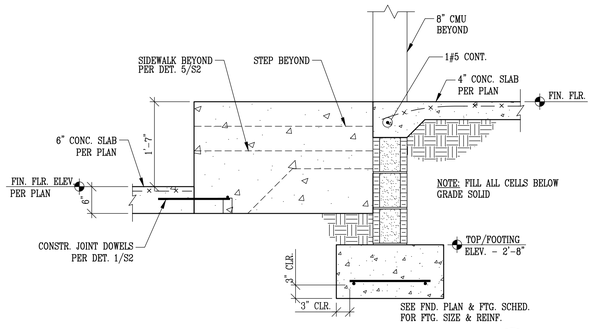
INT. COL. FTG. W/ ISOLATION JOINT (7/S2)
SCALE: 3/4" = 1'-0"



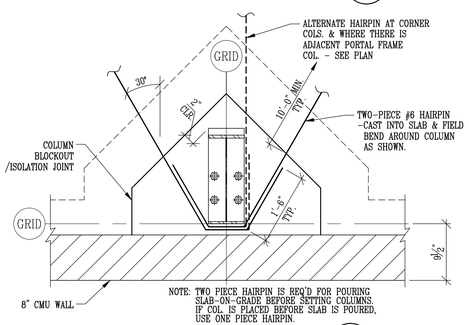
TURNED DOWN SLAB EDGE @ STEP (9/S2)
SCALE: 3/4" = 1'-0"



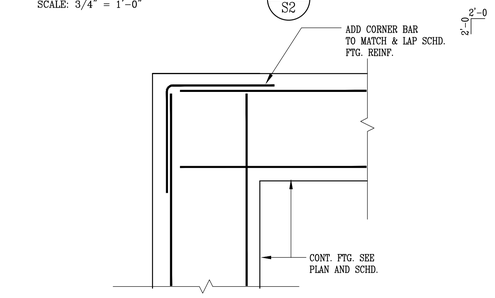
TURNED DOWN SLAB EDGE @ STEP (11/S2)
SCALE: 3/4" = 1'-0"



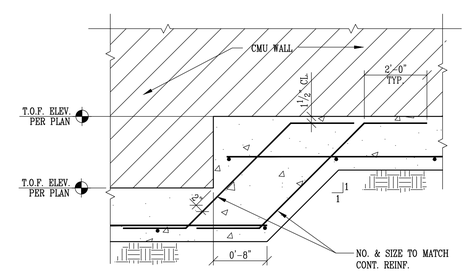
TURNED DOWN SLAB EDGE @ STEP (10/S2)
SCALE: 3/4" = 1'-0"



ELARGED PLAN DETAIL (12/S2)
AT COLUMN BLOCKOUT / HAIRPIN
SCALE: 1" = 1'-0"



CORNER REINFORCING @ CONT. FOOTING (13/S2)
SCALE: 3/4" = 1'-0"



FOOTING STEP DETAIL (14/S2)
SCALE: 3/4" = 1'-0"

GENERAL STRUCTURAL NOTES

METAL BUILDING DESIGN LOADS & CRITERIA

2015 INTERNATIONAL BUILDING CODE, ASCE/SEI 7-10,
ACI 318-14, ACI 530-13, AISC 360-10, AISC 341-10, AWS D1.1.

DESIGN LOADS

DEAD LOADS
ROOF DEAD LOAD ..... PER METAL BUILDING MANUFACTURER

ROOF COLLATERAL LOADS
BUS MAINTENANCE ..... 3 PSF
OFFICE ..... 8 PSF
ENTRY CANOPIES ..... 12 PSF

LIVE LOADS:

ROOF - TRIBUTARY AREA: 0 - 200 S.F. ..... 20 PSF.
201 - 600 S.F. ..... 24 -0.02xAREA ≥ 12 PSF.
OVER 600 S.F. ..... 12 PSF.

WIND LOADS
BASIC WIND SPEED: 165 MPH (ULTIMATE)
127.8 MPH (SERVICE)
RISK CATEGORY: II
CATEGORY: ENCLOSED BUILDING
EXPOSURE: C
INTERNAL PRESSURE COEFFICIENT: +0.18
DIRECTIONALITY FACTOR K_d: 0.85
BASIC VELOCITY PRESSURE, $q_h = 0.00256 K_h K_{zt} K_d V^2$ = 55.8 PSF BUS MAINTENANCE
= 53.0 PSF OFFICE/CANOPIES
WIND DESIGN PRESSURE, P, (PSF)
A. MAIN FORCE RESISTING SYSTEM: PER CODE

B.

AREA SQ. FT.	COMPONENTS & CLADDINGS - BUS MAINTENANCE (SERVICE LOADS) WALLS INT. ZONE ④	WALLS END ZONE ⑤	ROOF (SEE ASCE/SEI 7-10 FIGURE 30.4-2A) INT. ZONE ①	PERIMETER ②	CORNER ③	POSITIVE ALL ZONES
10	-38.6	-47.6	-39.5	-66.3	-99.8	+16.1
20	-37.0	-44.4	-38.5	-59.2	-82.6	+15.1
50	-34.8	-40.2	-37.2	-49.9	-60.0	+13.7
100	-33.2	-37.0	-36.2	-42.9	-42.9	+12.7
200	-31.6	-33.8	-36.2	-42.9	-42.9	+12.7
500	-29.5	-29.5	-36.2	-42.9	-42.9	+12.7

EDGE DISTANCE, a = 6.1 FT. MEAN ROOF HEIGHT = 24.5'

C.

AREA SQ. FT.	COMPONENTS & CLADDINGS - OFFICE/CANOPIES (SERVICE LOADS) WALLS INT. ZONE ④	WALLS END ZONE ⑤	ROOF (SEE ASCE/SEI 7-10 FIGURE 30.4-2B) INT. ZONE ①	PERIMETER ②	CORNER ③	POSITIVE ALL ZONES
10	-40.7	-50.2	-34.3	-59.8	-88.4	+21.6
20	-39.0	-46.9	-33.4	-55.0	-82.7	+19.7
50	-36.8	-42.4	-32.1	-48.7	-75.1	+17.2
100	-35.1	-39.0	-31.2	-43.9	-69.3	+15.3
200	-33.4	-35.6	-31.2	-43.9	-69.3	+15.3
500	-31.2	-31.2	-31.2	-43.9	-69.3	+15.3

EDGE DISTANCE, a = 6.1 FT. MEAN ROOF HEIGHT = 19.25'

NOTES:
1. FOR EFFECTIVE AREAS BETWEEN THOSE GIVEN ABOVE THE LOAD MAY BE INTERPOLATED, OTHERWISE CONSERVATIVELY USE THE LOAD ASSOCIATED WITH THE LOWER EFFECTIVE AREA.
2. PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE BUILDING SURFACES.
3. IF TRIBUTARY AREA ≥ 700 SQ. FT., MWFRS PRESSURE MAY BE USED.

SEISMIC LOADING CRITERIA:
ANNA'S HOPE, ST. CROIX, U.S.V.I.
LOCATION: 17d43m42s N (+17.7283d)
64d43m44s W (-64.7289d)
MCE SPECTRAL RESPONSE ACCELERATION: S_s = 74%g , S_1 = 23.2%g
DESIGN SPECTRAL ACCELERATION PARAMETERS: S_{MS} = 0.596 , S_{M1} = 0.299
OCCUPANCY CATEGORY: II
IMPORTANCE FACTOR (I) = 1.0
SEISMIC SITE CLASS = D
SEISMIC DESIGN CATAGORY = D
SESMIC FORCE RESISTING SYSTEM: ORDINARY STEEL MOMENT FRAMES
RESPONSE MODIFICATION COEFFICIENT (R) = 3.5

LOAD COMBINATIONS: PER CODE

DEFLECTION CRITERIA: THE METAL BUILDING AND ALL COMPONENTS SHALL MEET OR EXCEED ALL SERVICEABILITY CRITERIA AS SPECIFIED IN THE 2012 EDITION OF THE MBMA METAL BUILDINGS SYSTEMS MANUAL.

ALLOWABLE SOIL BEARING PRESSURE ..... 2000 PSF. (ASSUMED)

MATERIALS:
CONCRETE (NORMAL WEIGHT - 28 DAY COMPRESSIVE STRENGTH):
ALL CONCRETE UNLESS OTHERWISE NOTED ..... 3000 PSI
6" SLAB-ON-GRADE @ BUS ACCESS & BUS MAINTENANCE ... 4000 PSI
CONCRETE MASONRY ..... ASTM C90, f'm = 1500 PSI
MORTAR ..... ASTM C270, TYPE "M" OR "S"
MASONRY GROUT ..... ASTM C476
REINFORCING ..... ASTM A615, GRADE 60
WELDED WIRE FABRIC ..... ASTM A185
STRUCTURAL STEEL, U.O.N. ..... ASTM A36 OR ASTM A529
STEEL PIPE ..... ASTM A53, GRADE B, Fy = 35 KSI
STEEL TUBE ..... ASTM A500, GRADE B, Fy = 46 KSI
METAL BLDG. PLATE OR BAR STOCK ..... ASTM A529
STEEL ANGLES & PLATES..... ASTM A36
ANCHOR BOLTS ..... ASTM F1554, GR. 36
EXPANSION BOLTS ..... HILTI KWIK BOLT 3
HIGH STRENGTH BOLTS ..... ASTM A325
WELDS ..... AWS SERIES E60 OR E70
EPOXY GROUT ..... HILTI HIT-RE 500 V3 EPOXY ADHESIVE
EPOXY BOLTS ..... HILTI HAS-E THREADED ROD
DEFORMED BAR ANCHORS ..... ASTM A496 LOW CARBON

ABBREVIATIONS:
A.F.F. ..... ABOVE FINISHED FLOOR
C.J. ..... CONTROL JOINT OR CONSTRUCTION JOINT
CL ..... CENTER LINE
C.M.U. ..... CONCRETE MASONRY UNIT
D.B.A. ..... DEFORMED BAR ANCHOR
E.F. ..... EACH FACE
E.O.S. ..... EDGE OF SLAB
E.W. ..... EACH WAY
F.O.M. ..... FACE OF MASONRY
F.S. ..... FAR SIDE
G.O.L. ..... GAUGE OUTSTANDING LEG
H.C. ..... HOLLOW CORE
M.O. ..... MASONRY OPENING
N.S. ..... NEAR SIDE
P.T. ..... PRESSURE TREATED
T.O.F. ..... TOP OF FOOTING
T.O.J. ..... TOP OF JOIST
T.O.P. ..... TOP OF PIER
T.O.S. ..... TOP OF SLAB
T & B ..... TOP AND BOTTOM
U.O.N. ..... UNLESS OTHERWISE NOTED
W.P. ..... WORK POINT
W.W.R. ..... WELDED WIRE REINFORCING

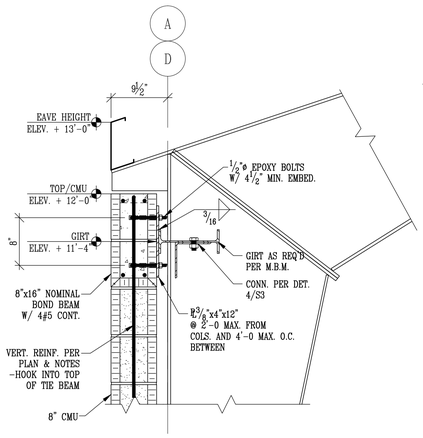
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340-778-8898 FAX 340-778-7754

PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING

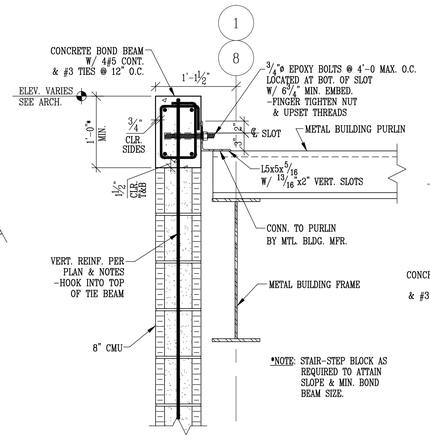
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DRAWN BY: RPH

SHEET NUMBER:
S2



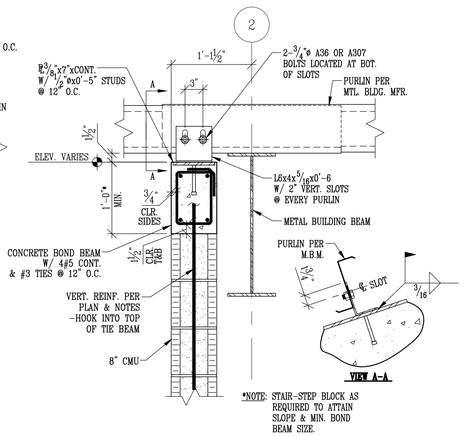
CMU CONN. AT OFFICE EAVE 1/S3

SCALE: 1" = 1'-0"



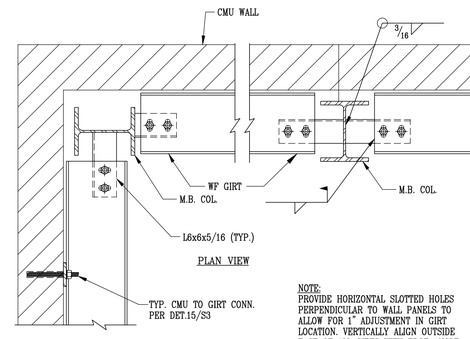
CMU CONN. AT OFFICE RAKE 2/S3

SCALE: 1" = 1'-0"



CMU CONN. TO METAL BLDG. 3/S3

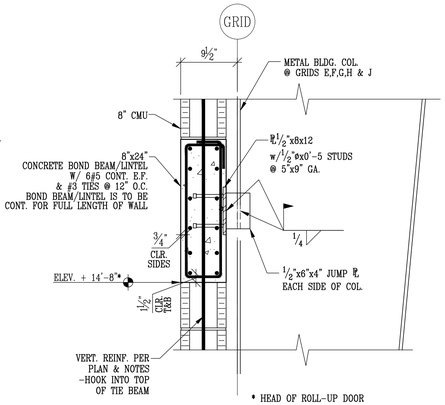
SCALE: 1" = 1'-0"



NOTE:
PROVIDE HORIZONTAL SLOTTED HOLES PERPENDICULAR TO WALL PANELS TO ALLOW FOR 1" ADJUSTMENT IN GIRT LOCATION. VERTICALLY ALIGN OUTSIDE FACE OF ALL GIRTS WITH EDGE ANGLE ABOVE. HAND TIGHTEN BOLTS, THEN WELD IN PLACE AS SHOWN OR USE A325SC BOLTS AS AN ALTERNATE.

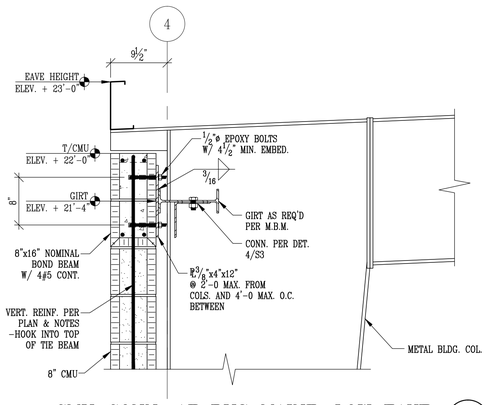
STEEL COL. CMU/GIRT CONNECTION 4/S3

SCALE: 1" = 1'-0"



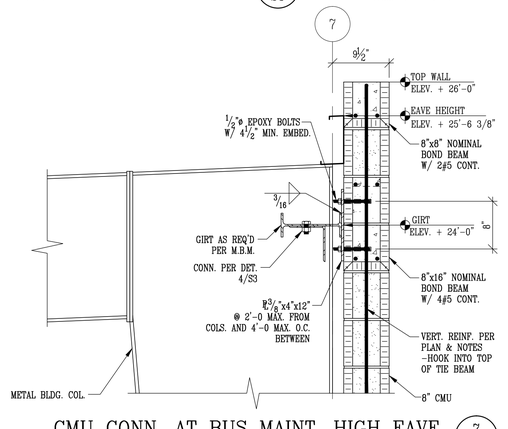
BOND BEAM CONN. @ MTL. BLDG. COL. 5/S3

SCALE: 1" = 1'-0"



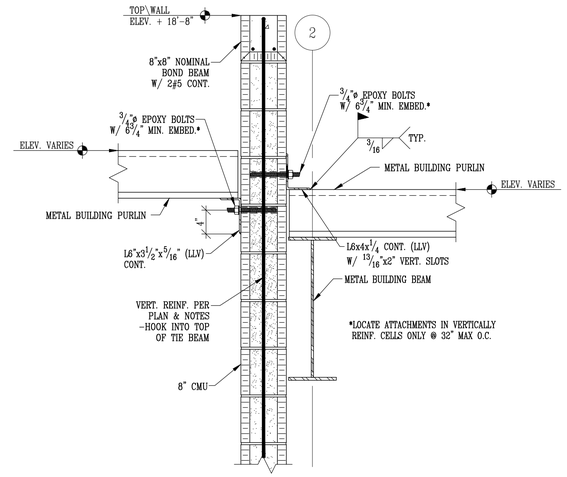
CMU CONN. AT BUS MAINT. LOW EAVE 6/S3

SCALE: 1" = 1'-0"



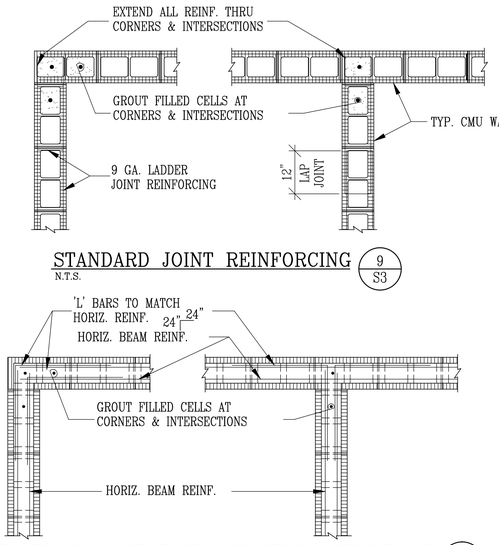
CMU CONN. AT BUS MAINT. HIGH EAVE 7/S3

SCALE: 1" = 1'-0"



CMU CONN. AT PARAPET 8/S3

SCALE: 1" = 1'-0"

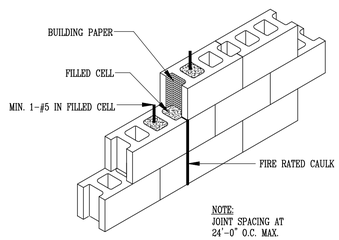


STANDARD JOINT REINFORCING 9/S3

N.T.S.

TYPICAL BOND OR DOUBLE KNOCKOUT BLOCK BEAMS 10/S3

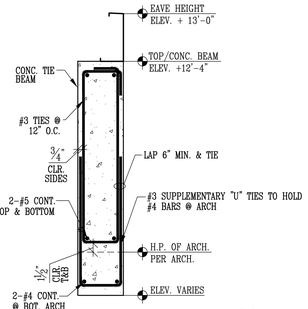
N.T.S.



NOTE:
JOINT SPACING AT 24'-0" O.C. MAX.

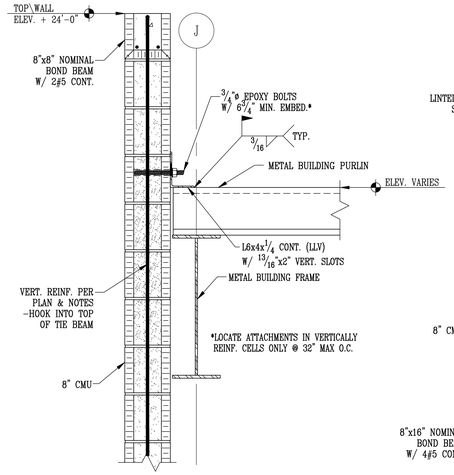
TYP. CMU WALL CONTROL JOINT 11/S3

N.T.S.



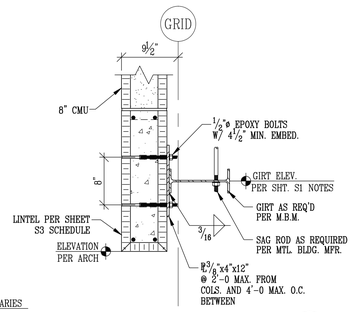
CONC. ARCH DETAIL 12/S3

SCALE: 1" = 1'-0"



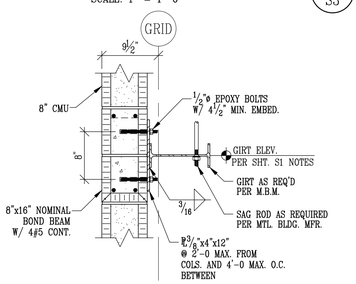
CMU CONN. AT PARAPET 13/S3

SCALE: 1" = 1'-0"



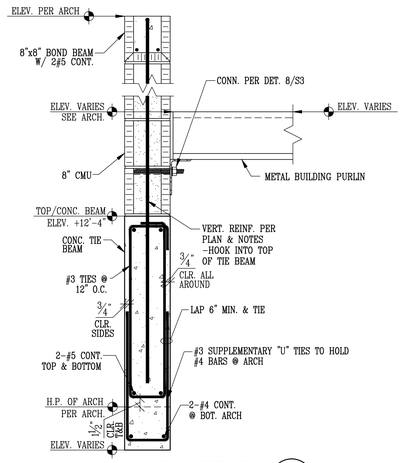
CMU CONN. TO GIRT 14/S3

SCALE: 1" = 1'-0"



TYP. CMU CONN. TO GIRT 15/S3

SCALE: 1" = 1'-0"



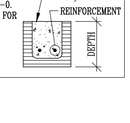
CONC. ARCH DETAIL 16/S3

SCALE: 1" = 1'-0"

8" CONCRETE MASONRY LINTEL SCHEDULE		
CLEAR SPAN	DEPTH	REINFORCEMENT
UP TO 6'-0"	8"	2-#5 BOTTOM
> 6'-0" TO 8'-0"	16"	2-#4 TOP & BOT *
> 8'-0" TO 12'-0"	16"	2-#5 TOP & BOT
> 12'-0" TO 17'-4"	24"	2-#5 TOP & BOT

* USE CONCRETE BEAM ONLY

NOTES:
1. PROVIDE 8" MIN. BEARING EACH END FOR SPANS ∠ 12'-0. PROVIDE 16" MIN. BEARING FOR SPANS > 12'-0.
2. REFER TO ARCH. & MECH. DWGS. FOR EXACT SIZE & LOCATION OF MASONRY OPENINGS.



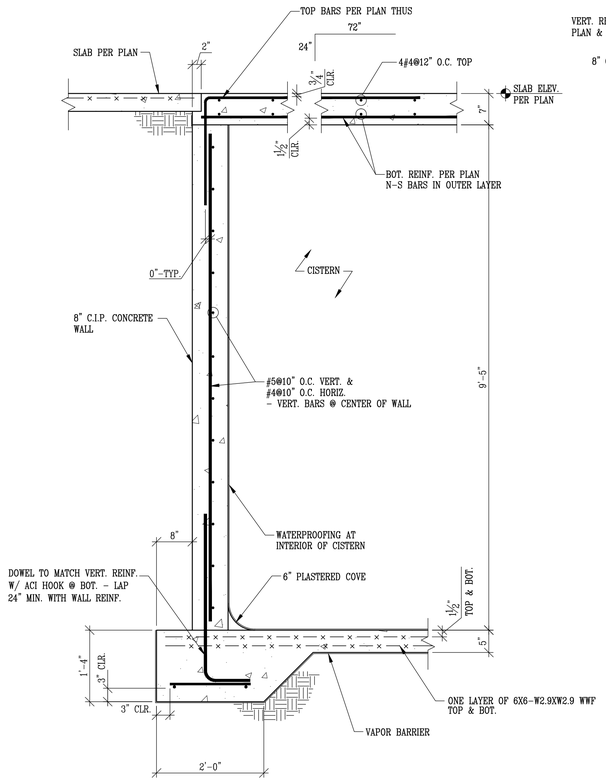
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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING

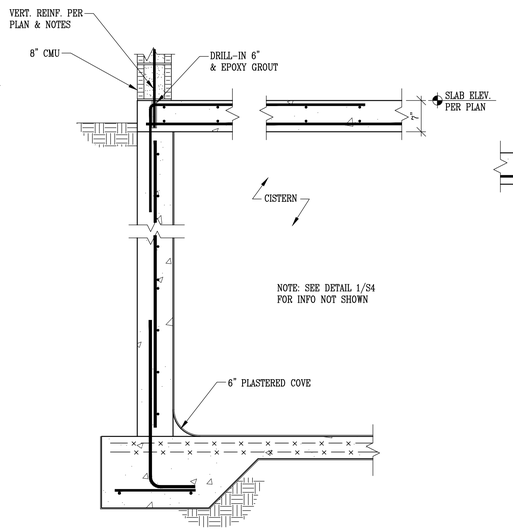
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SHEET NUMBER:
S3



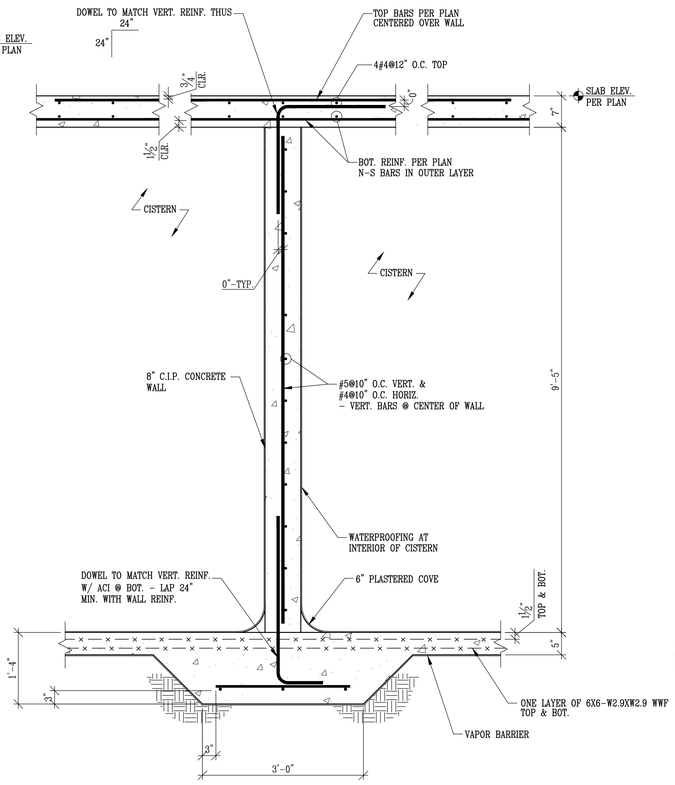
TYP. REINF. AT CISTERN (1/S4)

SCALE: 3/4" = 1'-0"



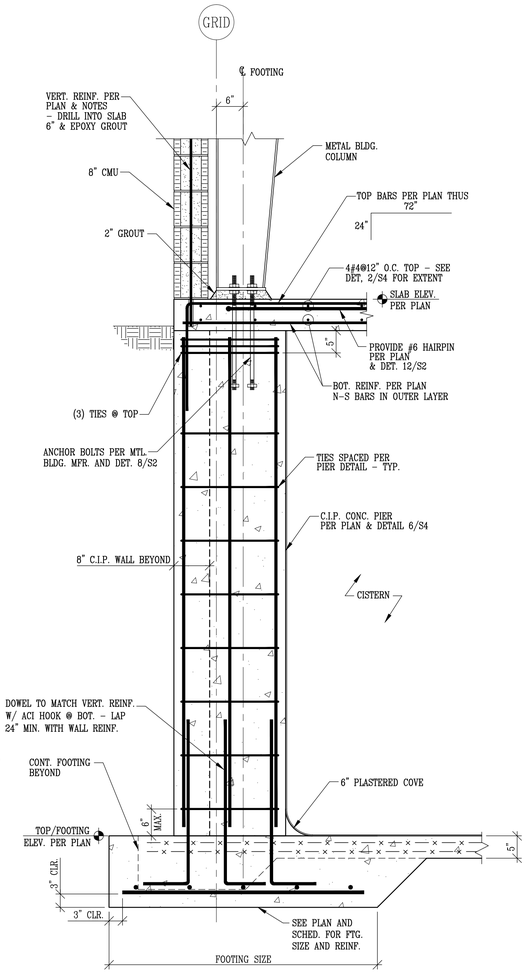
SECTION AT CISTERN (2/S4)

SCALE: 3/4" = 1'-0"



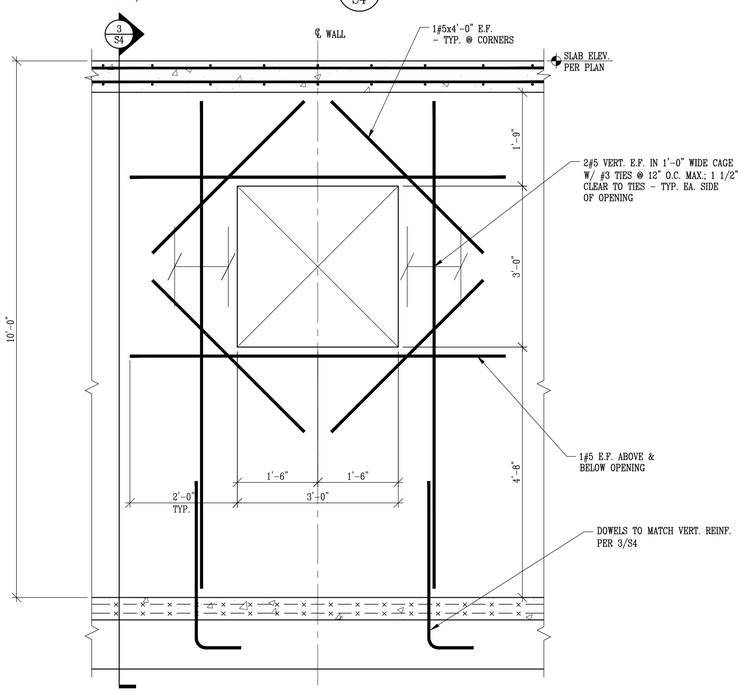
INTERIOR DIVIDER WALL @ CISTERN (3/S4)

SCALE: 3/4" = 1'-0"



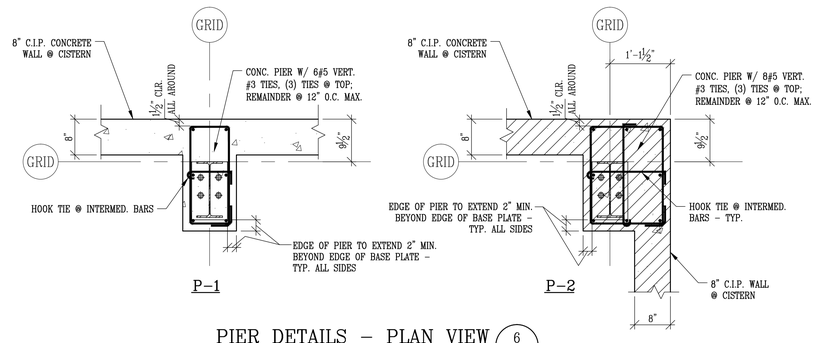
METAL BLDG. COL. W/ PIER @ CISTERN (4/S4)

SCALE: 3/4" = 1'-0"



ACCESS OPNG. IN DIVIDER WALL (5/S4)

SCALE: 3/4" = 1'-0"



PIER DETAILS - PLAN VIEW (6/S4)

SCALE: 3/4" = 1'-0"

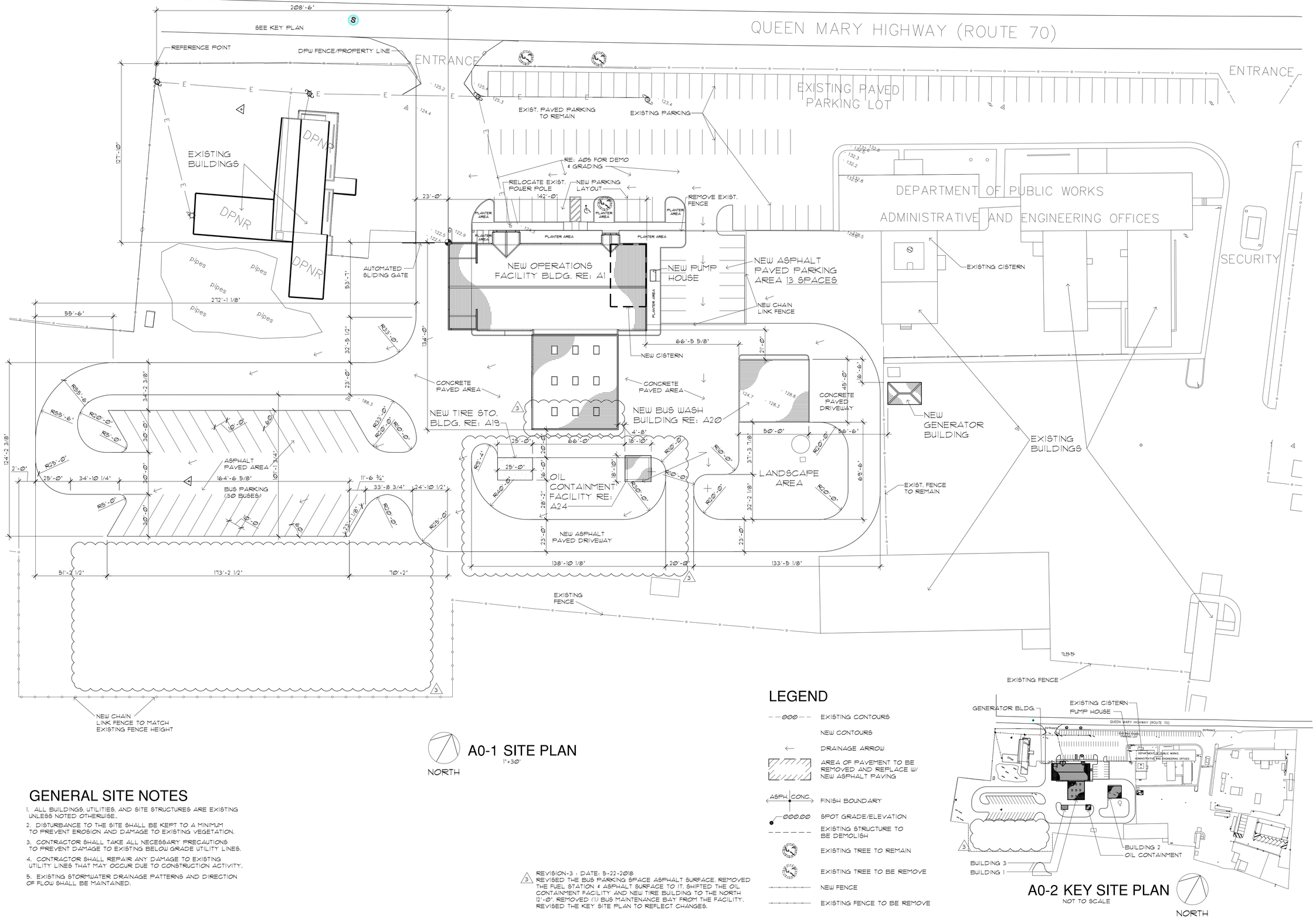
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DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING

DATE: 08-04-17
DRAWN BY: RPH

SHEET NUMBER:
S4



A0-1 SITE PLAN
1"=30'

NORTH

GENERAL SITE NOTES

1. ALL BUILDINGS, UTILITIES, AND SITE STRUCTURES ARE EXISTING UNLESS NOTED OTHERWISE..
2. DISTURBANCE TO THE SITE SHALL BE KEPT TO A MINIMUM TO PREVENT EROSION AND DAMAGE TO EXISTING VEGETATION.
3. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO EXISTING BELOW GRADE UTILITY LINES.
4. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES THAT MAY OCCUR DUE TO CONSTRUCTION ACTIVITY.
5. EXISTING STORMWATER DRAINAGE PATTERNS AND DIRECTION OF FLOW SHALL BE MAINTAINED.

3 REVISION-3 : DATE: 5-22-2018
REVISED THE BUS PARKING SPACE ASPHALT SURFACE. REMOVED THE FUEL STATION & ASPHALT SURFACE TO IT. SHIFTED THE OIL CONTAINMENT FACILITY AND NEW TIRE BUILDING TO THE NORTH 12'-0". REMOVED (1) BUS MAINTENANCE BAY FROM THE FACILITY. REVISED THE KEY SITE PLAN TO REFLECT CHANGES.

LEGEND

- EXISTING CONTOURS
- NEW CONTOURS
- DRAINAGE ARROW
- AREA OF PAVEMENT TO BE REMOVED AND REPLACE W/ NEW ASPHALT PAVING
- ASPH. CONC. FINISH BOUNDARY
- SPOT GRADE/ELEVATION
- EXISTING STRUCTURE TO BE DEMOLISH
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVE
- NEW FENCE
- EXISTING FENCE TO BE REMOVE

A0-2 KEY SITE PLAN
NOT TO SCALE

NORTH

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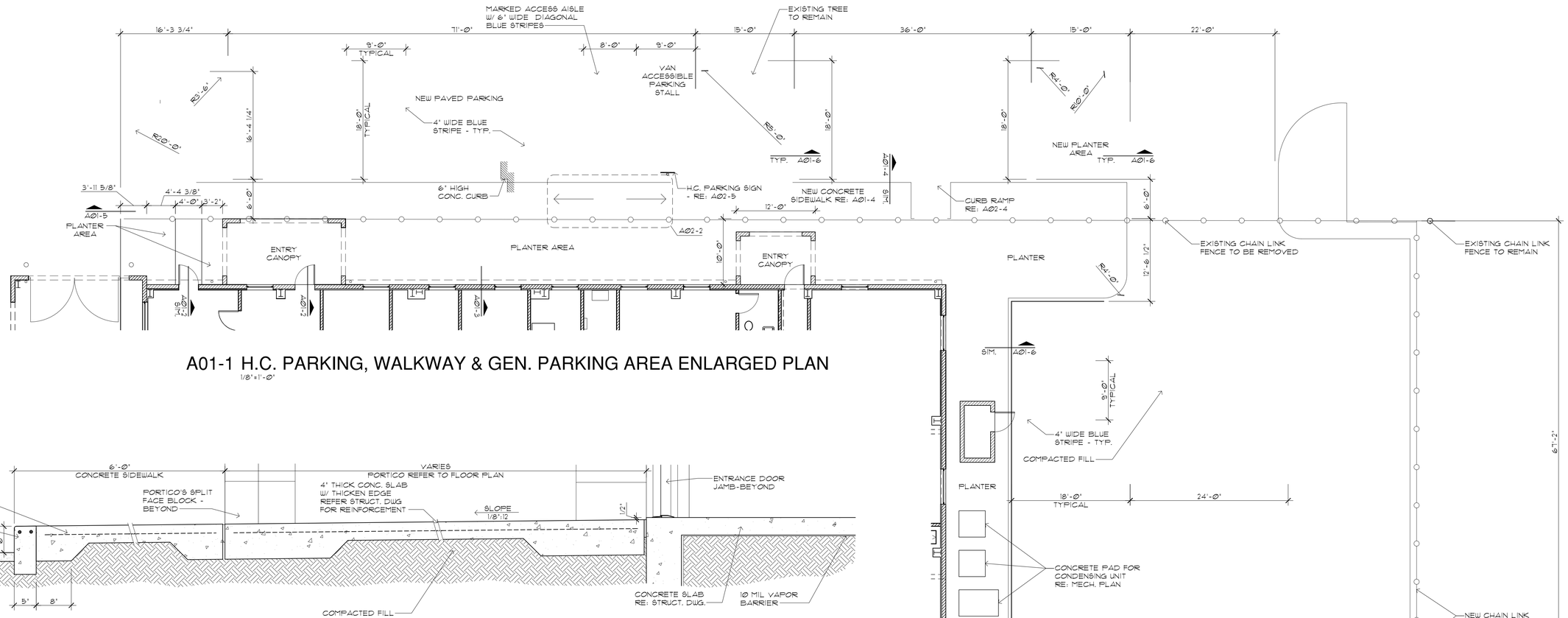
PROJECT:
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V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
SITE PLAN AND KEY SITE PLAN

DATE: 6-30-17
DRAWN BY: STAFF

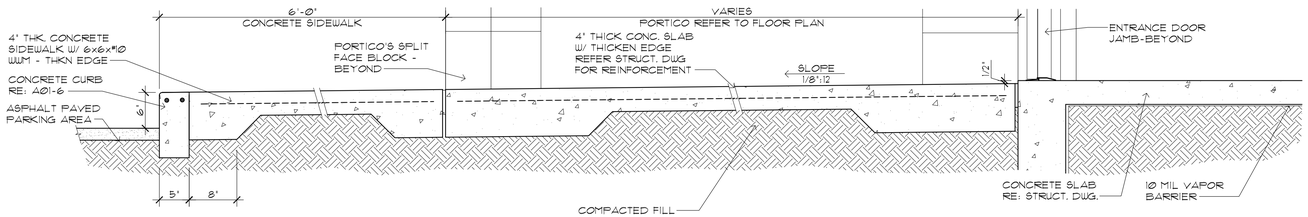
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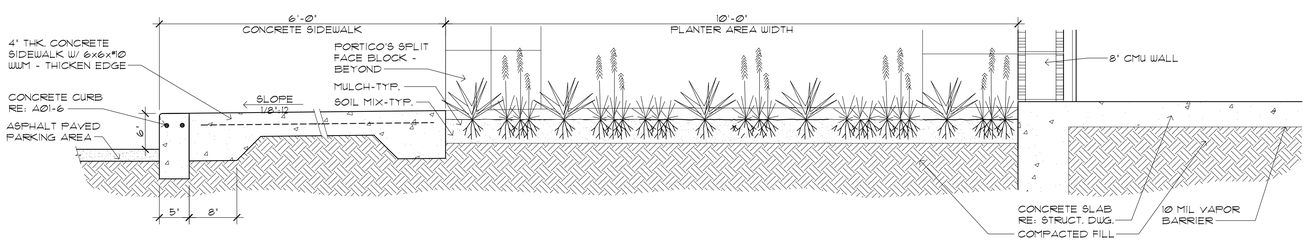
A01-1 H.C. PARKING, WALKWAY & GEN. PARKING AREA ENLARGED PLAN

1/8"=1'-Ø"



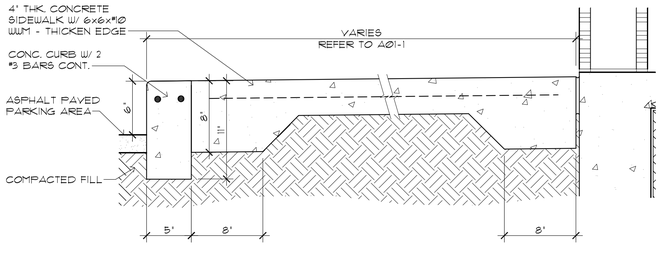
A01-2 SIDEWALK, PORTICO SECTION DETAIL

1"=1'-Ø"



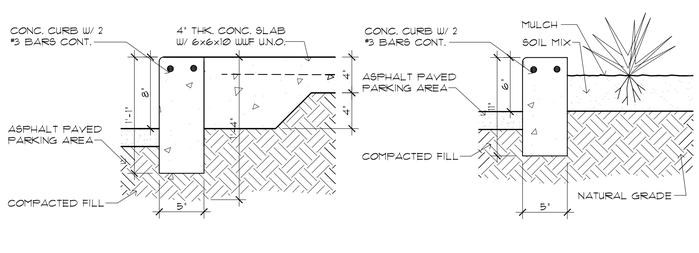
A01-3 SIDEWALK, PLANTERS & WALKWAY SECTION DETAIL

1"=1'-Ø"



A01-4 SIDEWALK DETAIL

1 1/2"=1'-Ø"

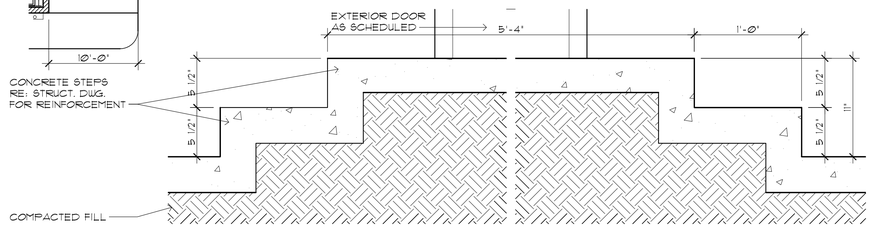


A01-5 CURB DETAIL

1 1/2"=1'-Ø"

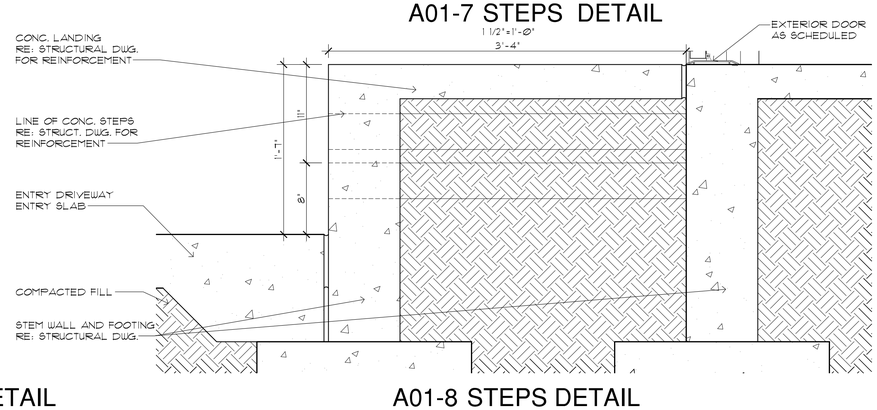
A01-6 CURB/PLANTER DETAIL

1 1/2"=1'-Ø"



A01-7 STEPS DETAIL

1 1/2"=1'-Ø"



A01-8 STEPS DETAIL

1 1/2"=1'-Ø"

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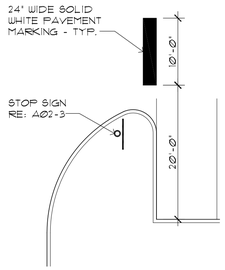
PROJECT:
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V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
SITE DETAILS
H.C. PARKING, WALKWAYS & GEN. PARKING ENLARGED PLAN

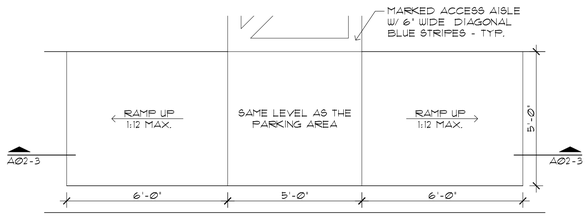
DATE: 6-30-17
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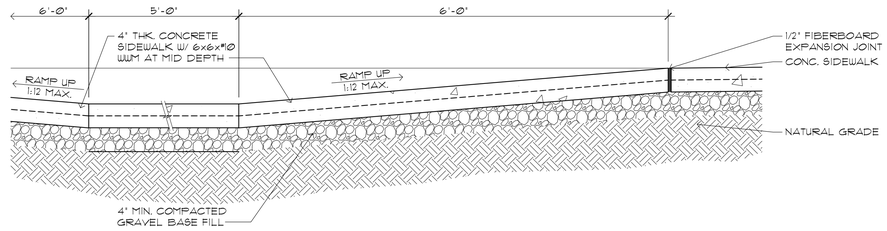
SHEET NUMBER:
A01



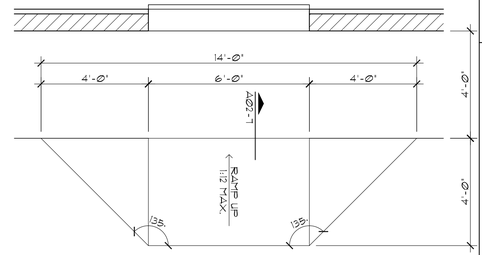
A02-1 STREET MARKING DET.
NOT TO SCALE



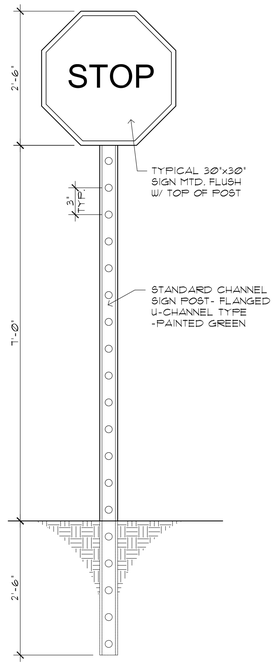
A02-2 RAMP/CURB ENLARGED PLAN
3/8"=1'-0"



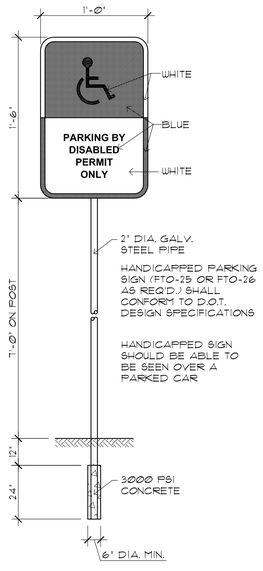
A02-3 RAMP/CURB DETAIL
1"=1'-0"



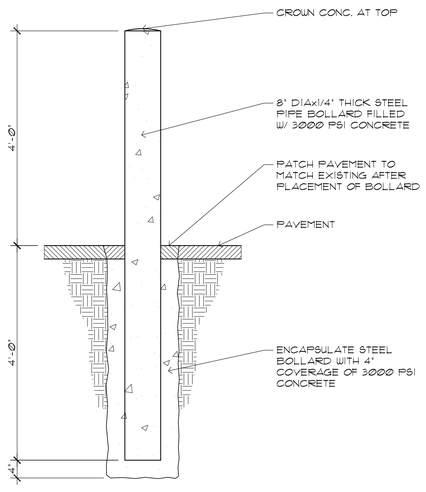
A02-6 RAMP/CURB ENLARGED PLAN
3/8"=1'-0"



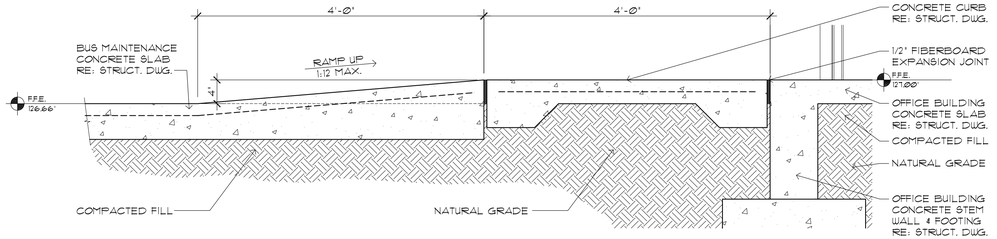
A02-4 STOP SIGN DETAIL
NOT TO SCALE



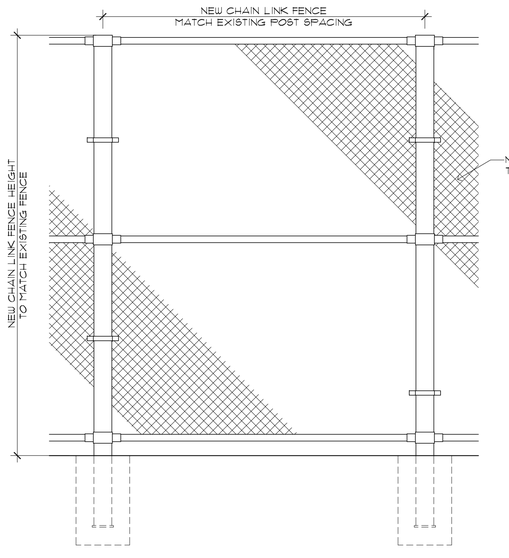
A02-5 H.C. PARKING SIGN
NOT TO SCALE



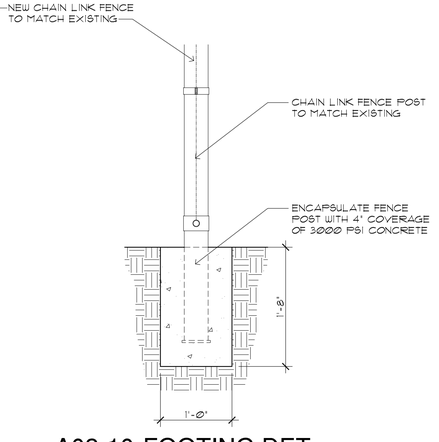
A02-8 BOLLARD DETAIL
3/4"=1'-0"



A02-7 RAMP/CURB DETAIL
1"=1'-0"



A02-9 CHAIN LINK FENCE ELEVATION
1"=1'-0"



A02-10 FOOTING DET.
1"=1'-0"

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
SITE DETAILS

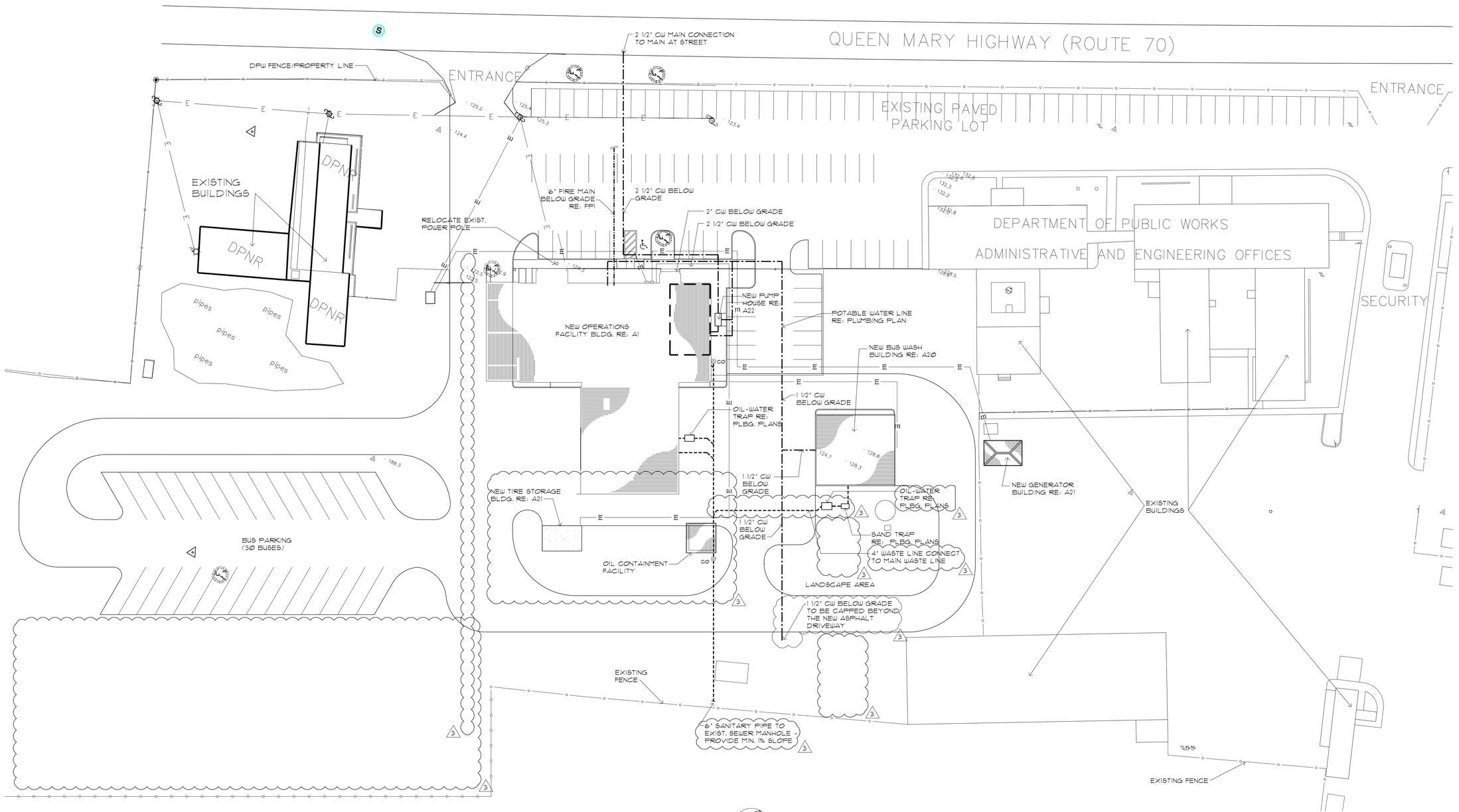
DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A02

GENERAL NOTES:

1. REFER TO PLUMBING PLANS FOR MORE PIPE SIZES AND DETAILS.



LEGEND

- POTABLE WATER PIPE
- SANITARY PIPE
- E — ELECTRICAL

NOTE:
REFER TO PLUMBING DRAWING FOR PLUMBING LAYOUT AND PIPE SCHEDULE AND ELECTRICAL DRAWING FOR SITE LIGHTING LAYOUT.

A03-1 SITE UTILITY PLAN

1"=30'

NORTH

3 REVISION-3 : DATE: 5-22-2018
REMOVED FUEL STATION AND ASPHALT SURFACE TO IT. REVISED BUS PARKING SURFACE. REMOVED ELECTRICAL TO FUEL STATION. ROUTED SAND TRAP & ADDED OIL-WATER TRAP @ BUS WASH WEST TO MAIN SANITARY LINE. REVISED 4" SANITARY PIPE TO EXIST SEWER MANHOLE TO BE 6". REMOVED (1) BUS MAINT. BAY FROM OPERATIONS FACILITY. SHIFTED OIL CONTAINMENT FACILITY AND NEW TIRE STORAGE BLDG NORTH 12'-Ø". REMOVED SEPTIC TANK. REMOVED DRAIN FIELD. CAPPED OFF 1 1/2" CW LINE BELOW GRADE BEYOND ASPHALT DRIVE.

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DRAWING INFORMATION:
SITE UTILITY PLAN

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A03

GATE PERFORMANCE SPECIFICATIONS

INSTALL LOOP DETECTORS AND EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURERS INSTALLATION SPECIFICATIONS

GATE A : ENTRANCE GATE-SLIDING GATE

A. GATES: PROVIDE ONE CANTILEVER SLIDING GATE WITH MOTOR AT MAIN ENTRANCE.

B. GOOSENECK: INSERT KEY FOB OR ENTER CORRECT NUMBER SEQUENCE FOR GATE TO SLIDE OPEN.

C. SAFETY LOOPS: THE GATES SHALL NOT CLOSE WHEN VEHICLE IS IN A GATE OPENING.

D. TIMER: CONTROLLER DEVICE SHALL ALLOW THE CLOSING TIME OF THE GATES TO BE ADJUSTED.

E. EMERGENCY: GATES OPENS TO EMERGENCY VEHICLES VIA KNOX KEY SWITCH LOCATED AT KEYPAD (COORDINATE WITH CITY OFFICIALS)

G. POWER FAILURE: GATES REMAINS IN OPEN POSITION WHEN POWER FAILS. GATE MOTOR SHALL HAVE MANUAL RELEASE.

GATE B & C : BUS DRIVEWAY-SWING GATE

A. GATES: PROVIDE TWO SWING GATES AT BUS DRIVEWAY ENTRANCE. ONE GATE WILL HAVE A MASTER MOTOR WITH THE SECOND GATE BEING A SLAVE MOTOR TO THE FIRST. BOTH B & C GATE WILL OPEN WHEN TRIGGERED.

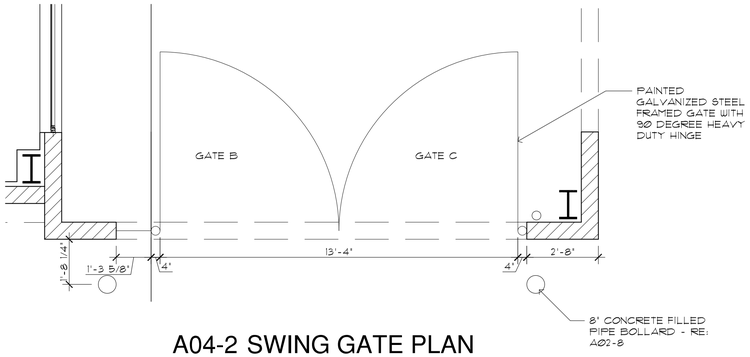
B. GOOSENECK: INSERT KEY FOB OR ENTER CORRECT NUMBER SEQUENCE AND BOTH GATES OPEN.

C. SAFETY LOOPS: THE GATES SHALL NOT CLOSE WHEN VEHICLE IS IN A GATE OPENING.

D. TIMER: CONTROLLER DEVICE SHALL ALLOW THE CLOSING TIME OF THE GATES TO BE ADJUSTED.

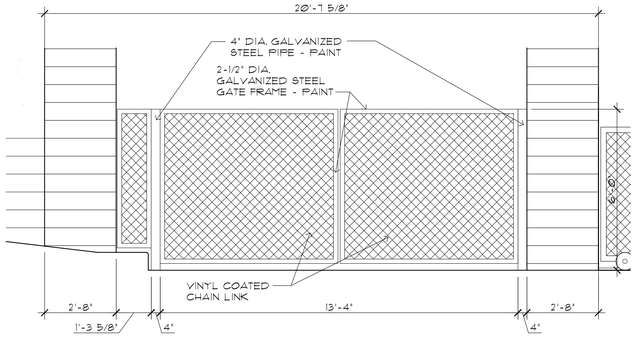
E. EMERGENCY: GATES OPENS TO EMERGENCY VEHICLES VIA KNOX KEY SWITCH LOCATED AT KEYPAD (COORDINATE WITH CITY OFFICIALS)

F. POWER FAILURE: GATES REMAINS IN OPEN POSITION WHEN POWER FAILS. GATE MOTOR SHALL HAVE MANUAL RELEASE.



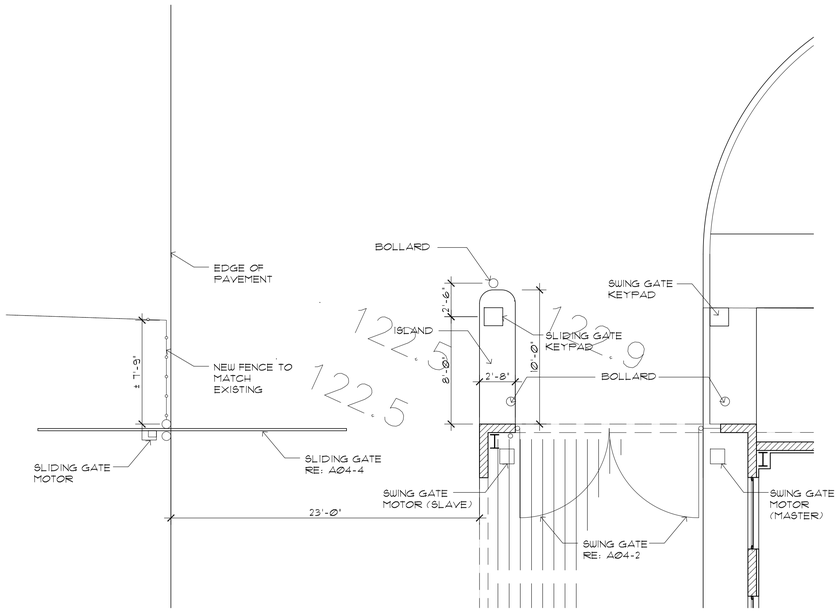
A04-2 SWING GATE PLAN

3/8"=1'-0"



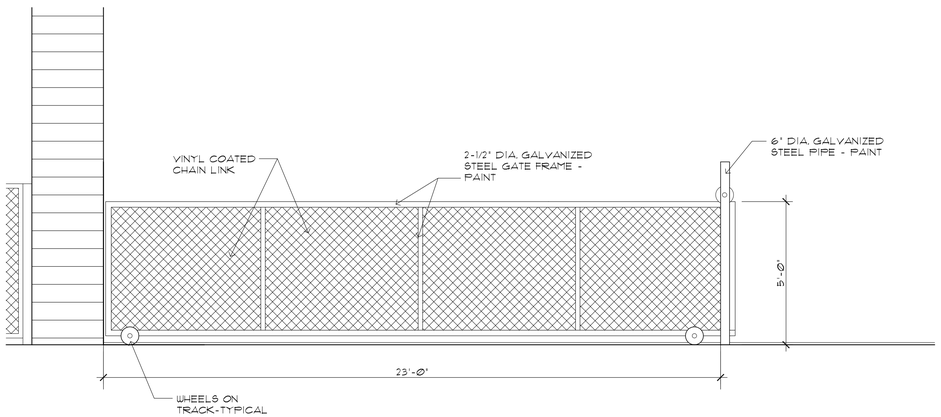
A04-3 SWING GATE ELEVATION

3/8"=1'-0"



A04-1 GATE LAYOUT

3/16"=1'-0"



A04-4 SLIDING GATE ELEVATION

3/8"=1'-0"

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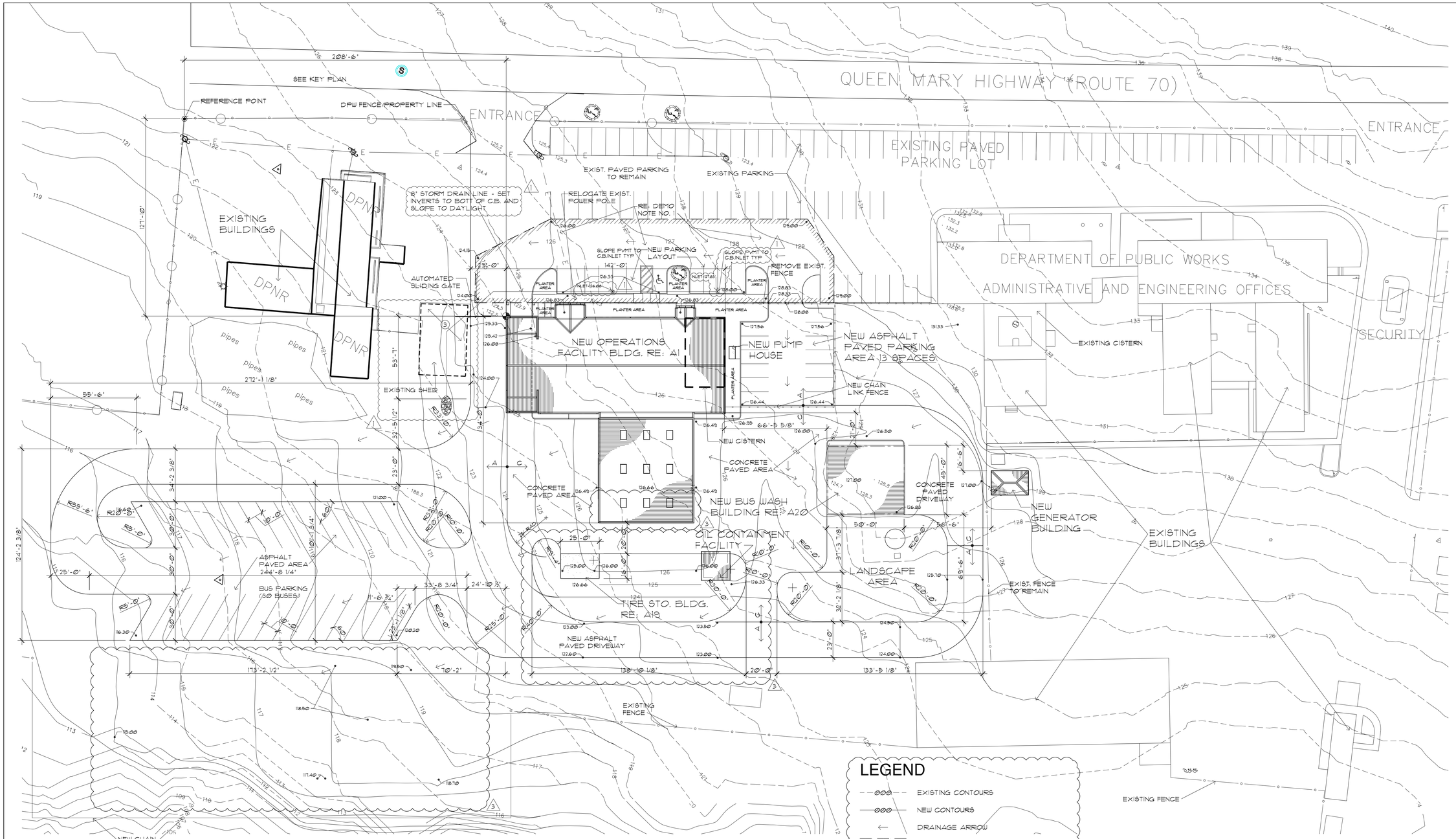
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
SITE DETAILS

DATE: 6-30-17
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SHEET NUMBER:
A04



A05-1 SITE GRADING AND PAVING

1"=30'

NORTH

LEGEND

- EXISTING CONTOURS
- NEW CONTOURS
- DRAINAGE ARROW
- AREA OF PAVEMENT TO BE REMOVED AND REPLACE W/ NEW ASPHALT PAVING
- (ASPH.) (CONC.) FINISH BOUNDARY
- SPOT GRADE/ELEVATION
- EXISTING STRUCTURE TO BE DEMOLISH
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVE
- NEW FENCE
- EXISTING FENCE TO BE REMOVE
- 24"X24"X24 CONC CATCH BASIN (INT DIM)
- #2 STONE OUTFALL RIPRAP

GENERAL SITE NOTES

1. ALL BUILDINGS, UTILITIES, AND SITE STRUCTURES ARE EXISTING UNLESS NOTED OTHERWISE..
2. DISTURBANCE TO THE SITE SHALL BE KEPT TO A MINIMUM TO PREVENT EROSION AND DAMAGE TO EXISTING VEGETATION.
3. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO EXISTING BELOW GRADE UTILITY LINES.
4. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES THAT MAY OCCUR DUE TO CONSTRUCTION ACTIVITY.
5. EXISTING STORMWATER DRAINAGE PATTERNS AND DIRECTION OF FLOW SHALL BE MAINTAINED.

DEMOLITION NOTES

1. BREAK UP AND REMOVE EXISTING ASPHALT PAVEMENT ON GRADE. CONDUCT DEMOLITION TO PREVENT INJURY TO PEOPLE AND DAMAGE TO NEW CONSTRUCTION. PROTECT EXISTING AND NEW SITE IMPROVEMENTS, APPURTENANCES AND LANSCAPING TO REMAIN. PROMPTLY DISPOSE OF DEMOLISHED MATERIALS TO ACCUMULATE ON SITE. TRANSPORT DEMOLISHED MATERIALS OFF OWNER'S PROPERTY AND LEGALLY DISPOSE OF THEM. REFER TO PLAN FOR AREA TO BE DEMOLISH.
2. REMOVE & LEGALLY DISPOSE EXISTING TREES AS INDICATED IN PLAN.
3. DEMOLISH EXISTING SHED, REMOVE & LEGALLY DISPOSE DEBRIS FROM SITE..

1 REVISION 1 - 1/4/18 - PROVIDE EXIST SHED LOCATION, PROVIDE PAVEMENT FINISH DEMARCATION. PROVIDE CATCH BASIN AND DRAIN AT FRONT PARKING.

3 REVISION-3 : DATE: 5-**-2018 REVISED THE BUS PARKING SPACE ASPHALT SURFACE REMOVED THE FUEL STATION & ASPHALT SURFACE TO IT. SIFTED THE OIL CONTAINMENT FACILITY AND NEW TIRE BUILDING TO THE NORTH 12'-0". REMOVED (1) BUS MAINTENANCE BAY FROM THE FACILITY. REVISED THE KEY SITE PLAN TO REFLECT CHANGES.

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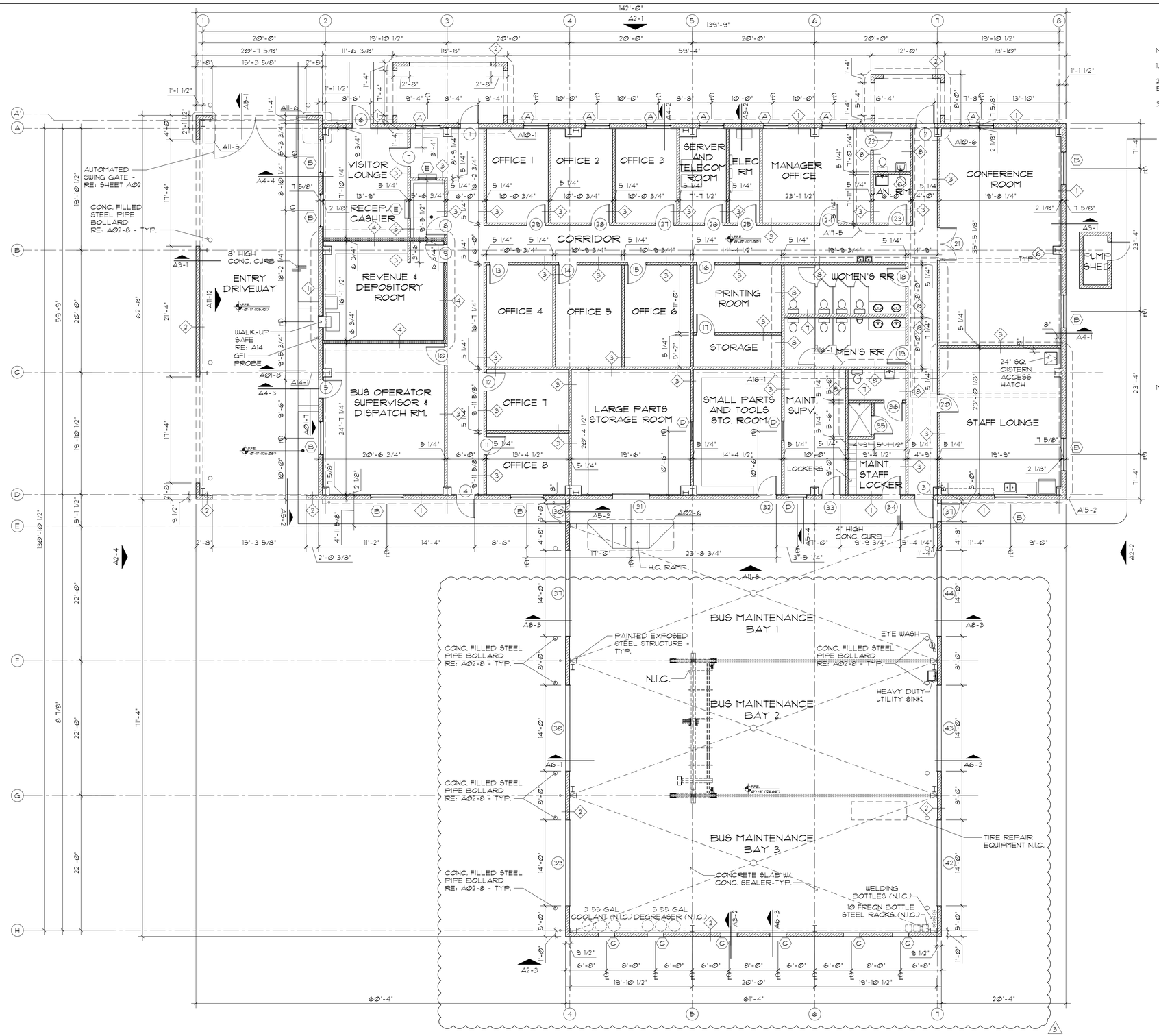
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DRAWING INFORMATION:
SITE GRADING AND PAVING

DATE: 6-30-17
DRAWN BY: STAFF

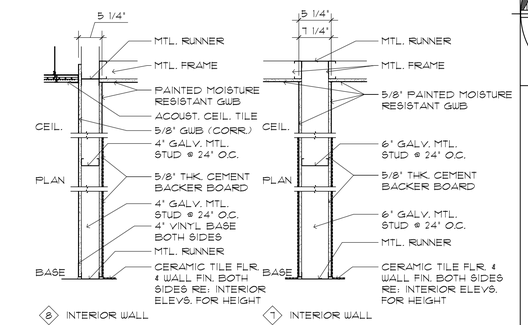
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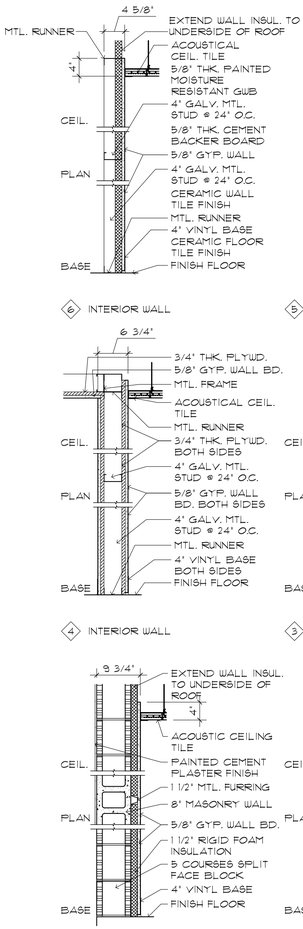
SHEET NUMBER:
A05



NOTES:

1. REFER TO SHEET A11.1 FOR COLUMN ENCLOSURE DETAILS.
2. ALL STUD WALL PARTITIONS ARE 4" BEYOND FINISH CEILING. PROVIDE BRACING TO BE ATTACHED TO THE NEAREST STRUCTURAL FRAMES.
3. REFER TO SHEET A02-8 FOR STEEL BOLLARD DETAIL.





A1-2 WALL TYPES

3/4"=1'-0"

A1-1 OPERATIONS FACILITY BUILDING FLOOR PLAN

1/8"=1'-0"

NORTH

3 REVISION-3 : DATE: 5-22-2018
REMOVED BUS MAINTENANCE BAY 2 OF THE FACILITY & SHIFTED BAYS 3 & 4 NORTH AND RENAMED THEM 1-3.

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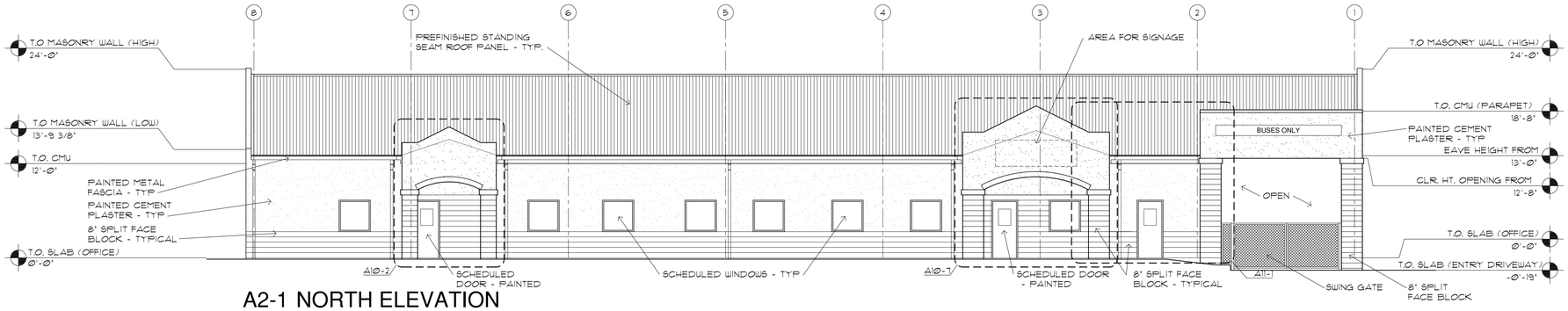
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING FLOOR PLAN

DATE: 6-30-17
DRAWN BY: STAFF

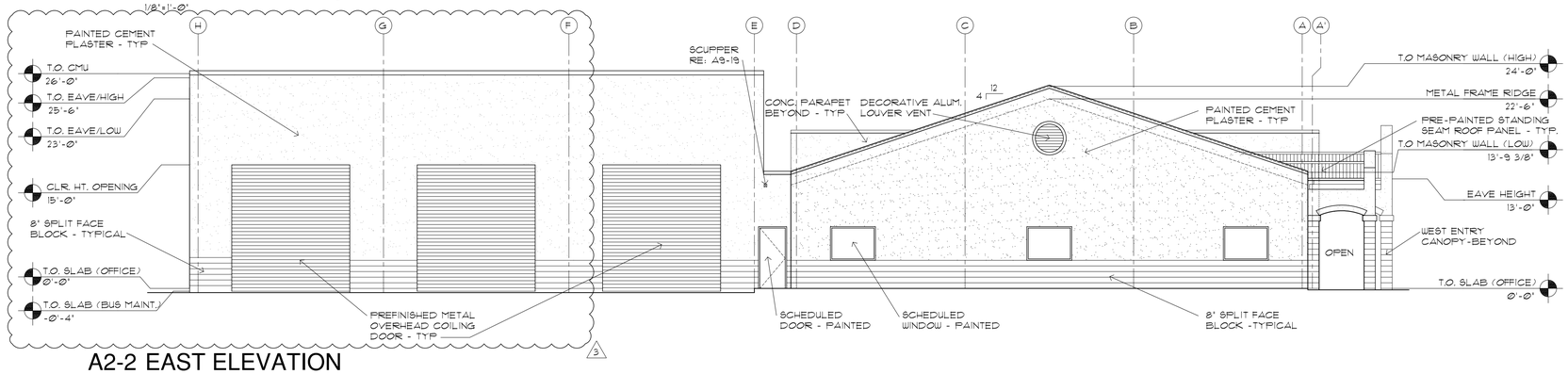
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SHEET NUMBER:
A1



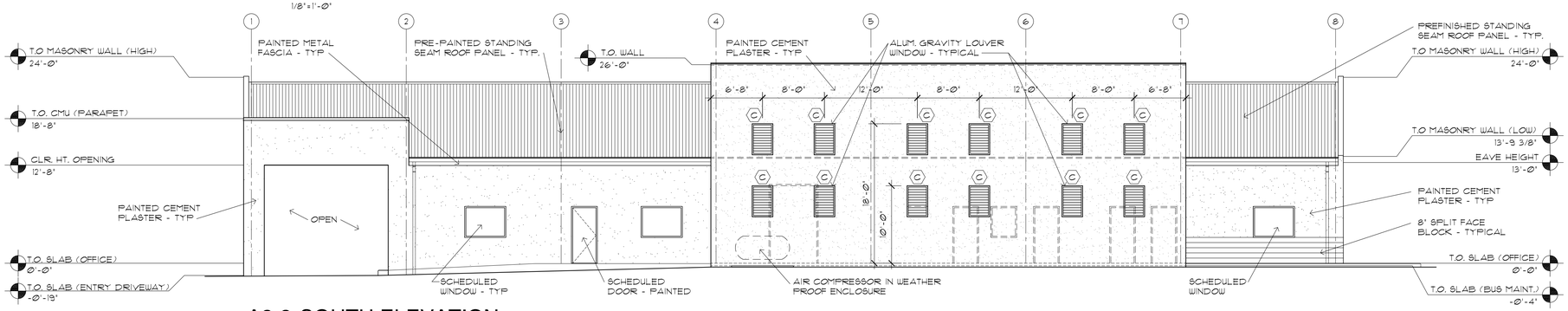
A2-1 NORTH ELEVATION

1/8"=1'-Ø"



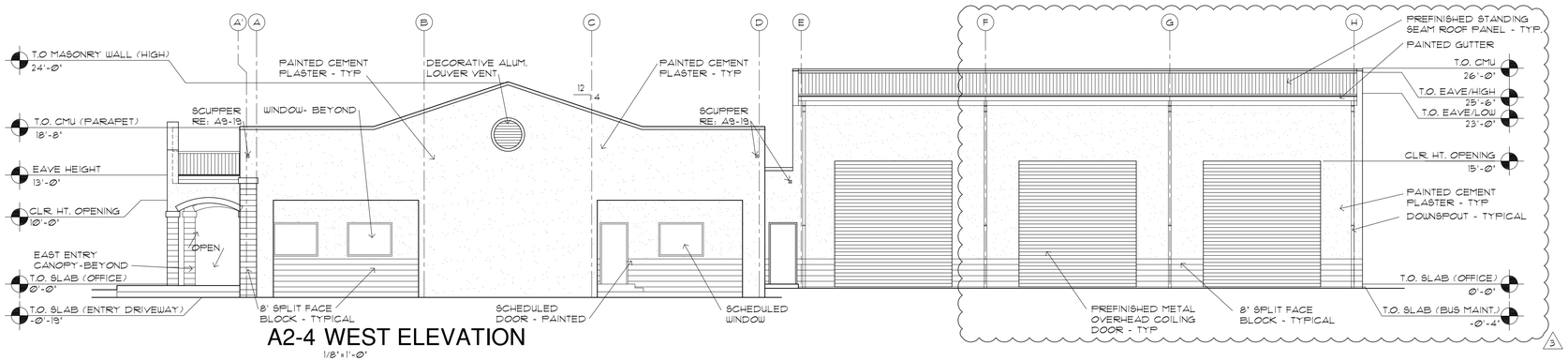
A2-2 EAST ELEVATION

1/8"=1'-Ø"



A2-3 SOUTH ELEVATION

1/8"=1'-Ø"



A2-4 WEST ELEVATION

1/8"=1'-Ø"

3 REVISION-3 : DATE: 5-22-2018
REVISED ELEVATIONS A2-2 & A2-4 TO REFLECT BUS MAINTENANCE BAY #4 REMOVAL.

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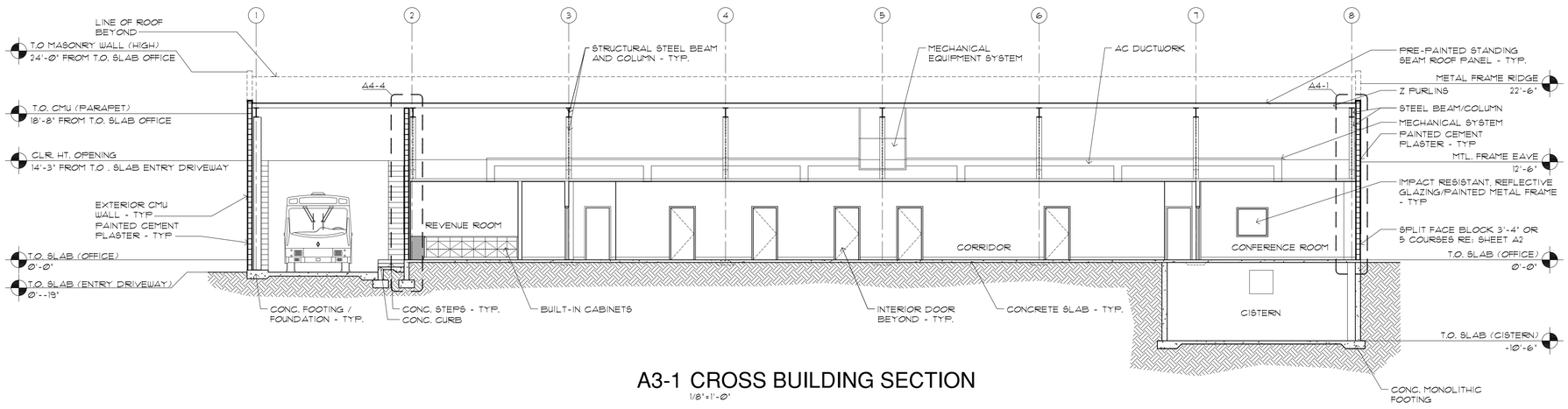
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DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
EXTERIOR ELEVATIONS

DATE: 6-30-17
DRAWN BY: STAFF

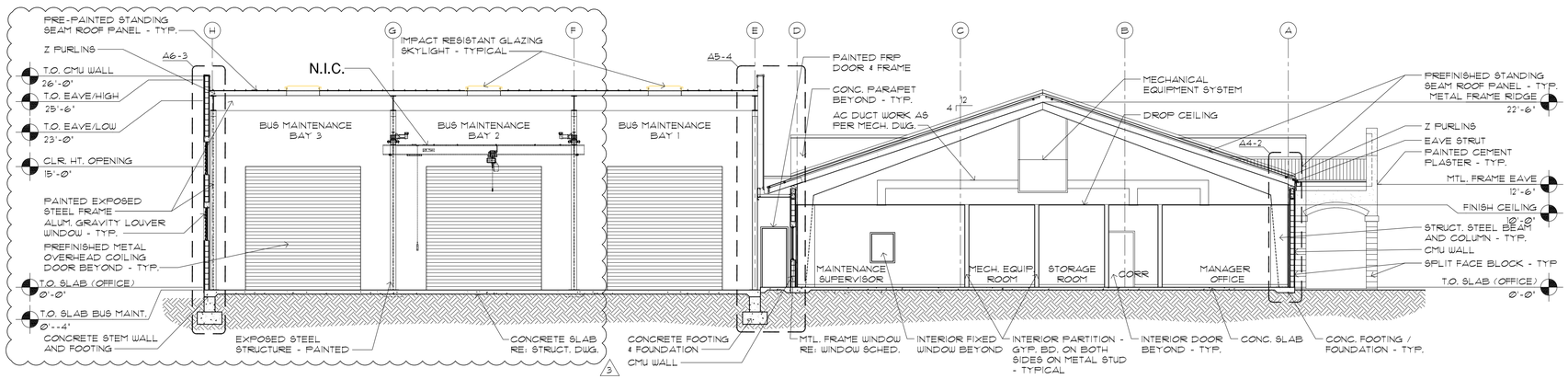
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SHEET NUMBER:
A2



A3-1 CROSS BUILDING SECTION

1/8"=1'-0"



A3-2 LONGITUDINAL BUILDING SECTION

1/8"=1'-0"

3 REVISION-3 : DATE: 5-22-2018
REVISED BUILDING SECTION A3-2 TO REFLECT BUS MAINTENANCE BAY #4 REMOVAL.

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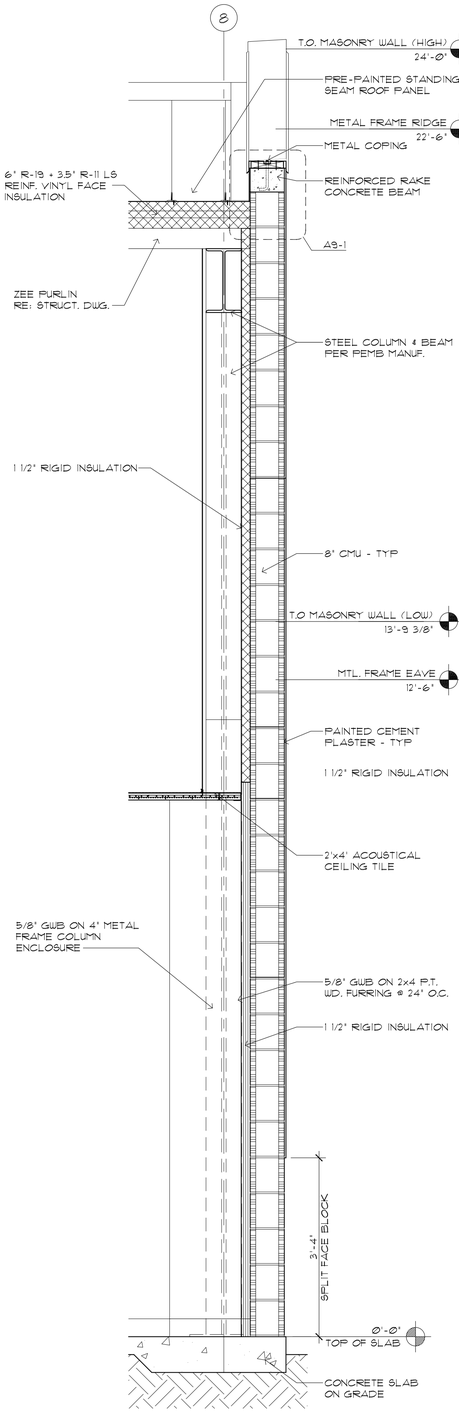
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DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
BUILDING SECTIONS

DATE: 6-30-17
DRAWN BY: STAFF

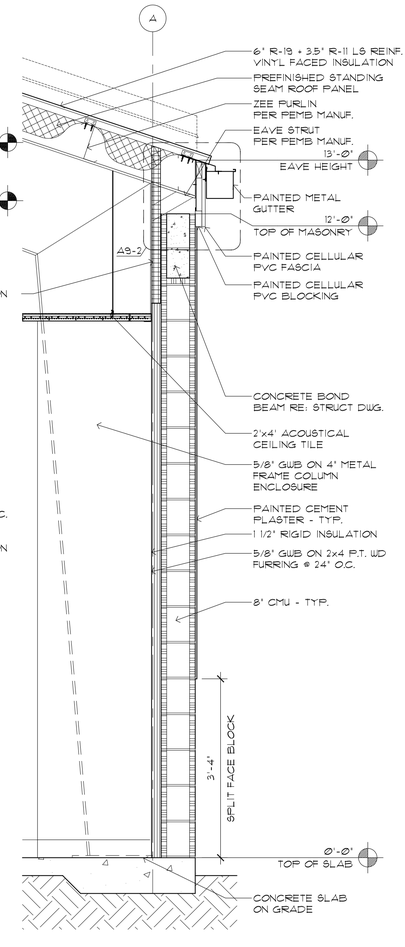
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SHEET NUMBER:
A3



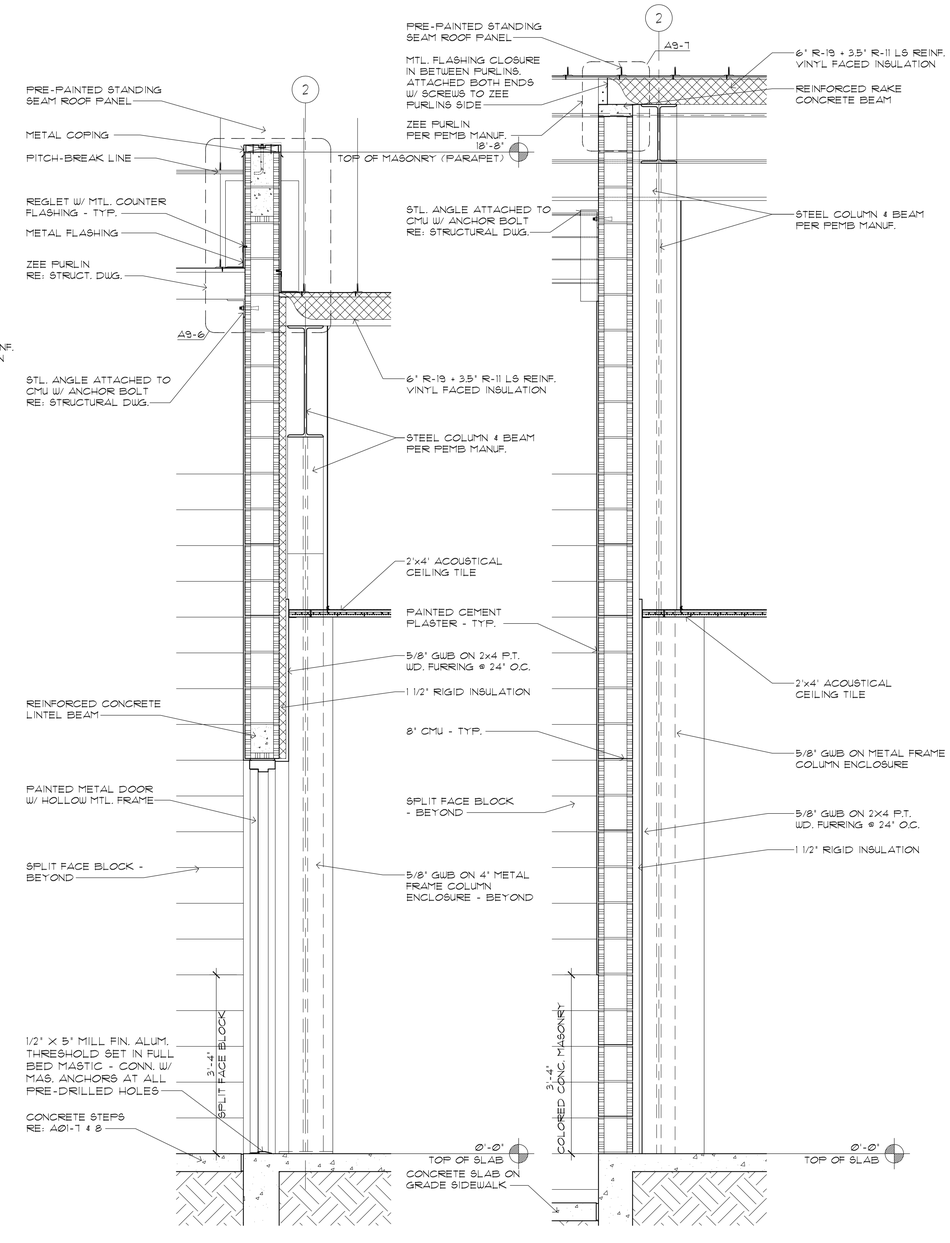
A4-1 WALL SECTION

3/4"=1'-0"



A4-2 WALL SECTION

3/4"=1'-0"



A4-3 WALL SECTION

3/4"=1'-0"

A4-4 WALL SECTION

3/4"=1'-0"

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DRAWING INFORMATION:

OPERATIONS FACILITY BUILDING WALL SECTIONS

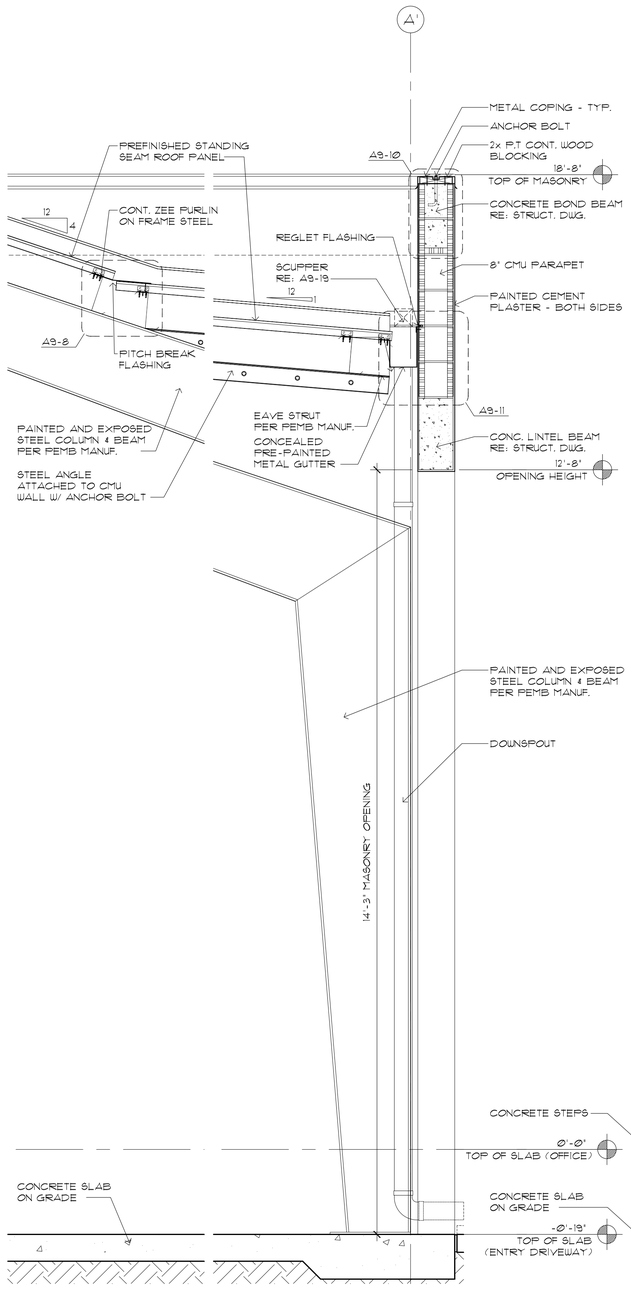
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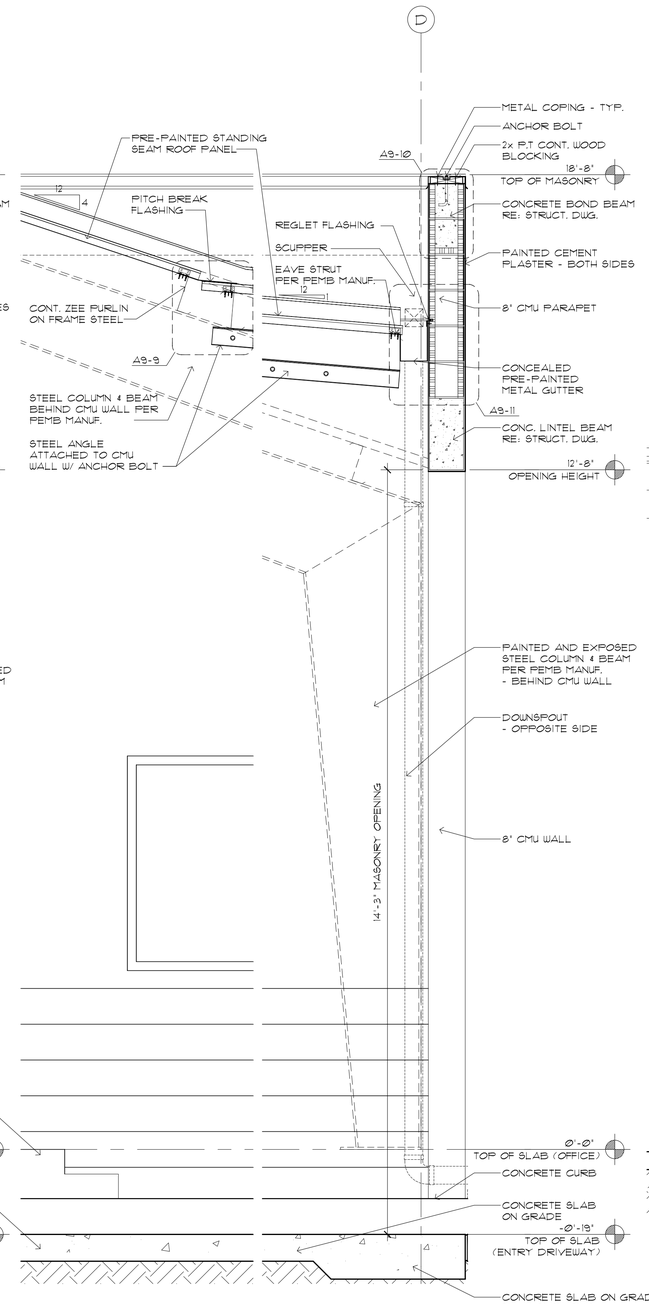
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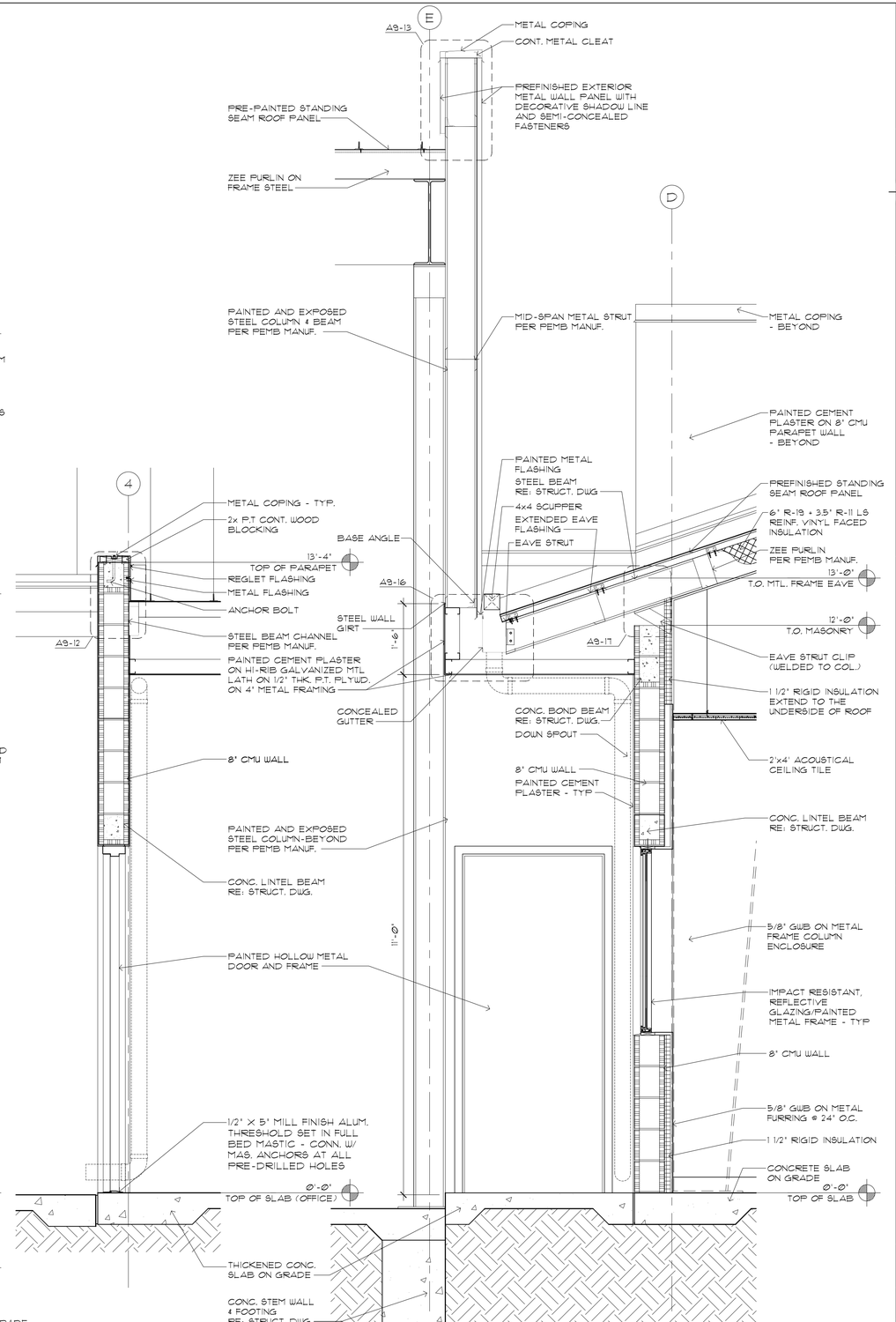
A4



A5-1 WALL SECTION
3/4"=1'-Ø"



A5-2 WALL SECTION
3/4"=1'-Ø"



A5-3 WALL SECTION
3/4"=1'-Ø"

A5-4 WALL SECTION
3/4"=1'-Ø"

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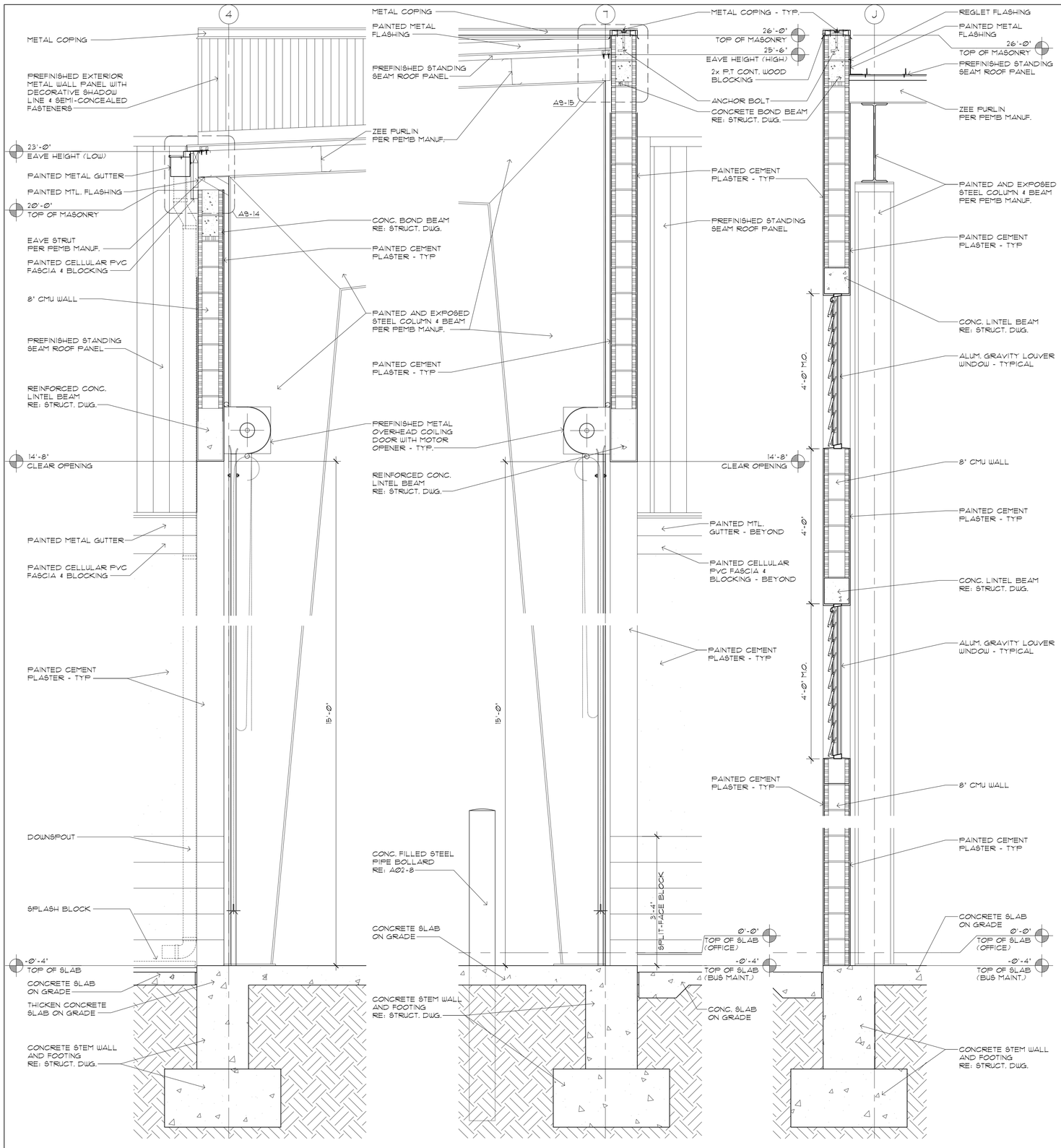
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DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
WALL SECTIONS

DATE: 6-30-17
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SHEET NUMBER:
A5



A6-1 WALL SECTION
3/4"=1'-Ø"

A6-2 WALL SECTION
3/4"=1'-Ø"

A6-3 WALL SECTION
3/4"=1'-Ø"

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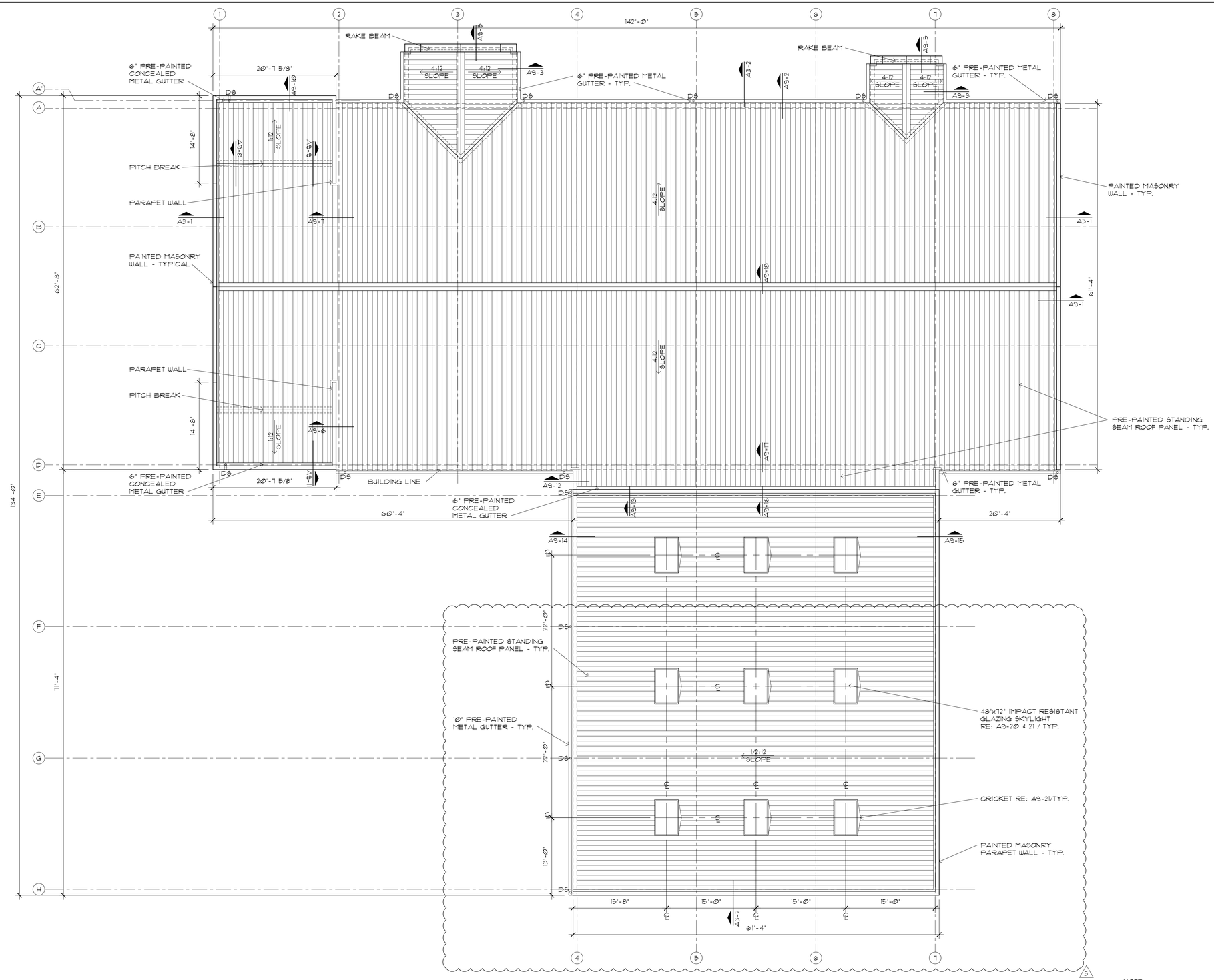
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
WALL SECTIONS

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A6



NOTE:
1. REFER TO PLUMBING PLAN FOR VENT PIPE LOCATIONS.
2. REFER TO SHEET A9 FOR ROOFING DETAILS.
3. USE 3"x4" DOWSPOUT AT OFFICE BUILDING AND ENTRY DRIVEWAY.
4. USE 4"x5" DOWSPOUT AT BUS MAINTENANCE.

NORTH

A7-1 OPERATIONS FACILITY BUILDING ROOF PLAN

1/8"=1'-0"

△3 REVISION-3 : DATE: 5-22-2018.
REMOVED BUS MAINTENANCE BAY 2 OF THE FACILITY & SHIFTED BAYS 3 & 4 NORTH AND RENAMED THEM 1-3.

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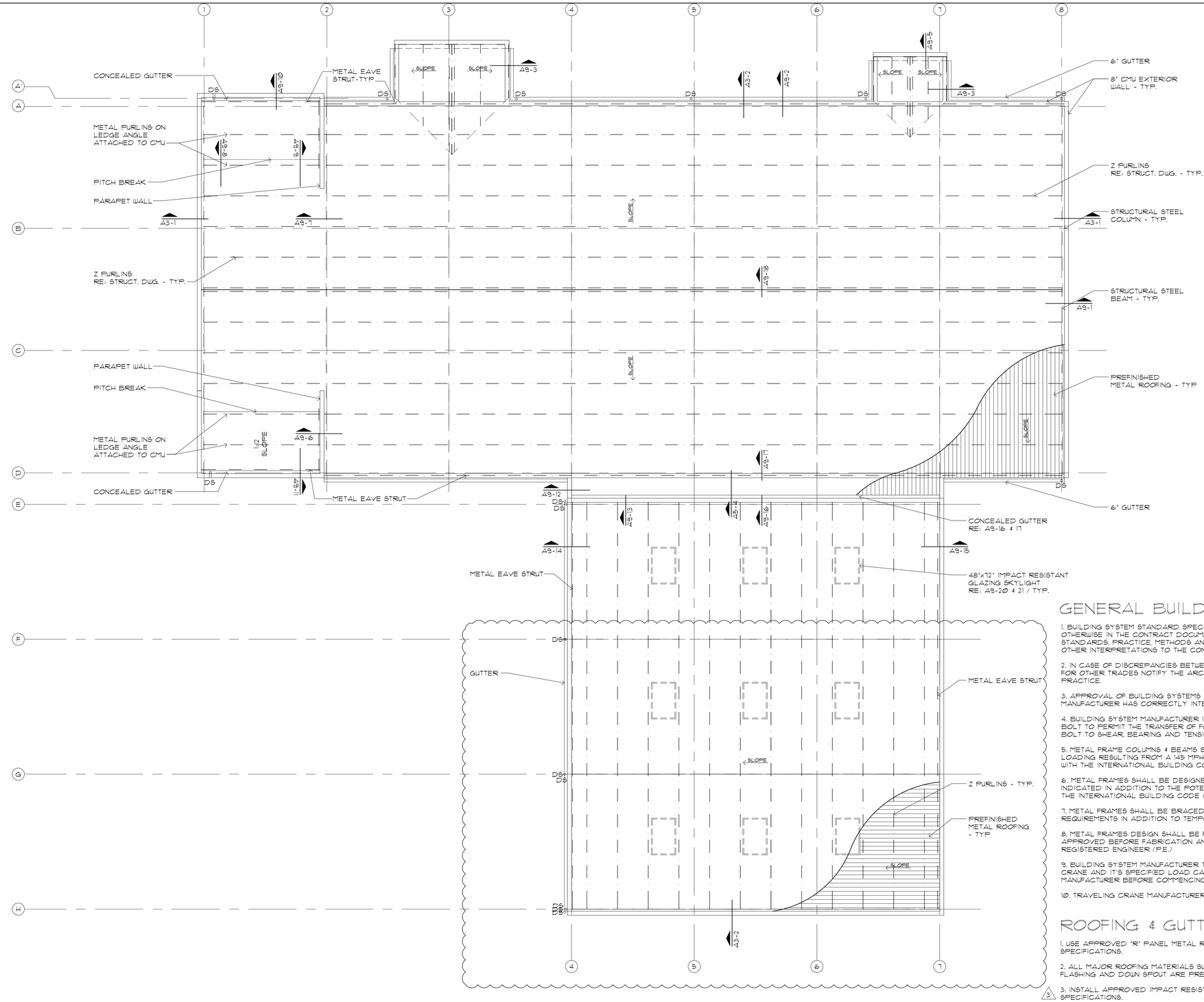
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING ROOF PLAN

DATE: 6-30-17
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A7



GENERAL BUILDING SYSTEM NOTES

1. BUILDING SYSTEM STANDARD SPECIFICATIONS APPLY AND UNLESS STIPULATED OTHERWISE IN THE CONTRACT DOCUMENTS, MFG'S DESIGN FABRICATION, QUALITY CRITERIA, STANDARDS, PRACTICE, METHODS AND TOLERANCES SHALL GOVERN THE WORK WITH ANY OTHER INTERPRETATIONS TO THE CONTRARY NOTWITHSTANDING.

2. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURER'S STRUCTURAL PLANS AND PLANS FOR OTHER TRADES NOTIFY THE ARCHITECT OR ENGINEER OR AS PER CODE OF STANDARD PRACTICE.

3. APPROVAL OF BUILDING SYSTEMS DRAWINGS AND CALCULATIONS INDICATES THAT THE MANUFACTURER HAS CORRECTLY INTERPRETED AND APPLIED THE CONTRACT DOCUMENTS.

4. BUILDING SYSTEM MANUFACTURER IS RESPONSIBLE FOR THE DESIGN OF THE ANCHOR BOLT TO PERMIT THE TRANSFER OF FORCES BETWEEN THE BASE PLATE AND THE ANCHOR BOLT TO SHEAR, BEARING AND TENSION.

5. METAL FRAME COLUMNS & BEAMS SHALL BE DESIGNED FOR THE ADDITIONAL WIND LOADING RESULTING FROM A 145 MPH WIND SPEED WITH AN EXPOSURE D IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC) LATEST EDITION.

6. METAL FRAMES SHALL BE DESIGNED FOR THE MAXIMUM CODE PRESCRIBED LOADING INDICATED IN ADDITION TO THE POTENTIAL UNBALANCED LOADING IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC) LATEST ADDITION.

7. METAL FRAMES SHALL BE BRACED DURING CONSTRUCTION AS PER MANUFACTURER'S REQUIREMENTS IN ADDITION TO TEMPORARY AND PERMANENT BRACING REQUIRED.

8. METAL FRAMES DESIGN SHALL BE FURNISHED IN SHOP DRAWINGS TO BE DELIVERED AND APPROVED BEFORE FABRICATION AND SHOP DRAWINGS SHALL BEAR THE SEAL OF A REGISTERED ENGINEER (P.E.)

9. BUILDING SYSTEM MANUFACTURER TO PROVIDE ADEQUATE SUPPORT FOR TRAVELING CRANE AND IT'S SPECIFIED LOAD CAPACITY, AND TO COORDINATE WITH CRANE MANUFACTURER BEFORE COMMENCING AND INSTALLING.

10. TRAVELING CRANE MANUFACTURER TO PROVIDE SHOP DRAWINGS FOR APPROVAL.

ROOFING & GUTTER NOTES

1. USE APPROVED 'R' PANEL METAL ROOFING AND INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.

2. ALL MAJOR ROOFING MATERIALS SUCH AS ROOFING PANEL, END CLOSURE, GUTTER, RIDGE CAP, FLASHING AND DOWN SPOUT ARE PRE PAINTED AND ARE READY TO BE INSTALL.

3. INSTALL APPROVED IMPACT RESISTANT GLAZING SKYLIGHT AS PER MANUFACTURER'S SPECIFICATIONS.

4. GUTTER JOINTS SHALL BE LAPPED & RIVETED W/ SILICONE SEALANT BETWEEN SECTIONS.

5. REFER TO ROOFING DETAILS REGARDING CONCEALED GUTTER INSTALLATIONS.

6. REFER TO SHEET A7 FOR GUTTER AND DOWNSPOUT SIZES.

A8-1 MAIN BUILDING ROOF FRAMING PLAN

1/8"=1'-0"

△3 REVISION-3 : DATE: 5-22-2018
REVISED FRAMING PLANS AFTER REMOVING (1) BUS MAINTENANCE BAY.

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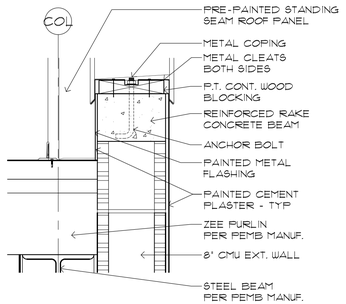
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
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DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
ROOF FRAMING PLAN

DATE: 6-30-17
DRAWN BY: STAFF

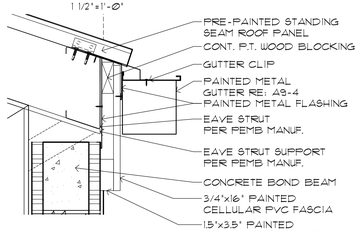
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SHEET NUMBER:
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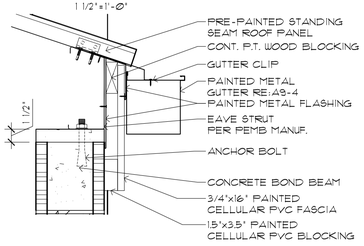
A9-1 TYP. RAKE DETAIL

1 1/2"=1'-0"



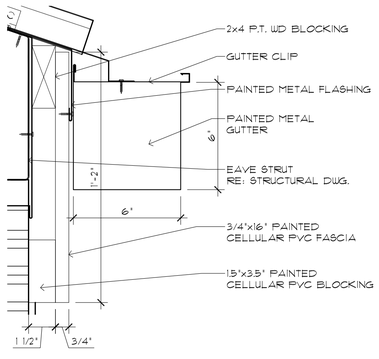
A9-2 TYP. EAVE DETAIL

1 1/2"=1'-0"



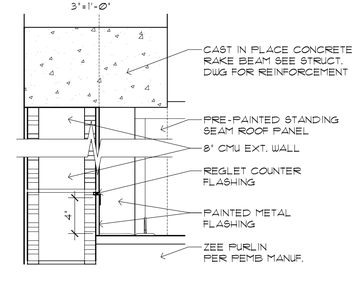
A9-3 EAVE DETAIL

1 1/2"=1'-0"



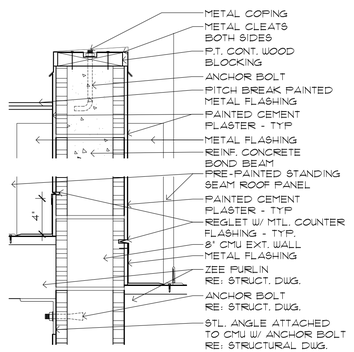
A9-4 GUTTER DETAIL

3"=1'-0"



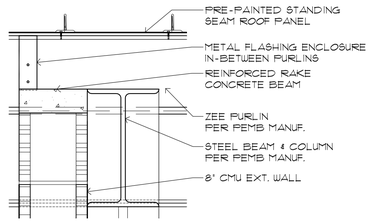
A9-5 ENTRY CANOPY DETAIL

1 1/2"=1'-0"



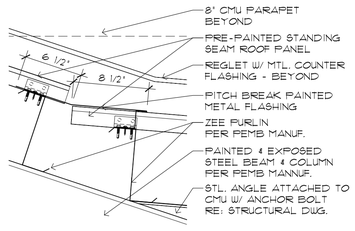
A9-6 PARAPET DETAIL

1 1/2"=1'-0"



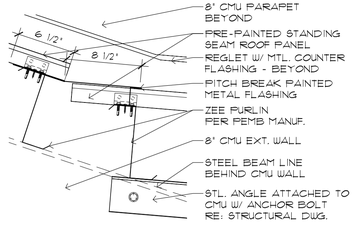
A9-7 WALL DETAIL

1 1/2"=1'-0"



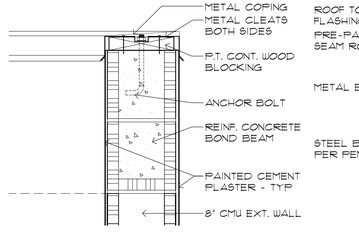
A9-8 PITCH BREAK DETAIL

1 1/2"=1'-0"



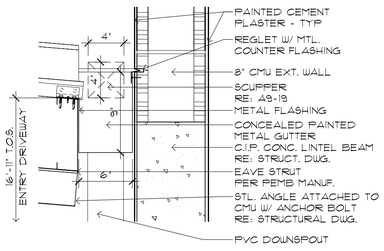
A9-9 PITCH BREAK DETAIL

1 1/2"=1'-0"



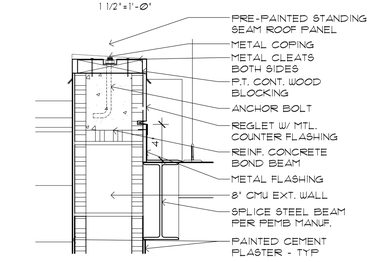
A9-10 PARAPET DETAIL

1 1/2"=1'-0"



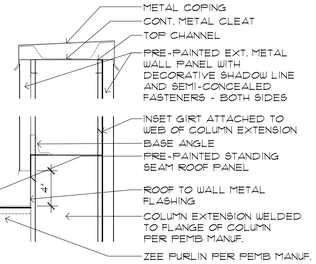
A9-11 GUTTER DETAIL

1 1/2"=1'-0"



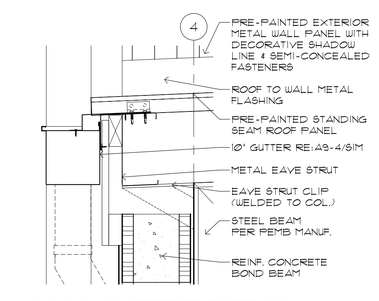
A9-12 PARAPET DETAIL

1 1/2"=1'-0"



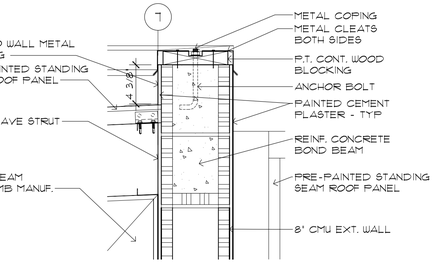
A9-13 PARAPET DETAIL

1 1/2"=1'-0"



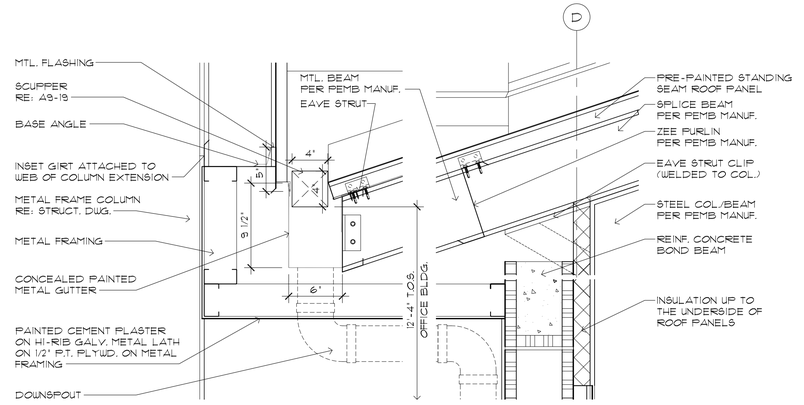
A9-14 GUTTER DETAIL

1 1/2"=1'-0"



A9-15 PARAPET DETAIL

1 1/2"=1'-0"

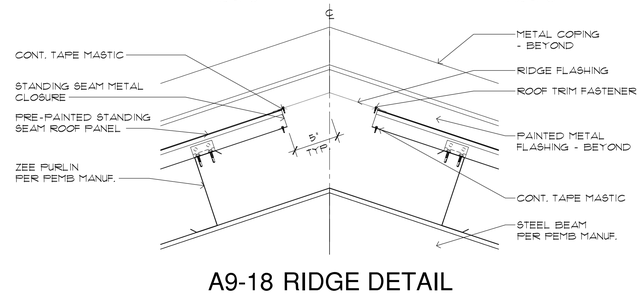


A9-16 GUTTER DETAIL

1 1/2"=1'-0"

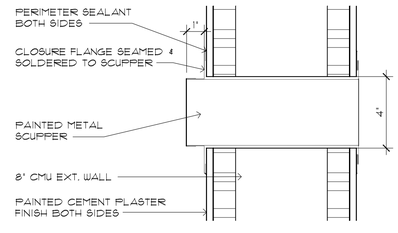
A9-17 EAVE DETAIL

1 1/2"=1'-0"



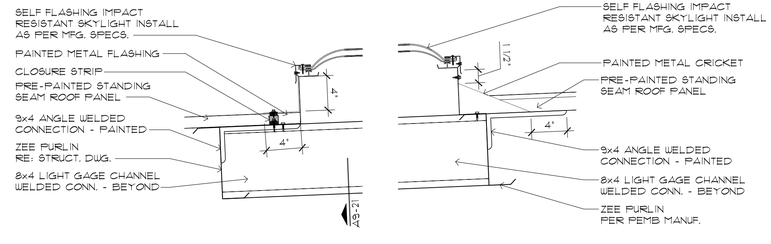
A9-18 RIDGE DETAIL

1 1/2"=1'-0"



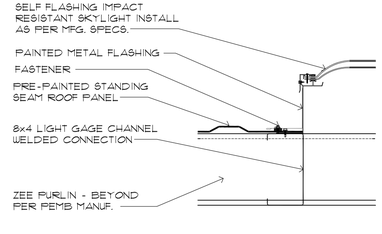
A9-19 SCUPPER DETAIL

3"=1'-0"



A9-20 SKYLIGHT DETAILS

1 1/2"=1'-0"



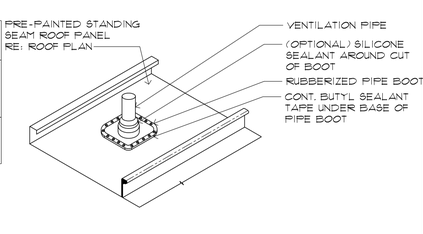
A9-21 SKYLIGHT DETAIL

1 1/2"=1'-0"

NOTE: PIPE PENETRATION TO BE IN PAN OF PANEL ONLY.

NOTE: POSITION SQUARE BASED BOOTS IN A DIAMOND ORIENTATION WHERE POSSIBLE TO AID IN DIVERTING WATER.

NOTE: IF PIPE IS MADE OF METAL, IT MUST BE PAINTED TO PREVENT RUST RUN-OFF FROM STAINING PANELS.



A9-22 VENT PIPE FLASHING DETAIL

1 1/2"=1'-0"

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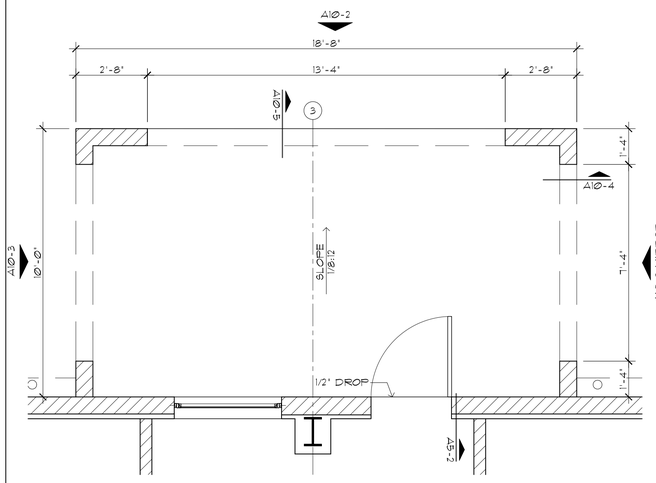
PROJECT:
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
ROOF DETAILS

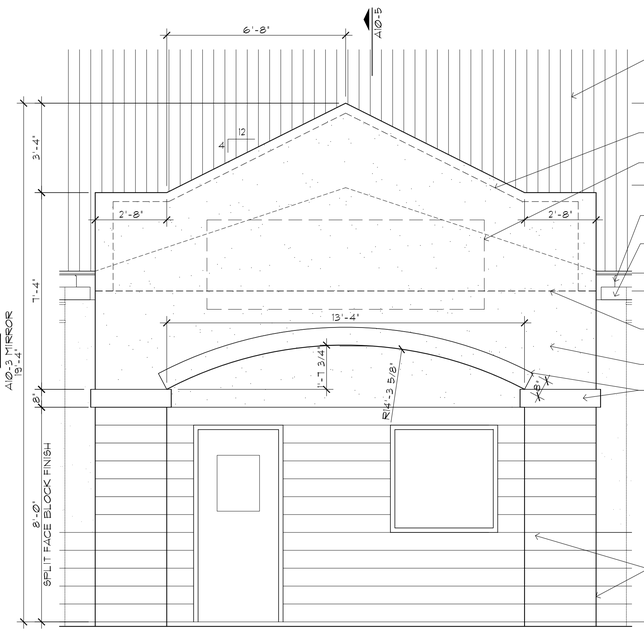
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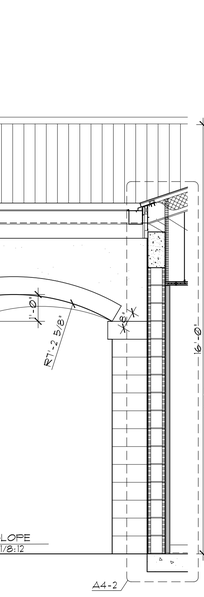
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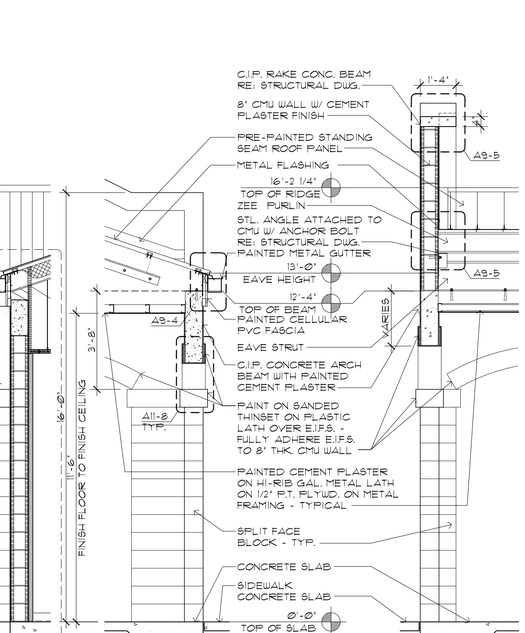
A10-1 ENTRY CANOPY WEST ENLARGED PLAN
3/8"=1'-0"



A10-2 FRONT ELEVATION
3/8"=1'-0"

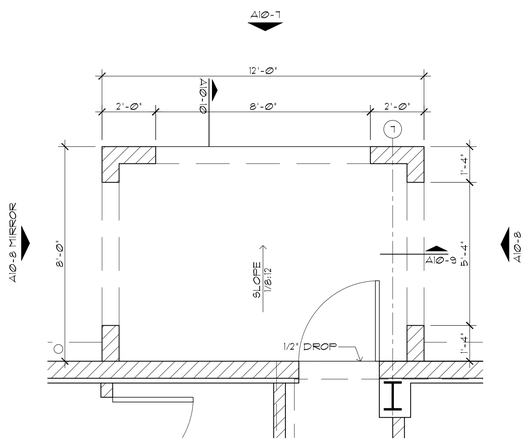


A10-3 TYP. SIDE ELEVATION
3/8"=1'-0"

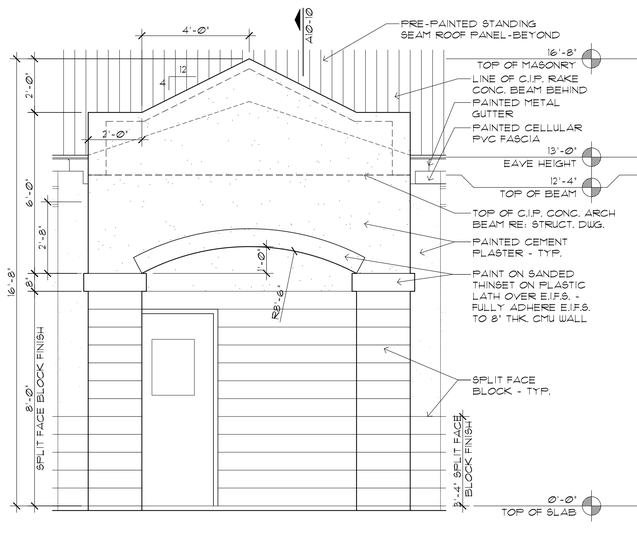


A10-4 SECTION
3/8"=1'-0"

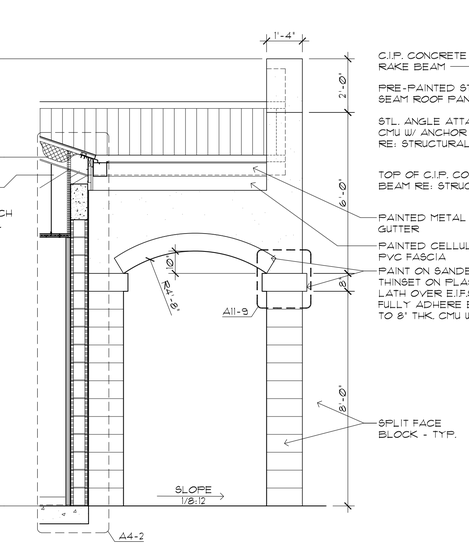
A10-5 SECTION
3/8"=1'-0"



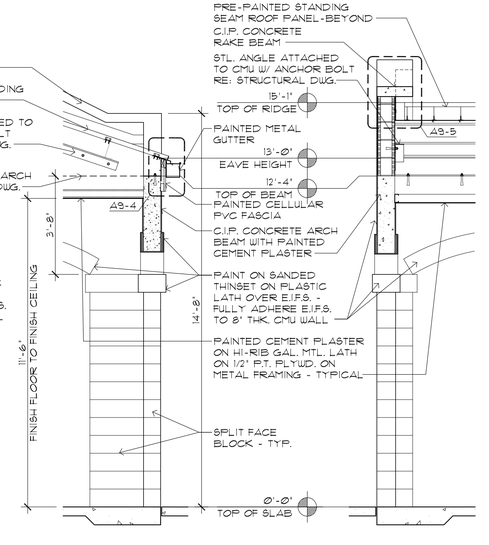
A10-6 ENTRY CANOPY EAST ENLARGED PLAN
3/8"=1'-0"



A10-7 FRONT ELEVATION
3/8"=1'-0"



A10-8 TYPICAL SIDE ELEVATION
3/8"=1'-0"



A10-9 SECTION
3/8"=1'-0"

A10-10 SECTION
3/8"=1'-0"

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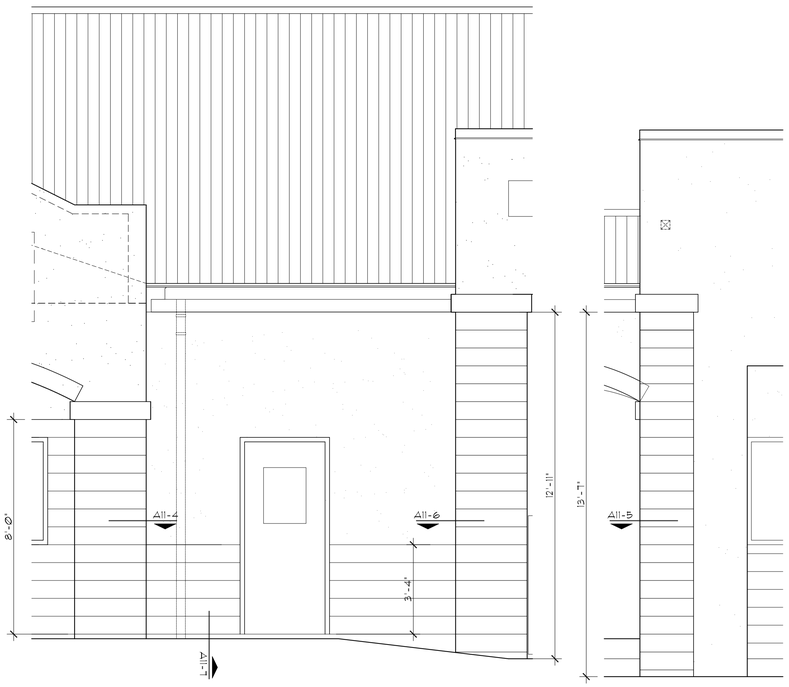
PROJECT:
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
ENTRY CANOPY
ENLARGED PLANS, ELEVATIONS AND DETAILS

DATE: 6-30-17
DRAWN BY: STAFF

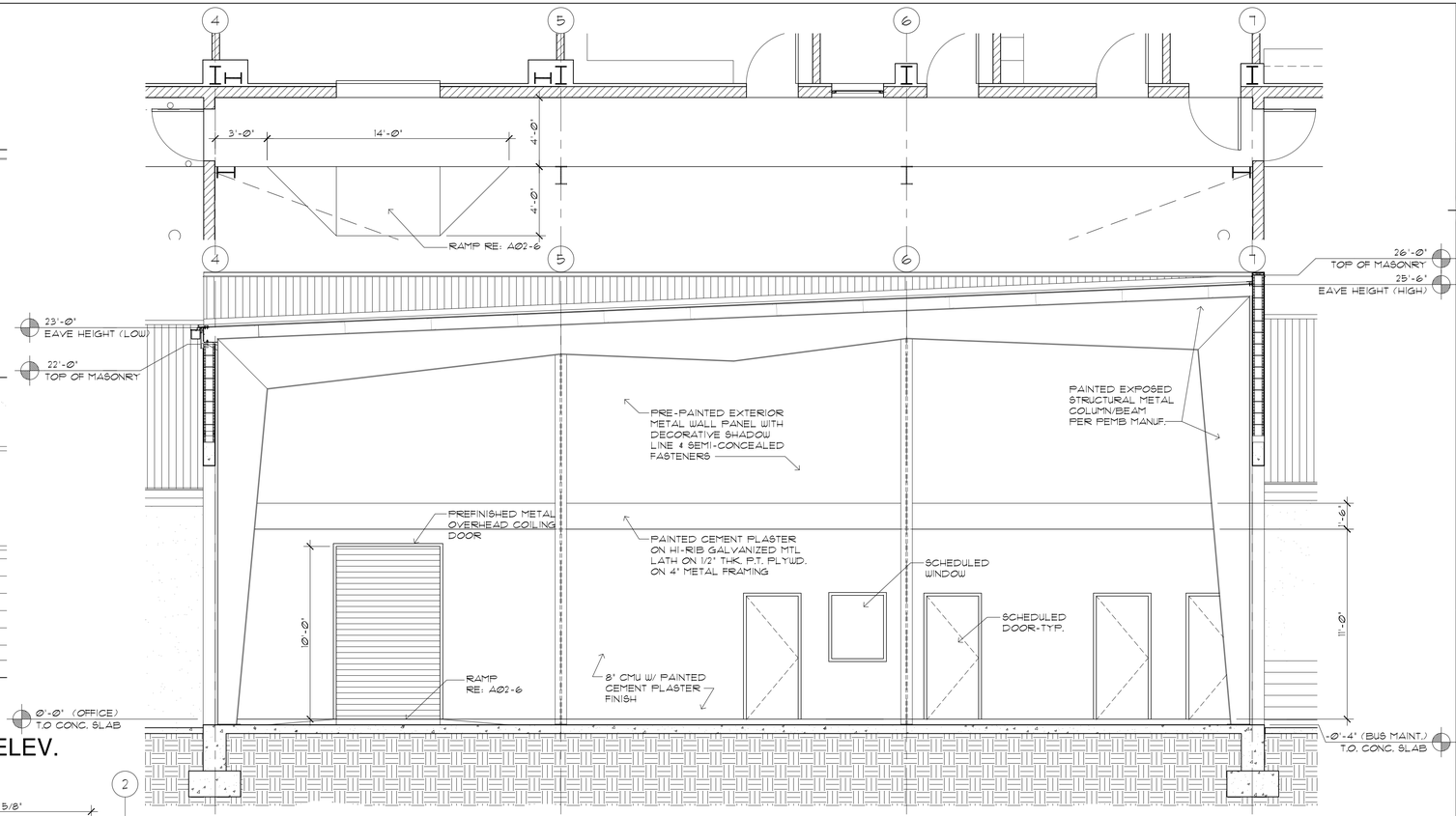
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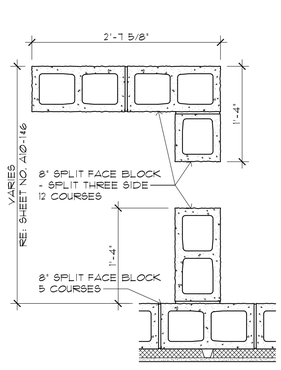


A11-1 PARTIAL EXTERIOR ELEVATION
3/8"=1'-0"

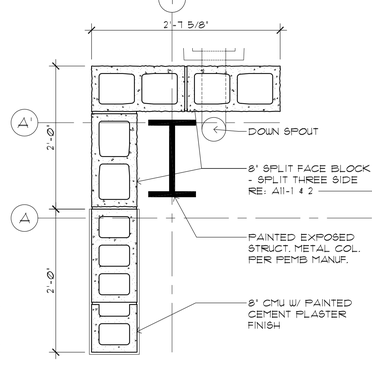
A11-2 PARTIAL EXT. ELEV.
3/8"=1'-0"



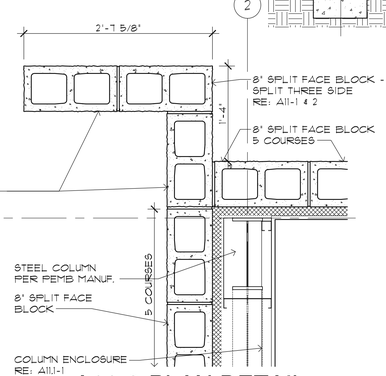
A11-3 PARTIAL PLAND & SECTION ELEVATION
1/4"=1'-0"



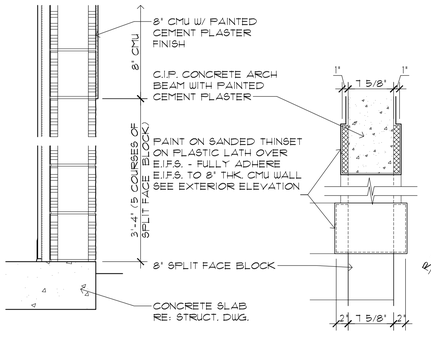
A11-4 PLAN DETAILS
1"=1'-0"



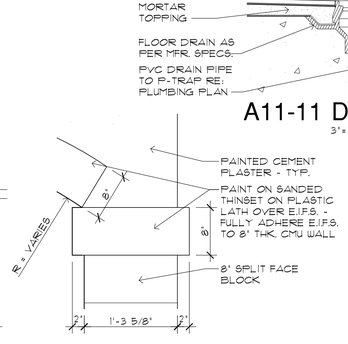
A11-5 PLAN DETAIL
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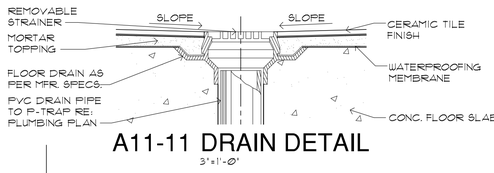
A11-6 PLAN DETAIL
1"=1'-0"



A11-7 WALL DETAIL
1"=1'-0"

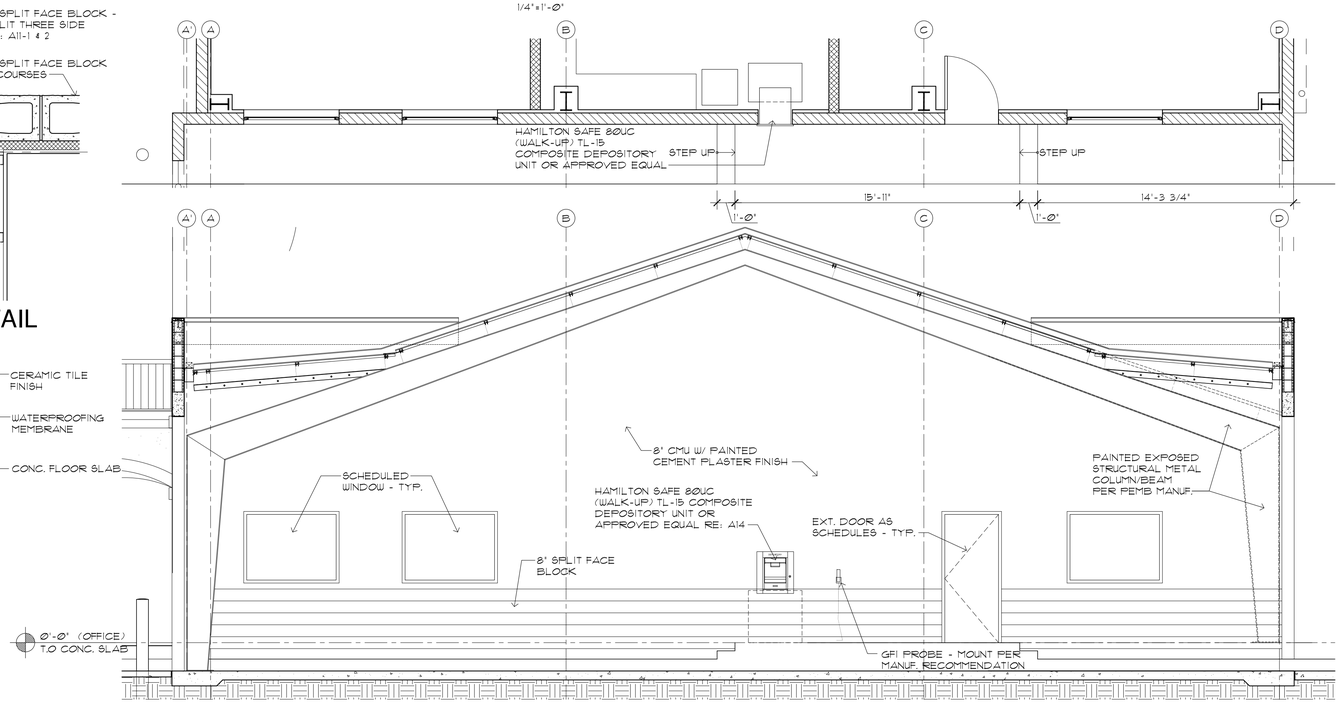


A11-8 ARCH DET.
1"=1'-0"



A11-11 DRAIN DETAIL
3"=1'-0"

A11-9 ARCH DETAIL
1"=1'-0"



A11-12 PARTIAL PLAN & SECTION ELEVATION
1/4"=1'-0"

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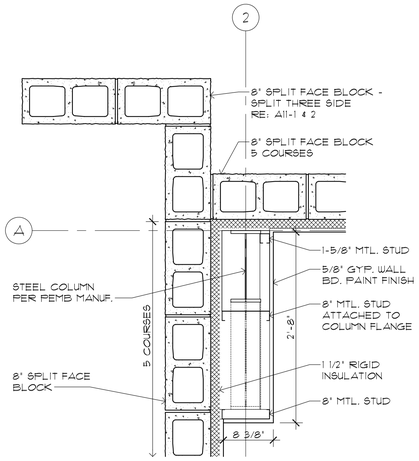
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
ENTRY CANOPY DETAIL
PARTIAL ELEVATION
SECTION ELEVATION & DETAILS

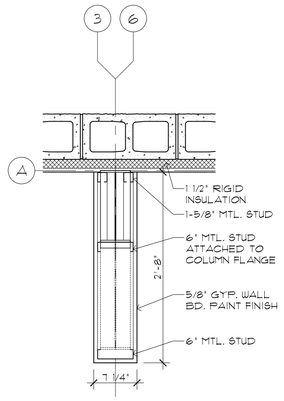
DATE: 6-30-17
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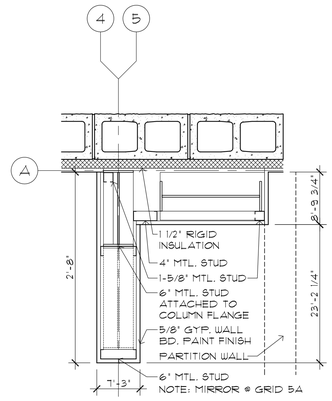
SHEET NUMBER:
A11



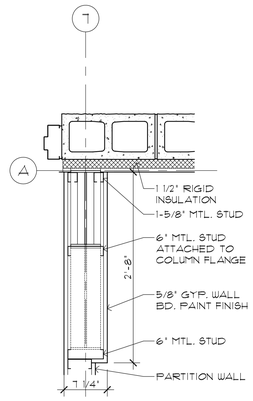
A11.1-1 COL. ENCLOSURE DETAIL
1"=1'-0"



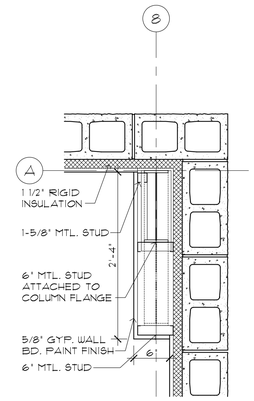
A11.1-2 COL. ENCLOSURE DETAIL
1"=1'-0"



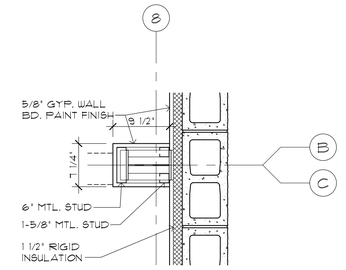
A11.1-3 COL. ENCLOSURE DETAIL
1"=1'-0"



A11.1-4 COL. ENCLOSURE DETAIL
1"=1'-0"



A11.1-5 COL. ENCLOSURE DETAIL
1"=1'-0"



NOTE: PARTITION @ GRID 8C

A11.1-6 COL. ENCLOSURE DETAIL
1"=1'-0"

NOTE:
1. VERIFY IN FIELD ALL METAL COLUMN/FRAME DIMENSION PRIOR TO BUILDING COLUMN ENCLOSURE.

2. PROVIDE 'J' BEAD AT ALL CORNER/JOINT CONNECTION OF GYPSUM BOARD.

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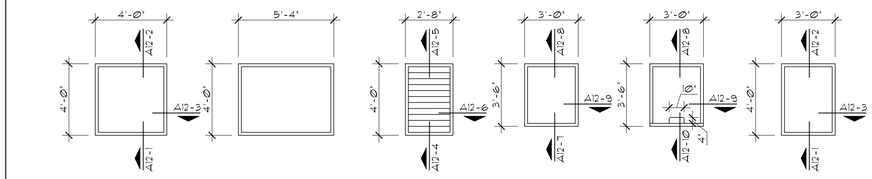
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
INTERIOR COLUMN ENCLOSURE DETAILS

DATE: 06-30-17
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SHEET NUMBER:
A11.1



A — FIXED IMPACT RESISTANT REFLECTIVE GLAZING/PAINTED METAL FRAME

B — FIXED IMPACT RESISTANT REFLECTIVE GLAZING/PAINTED METAL FRAME

C — AWNING ALUMINUM GRAVITY LOUVER

D — FIXED GLASS WINDOW/ PAINTED HOLLOW METAL FRAME

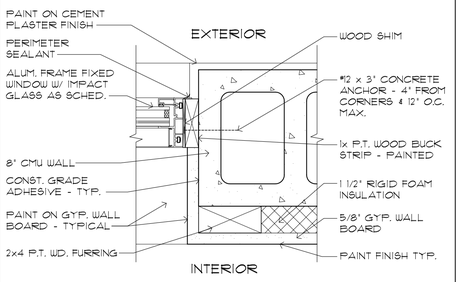
E — FIXED GLASS WINDOW/ PAINTED HOLLOW METAL FRAME

F — FIXED IMPACT RESISTANT REFLECTIVE GLAZING/PAINTED METAL FRAME

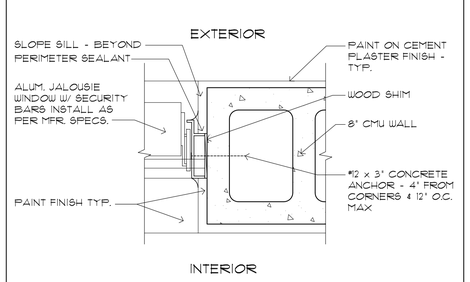
WINDOW TYPES

WINDOW SCHEDULE

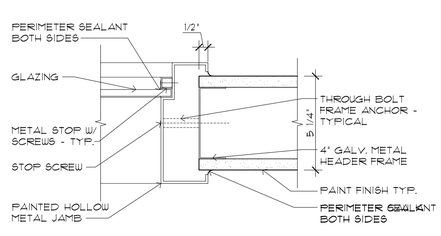
TYPE	M.O. SIZE	HEAD HGT. AFF (M.O.)	TYPE	HEAD	JAMB	SILL	MANUFACTURER
A	4'-0"x4'-0"	7'-4"	FIXED	A12-2	A12-3	A12-1	PGT WINDGUARD SERIES PWT20 OR APPROVED EQUAL
B	5'-4"x4'-0"	7'-4"	FIXED	A12-2	A12-3	A12-1	PGT WINDGUARD SERIES PWT20 OR APPROVED EQUAL
C	2'-8"x4'-0"	10'-0"/18'-0"	LOUVER	A12-5	A12-6	A12-4	RUSKIN (RE: MECH. DWG.)
D	3'-0"x3'-6"	7'-0"	FIXED	A12-8	A12-9	A12-7	-
E	3'-0"x3'-6"	7'-0"	FIXED	A12-8	A12-9	A12-10	WITH 10"x4" PASS-THRU OPENING
F	3'-0"x4'-0"	7'-4"	FIXED	A12-2	A12-3	A12-1	PGT WINDGUARD SERIES PWT20 OR APPROVED EQUAL



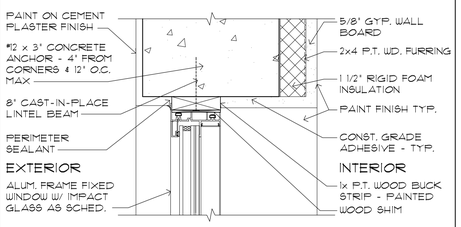
A12-3 ALUM. FIXED WIN. JAMB DET.
3" = 1'-0"



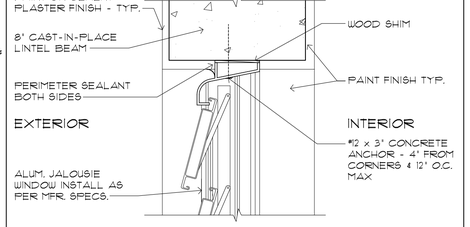
A12-6 ALUM. LOUVER JAMB DET.
3" = 1'-0"



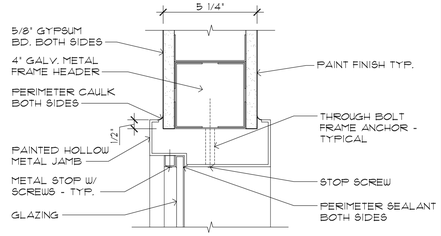
A12-9 H.M. JAMB DETAIL
3" = 1'-0"



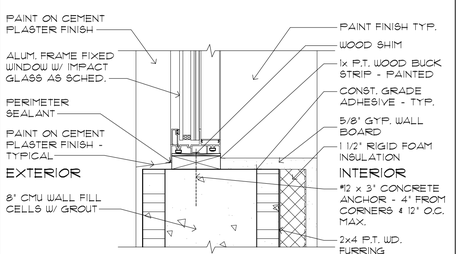
A12-2 ALUM. FIXED WIN. HEAD DET.
3" = 1'-0"



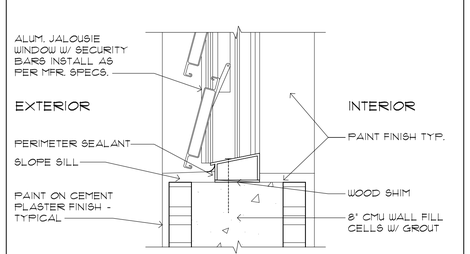
A12-5 ALUM. LOUVER HEAD DET.
3" = 1'-0"



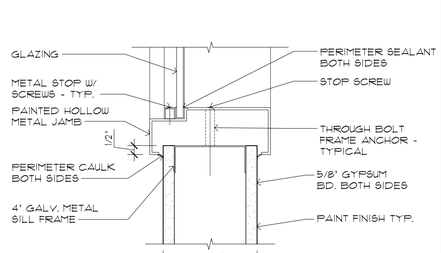
A12-8 H.M. HEAD DETAIL
3" = 1'-0"



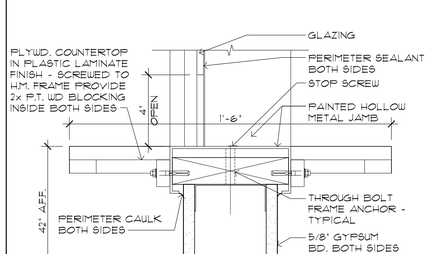
A12-1 ALUM. FIXED WIN. SILL DET.
3" = 1'-0"



A12-4 ALUM. LOUVER SILL DET.
3" = 1'-0"



A12-7 H.M. SILL DETAIL
3" = 1'-0"



A12-10 RECEPT. SILL DETAIL
3" = 1'-0"

LIST OF FINISHES

1 - COMPOSITE VINYL TILE
2 - PAINT
3 - GYPSUM BOARD
4 - CERAMIC TILE
5 - ACOUSTIC CLG TILE
6 - CONCRETE SEALER
7 - OPEN TO STRUCTURE

FINISH SCHEDULE

ROOM NAME	FLOOR FINISH	WALLS	CEILING	CEILING HEIGHT
VISITOR LOUNGE	1	2/3	5	10'-0"
RECEPTION/CASHIER	1	2/3	5	8'-0"
REVENUE & DEPOSITORY RM	1	2/3	2/3	10'-0"
BUS OPERATOR SUPERVISOR & DISPATCH RM	1	2/3	5	10'-0"
CORRIDOR	1	2/3	5	10'-0"
OFFICE 1	1	2/3	5	10'-0"
OFFICE 2	1	2/3	5	10'-0"
OFFICE 3	1	2/3	5	10'-0"
OFFICE 4	1	2/3	5	10'-0"
OFFICE 5	1	2/3	5	10'-0"
OFFICE 6	1	2/3	5	10'-0"
OFFICE 7	1	2/3	5	10'-0"
OFFICE 8	1	2/3	5	10'-0"
IT SERVER & TELECOM ROOM	1	2/3	2/3	8'-0"
ELECTRICAL ROOM	1	2/3	2/3	8'-0"
MANAGER OFFICE	1	2/3	5	10'-0"
MANAGER RESTROOM	4	2/3/4	5	8'-0"
JANITOR CLOSET	4	2/3	5	8'-0"
PRINTING ROOM	1	2/3	5	10'-0"
STORAGE	1	2/3	5	10'-0"
WOMEN'S RESTROOM	4	2/3/4	2/3	10'-0"
MEN'S RESTROOM	4	2/3/4	2/3	10'-0"
CONFERENCE ROOM	1	2/3	5	10'-0"
STAFF LOUNGE	1	2/3	5	10'-0"
MAINTENANCE STAFF LOCKER	1	2/3	5	10'-0"
MAINTENANCE STAFF RESTROOM	4	2/3/4	2/3	8'-0"
MAINTENANCE SUPERVISOR	1	2/3	5	10'-0"
SMALL PARTS & TOOLS STORAGE	6	2/3	5	10'-0"
LARGE PARTS STORAGE ROOM	6	2/3	5	10'-0"
BUS MAINTENANCE BAYS	6		7	VARIES

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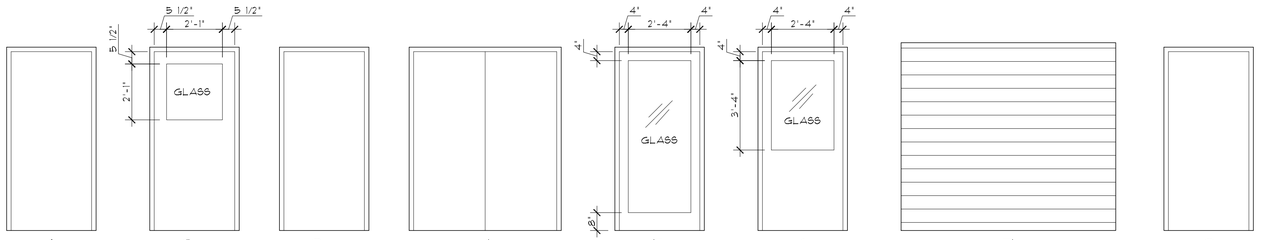
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
WINDOW TYPES, SCHEDULE, DETAILS & FINISH SCHEDULE

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A12



1 HOLLOW METAL DOOR W/ HOLLOW METAL FRAME

2 HOLLOW METAL DOOR W/ HOLLOW METAL FRAME

3 SOLID CORE WOOD DOOR WITH HOLLOW METAL FRAME

4 SOLID CORE WOOD DOOR WITH HOLLOW METAL FRAME

5 WOOD DOOR FULL LITE TEMPERED GLASS W/ HOLLOW METAL FRAME

6 WOOD DOOR HALF LITE TEMPERED GLASS W/ HOLLOW METAL FRAME

7 STEEL ROLL-UP DOOR

8 FIBER REINFORCED PLASTIC (FRP) DOOR

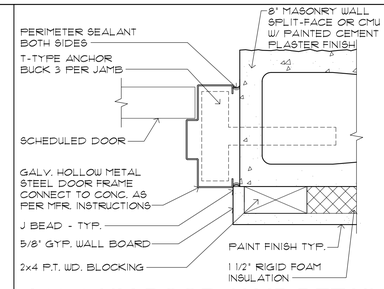
DOOR SCHEDULE

MARK	TYPE	SIZE	HEAD	JAMB	SILL	HDWARE	REMARKS	FIRE RATING
1	2	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	2	-	-
2	2	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	2	-	-
3	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	1	PROVIDE ARMOR PLATE	-
4	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	1	-	-
5	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	1	-	-
6	2	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	2	-	-
7	5	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	6	-	-
8	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	3	-	-
9	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	3	SECURITY LOCKSET	-
10	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
11	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
12	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
13	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
14	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
15	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
16	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	6	-	-
17	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	7	-	-
18	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	A13-6	5	-	-
19	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	A13-6	5	-	-
20	5	3'-0"x7'-0"x1 3/4"	A13-5	A13-4		6		-
21	4	PR 2'-8"x7'-0"x1 3/4"	A13-5	A13-4	-	9		-
22	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	A13-6	8	-	-
23	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	7	-	-
24	5	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	A13-6	4		
25	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	7	-	-
26	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	A13-6	7	-	-
27	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
28	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
29	6	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	4	-	-
30	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	1	-	-
31	7	6'-0"x10'-0"	-	-	-	-	-	-
32	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	-	7	ARMOR PLATE	-
33	2	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	10	-	-
34	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	10		
35	8	3'-0"x7'-0"x1 3/4"	A13-8	A13-7	-	8		-
36	3	3'-0"x7'-0"x1 3/4"	A13-5	A13-4	-	8	-	-
37	1	3'-0"x7'-0"x1 3/4"	A13-2	A13-1	A13-3	1	-	-
38	7	14'-0"x14'-0"	-	-	-	-	MOTOR OPERATED WITH CHAIN HOIST FOR MANUAL OPERATION. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.	-
39	7	14'-0"x14'-0"	-	-	-	-		-
40	7	14'-0"x14'-0"	-	-	-	-		-
41	7	14'-0"x14'-0"	-	-	-	-		-
42	7	14'-0"x14'-0"	-	-	-	-		-
43	7	14'-0"x14'-0"	-	-	-	-		-
44	7	14'-0"x14'-0"	-	-	-	-		-
45	7	14'-0"x14'-0"	-	-	-	-		-

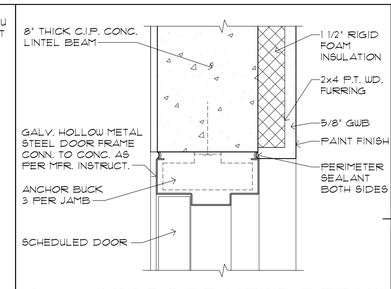
HARDWARE SCHEDULE

1. KEYED ENTRANCE SET W/ BUTTON RELEASE, DOUBLE CYLINDER KEYED ENTRY DEADBOLT, 1 1/2 PAIR BUTT HINGES, DOOR CLOSER, ALUMINUM THRESHOLD, VINYL JAMB WEATHER STRIP, ALUM. VINYL DOOR SWEEP, KICK PLATE BOTH SIDES.
2. PULL HANDLE OUTSIDE W/ PUSH PLATE INSIDE, DOUBLE CYLINDER KEYED ENTRY DEADBOLT, 1 1/2 PAIR BUTT HINGES, DOOR CLOSER, ALUMINUM THRESHOLD VINYL JAMB WEATHER STRIP, ALUM. VINYL DOOR SWEEP.
3. KEYED ENTRANCE SET W/ BUTTON RELEASE LOCKSET, KEYED DEADBOLT W/ THUMB TURN INSIDE, 1 1/2 PAIR BUTT HINGES.
4. KEYED ENTRANCE SET W/ BUTTON RELEASE, 1 1/2 PAIR BUTT HINGES AND DOOR CLOSER.
5. PUSH PLATE/PULL HANDLE, 1 1/2 PAIR BUTT HINGES & DOOR CLOSER WITH KICK PLATE.
6. PASSAGE SET, 1 1/2 PAIR BUTT HINGES AND DOOR CLOSER.
7. STORE ROOM LOCK WITH 1 1/2 PAIR BUTT HINGES WITH WALL MOUNTED DOOR HOLDER.
8. PRIVACY SET WITH BUTTON RELEASE, 1 1/2 PAIR BUTT HINGES AND WALL MOUNTED DOOR STOP.
9. PUSH/PULL HANDLE, 3 PAIR BUTT HINGES, TOP & BOTTOM FLUSH BOLTS ON INACTIVE LEAF, DOOR CLOSER HOLD OPEN.
10. KEYED ENTRANCE SET W/ BUTTON RELEASE, 1 1/2 PAIR BUTT HINGES, DOOR CLOSER, ALUMINUM THRESHOLD & VINYL JAMB WEATHER STRIP.

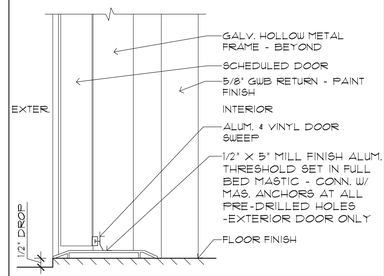
ELECTRONIC "EXIT SET" & KEYPAD W/ KEY OVERIDE, PANIC HARDWARE INSIDE, (3) 4 1/2" X 4 1/2" BALL BEARING BUTT HINGES, DOOR CLOSER, ALUMINUM THRESHOLD, WEATHERSTRIPPING, ALUMINUM & VINYL DOOR SWEEP.



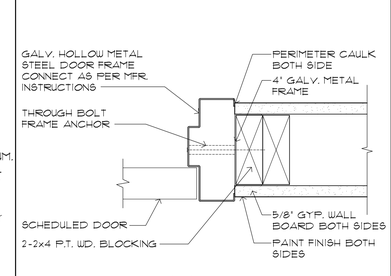
A13-1 HM DOOR JAMB DETAIL
3" = 1'-0"



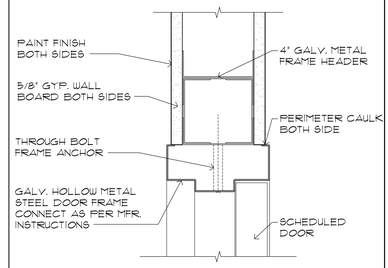
A13-2 HM DOOR HEAD DETAIL
3" = 1'-0"



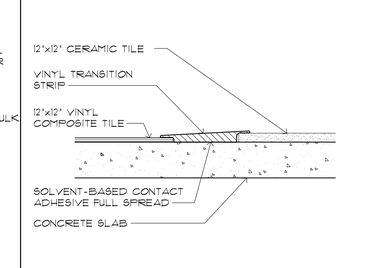
A13-3 HM DOOR SILL DETAIL
3" = 1'-0"



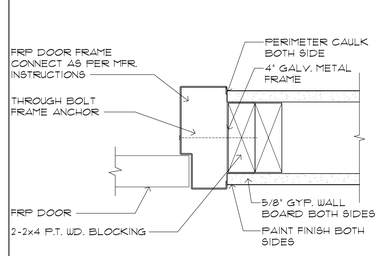
A13-4 HM DOOR JAMB DETAIL
3" = 1'-0"



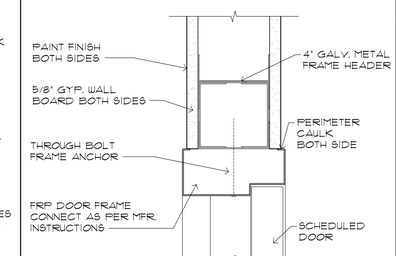
A13-5 HM DOOR HEAD DETAIL
3" = 1'-0"



A13-6 THRESHOLD DETAIL
6" = 1'-0"



A13-7 FRP DOOR JAMB DTL
3" = 1'-0"



A13-8 FRP DOOR HEAD DTL
3" = 1'-0"

△3 REVISION-3 : DATE: 5-22-2018
REVISED OMITTED DOORS FROM SCHEDULE FOR BUS MAINTENANCE BAY REDUCTION.

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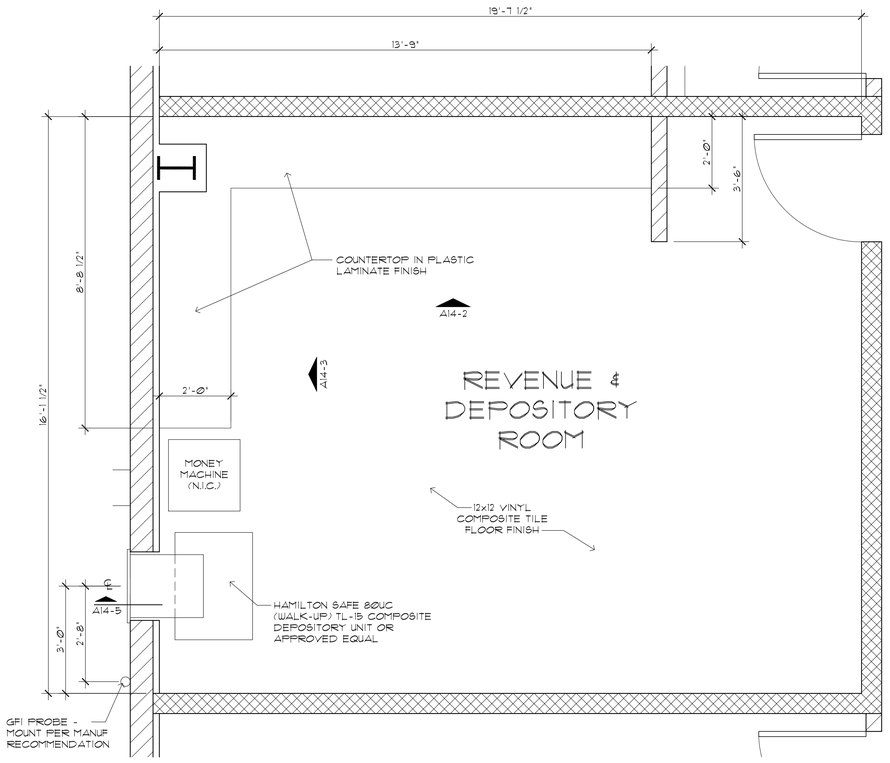
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
DOOR TYPES, SCHEDULES & DETAILS

DATE: 6-30-17
DRAWN BY: STAFF

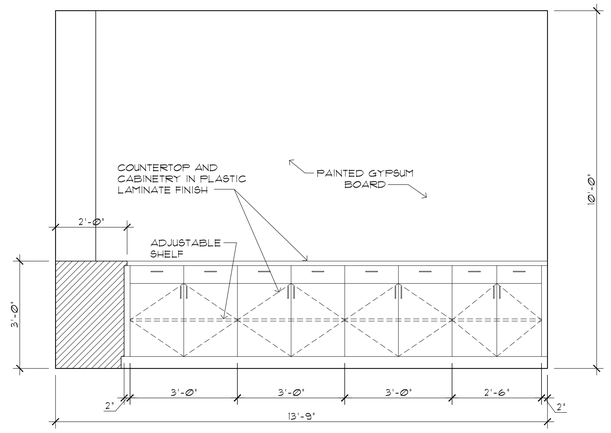
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SHEET NUMBER:
A13



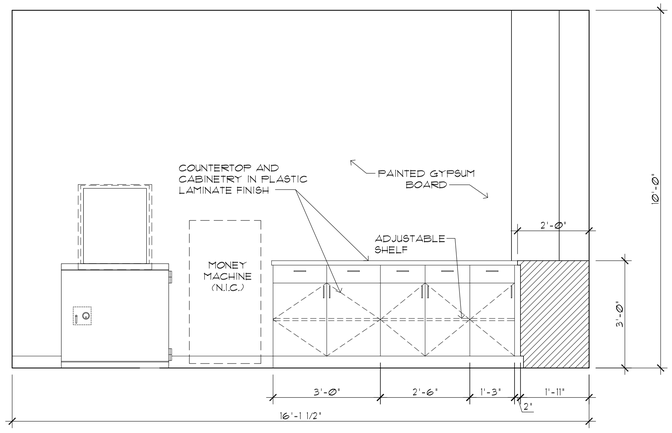
A14-1 REVENUE & DEPOSITORY ROOM ENLARGED PLAN

1/2"=1'-0"



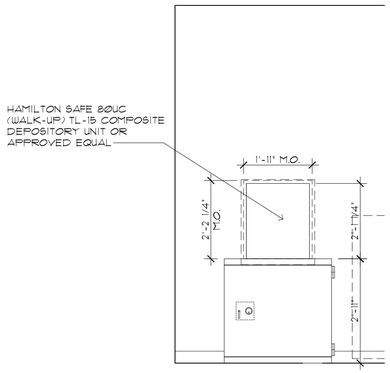
A14-2 REVENUE & DEPOSITORY RM ELEV

1/2"=1'-0"



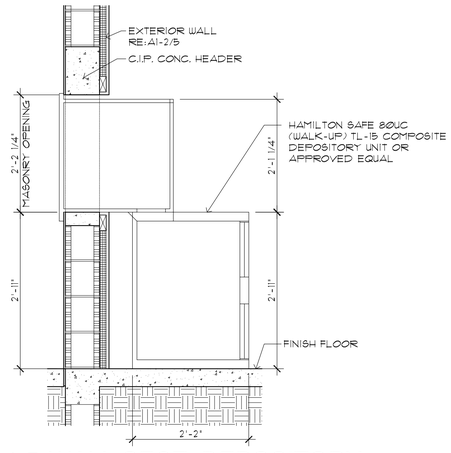
A14-3 REVENUE & DEPOSITORY RM ELEV

1/2"=1'-0"



A14-4 SAFE ELEVATION

1/2"=1'-0"



A14-5 WALL SECT. DEPOSITORY

3/4"=1'-0"

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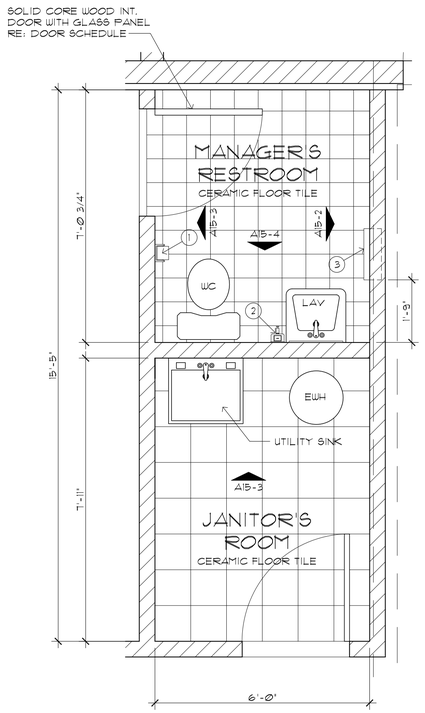
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
ENLARGED PLANS, INTERIOR
ELEVATIONS AND WALL SECTION

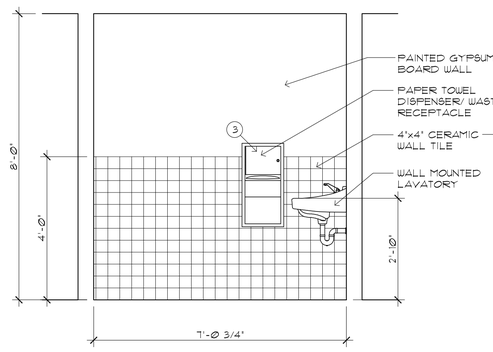
DATE: 6-30-17
DRAWN BY: STAFF

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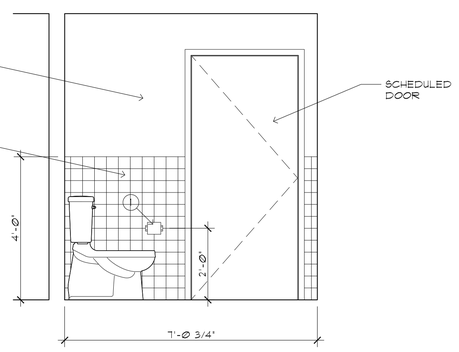
SHEET NUMBER:
A14



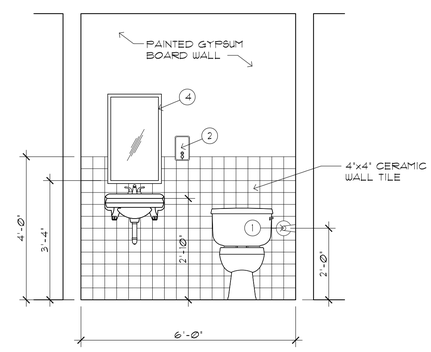
A15-1 ENLARGED PLAN - MGR. RESTRM & JAN. RM.
1/2"=1'-Ø"



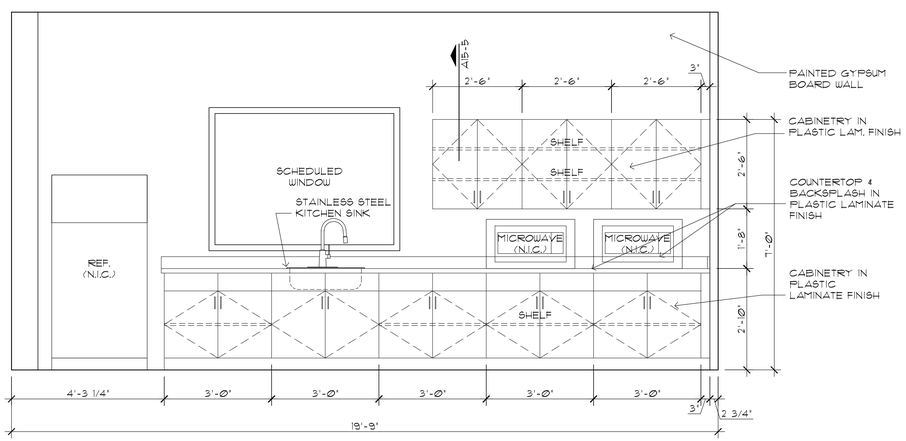
A15-2 MGR. RESTRM. INTERIOR ELEV.
1/2"=1'-Ø"



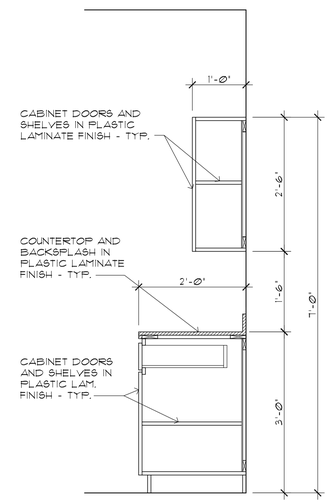
A15-3 MGR. RESTRM. INTERIOR ELEV.
1/2"=1'-Ø"



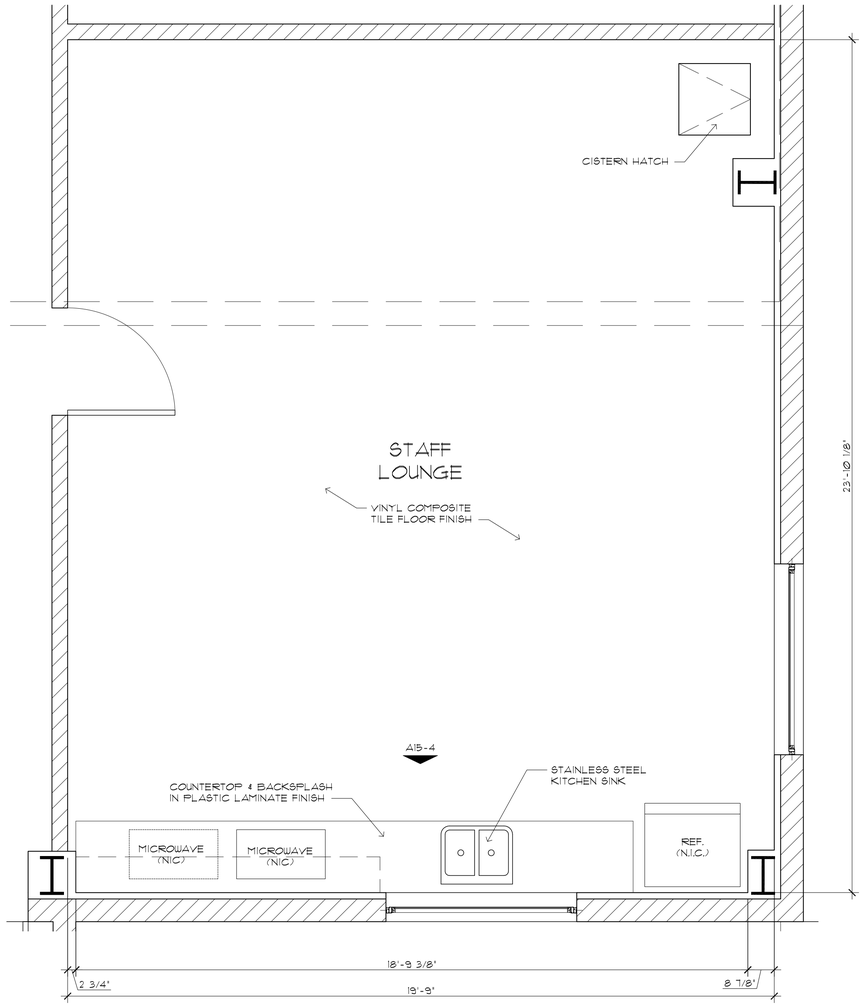
A15-4 MGR. RESTRM. INTERIOR ELEV.
1/2"=1'-Ø"



A15-4 KITCHENETTE ELEVATION
1/2"=1'-Ø"



A15-5 TYP. CABINET SECTION
3/4"=1'-Ø"



A15-5 ENLARGED PLAN - KITCHENETTE
1/2"=1'-Ø"

RESTROOM ACCESSORIES SCHEDULE

MARK	ITEM	MANUFACTURER	MODEL NO.	MOUNTING HEIGHT	REMARKS
1	TOILET PAPER HOLDER	BRADLEY	5084	SURFACE - 24" A.F.F.	TO CENTERLINE OF UNIT
2	SOAP DISPENSER	BRADLEY	6562	SURFACE - 48" MAX. A.F.F.	TO OPERATING LEVER
3	TOWEL DISPENSER/WASTE RECEPTACLE	BRADLEY	2252	RECESSED - 48" MAX. A.F.F.	TO OPERATING LEVER
4	MIRROR - 18"x36"	BRADLEY	740	SURFACE - 40" MAX. A.F.F.	REFL. PART OF MIRROR BOTTOM

NOTE: 1. CLIENT/BUILDER MAY SUBSTITUTE THESE SELECTIONS FOR EQUAL OR ABOVE QUALITY WITH ARCHITECT'S APPROVAL.
2. REFER TP PLUMBING DRAWING FOR FIXTURE SCHEDULE.

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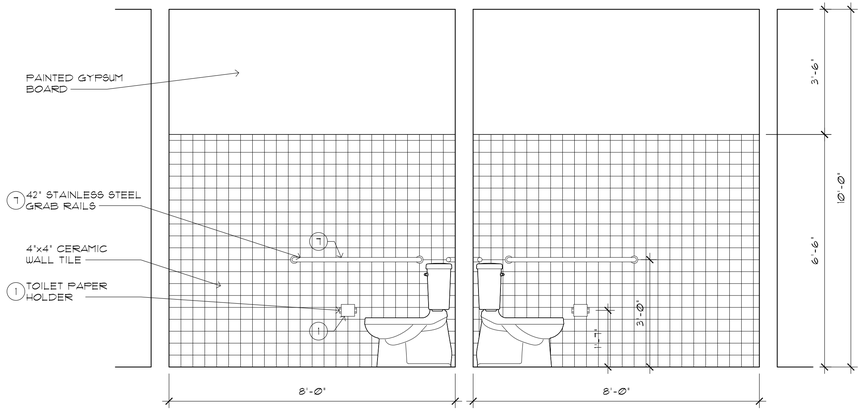
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING
ENLARGED PLANS AND INTERIOR ELEVATIONS

DATE: 6-30-17
DRAWN BY: STAFF

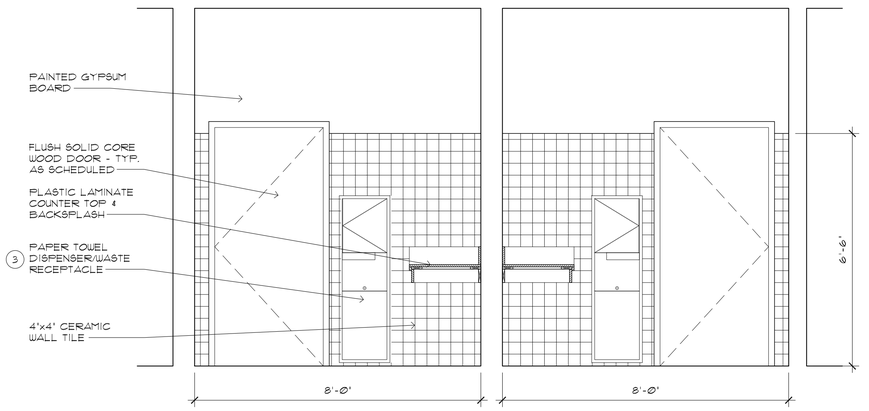
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SHEET NUMBER:
A15



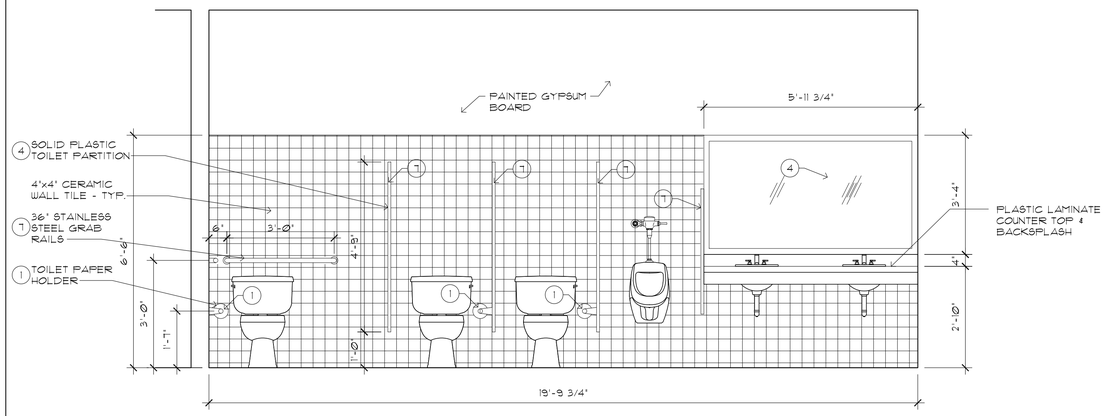
A16-4 RESTROOM INTERIOR ELEVATION

SCALE : 1/2"=1'-0"



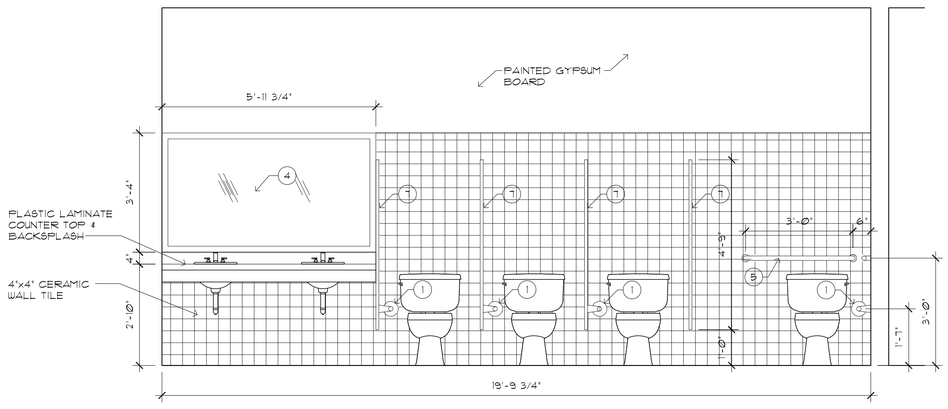
A16-5 RESTROOM INTERIOR ELEVATION

SCALE : 1/2"=1'-0"



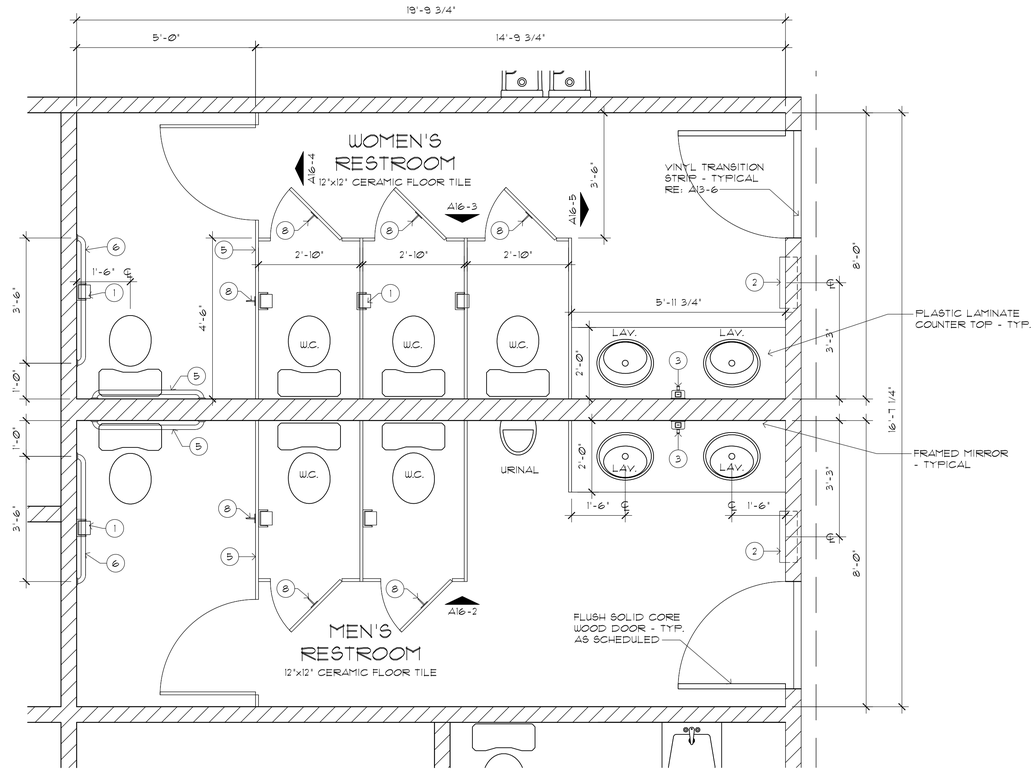
A16-3 RESTROOM INTERIOR ELEVATION

SCALE : 1/2"=1'-0"



A16-2 RESTROOM INTERIOR ELEVATION

SCALE : 1/2"=1'-0"



A16-1 TYPICAL ENLARGED RESTROOM PLAN

SCALE : 1/2"=1'-0"

RESTROOM ACCESSORY SCHEDULE

MARK	ITEM	MANUFACTURER	MODEL NUMBER	REMARKS
1	TOILET PAPER HOLDER	BRADLEY	5084	SURFACE MOUNTED
2	TOWEL DISPENSER/WASTE RECEPTACLE	BRADLEY	2252	RECESSED - 48" MAX. AFF. TO OPERATING LEVER
3	SOAP DISPENSER	BRADLEY	6501	SURFACE - 40" AFF
4	FRAMED MIRROR			SURFACE 40" MAX. REFL PART OF MIRROR BOTT.
5	36" GRAB BAR	BRADLEY	812Ø-ØØ136Ø	SURFACE, CONCEALED FAST.-36" AFF
6	42" GRAB BAR	BRADLEY	812Ø-ØØ142Ø	SURFACE, CONCEALED FAST.-36" AFF
7	TOILET PARTITIONS	BRADLEY	SERIES 4ØØ	BRACED TOP & BOTTOM.
8	HOOK	BRADLEY	9118	SURFACE - 6Ø" AFF. TO CENTERLINE OF UNIT

OWNER/BUILDER MAY SUBSTITUTE THESE SELECTIONS FOR EQUAL OR ABOVE QUALITY WITH ARCHITECT'S APPROVAL

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
TYPICAL RESTROOM ENLARGED PLAN, INT. ELEVATIONS AND ACCESSORIES SCHEDULE

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A16

RESTROOM ACCESSORY SCHEDULE

MARK	ITEM	MANUFACTURER	MODEL NUMBER	REMARKS
1	TOILET PAPER HOLDER	BRADLEY	5084	SURFACE MOUNTED
2	PAPER TOWEL DISPENSER	BRADLEY	252-15	SURFACE, 48" MAX TO CENTER OF TOWEL SLOT
3	SOAP DISPENSER	BRADLEY	6501	SURFACE- 40" AFF
4	MIRROR - 18"x30"	BRADLEY	740	SURFACE,40" MAX. REFL PART OF MIRROR BOTT.
5	36" GRAB BAR	BRADLEY	812Ø-ØØ136Ø	SURFACE, CONCEALED FAST.-36" AFF
6	42" GRAB BAR	BRADLEY	812Ø-ØØ142Ø	SURFACE, CONCEALED FAST.-36" AFF

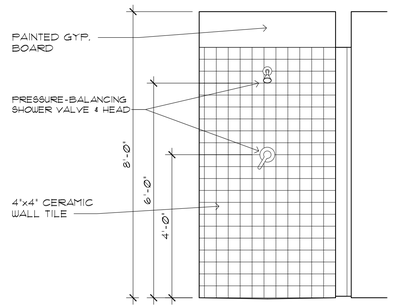
OWNER/BUILDER MAY SUBSITUTE THESE SELECTIONS FOR EQUAL OR ABOVE QUALITY WITH ARCHITECT'S APPROVAL

NOTES:

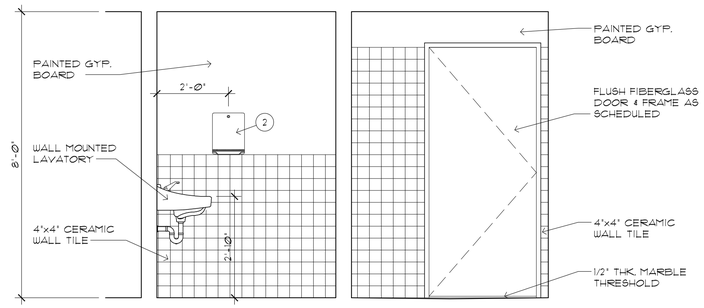
1. PROVIDE THINSET TILE ON SLOPED MORTAR CAP ON SHOWER MEMBRANE. PROVIDE 1/8" PER FT. SLOPE TO SHOWER DRAIN AT SHOWERS.

2. REFER TO SHEET A1 FOR BATHROOM WALL TYPE.

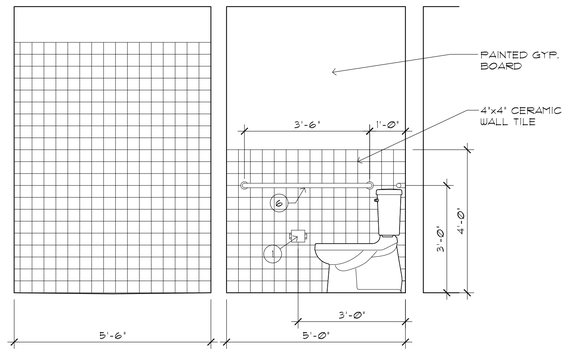
3. REFER TO PLUMBING DRAWING FOR FIXTURE SCHEDULE.



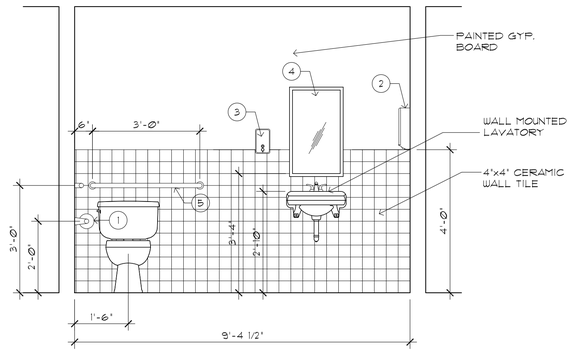
A17-5 LOCKERS RESTRM. INTERIOR ELEV.
SCALE : 1/2"=1'-Ø"



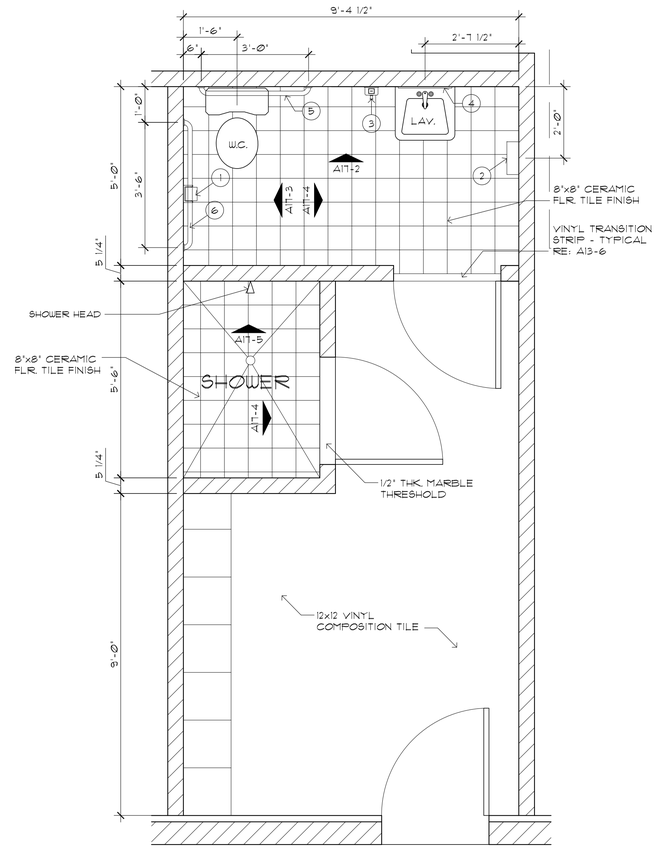
A17-4 LOCKERS RESTRM. INTERIOR ELEV.
SCALE : 1/2"=1'-Ø"



A17-3 LOCKERS RESTRM. INTERIOR ELEV.
SCALE : 1/2"=1'-Ø"



A17-2 LOCKERS RESTRM. INTERIOR ELEV.
SCALE : 1/2"=1'-Ø"



A17-1 ENLARGED PLAN - LOCKERS ROOM, RESTROOM & SHOWER
SCALE : 1/2"=1'-Ø"

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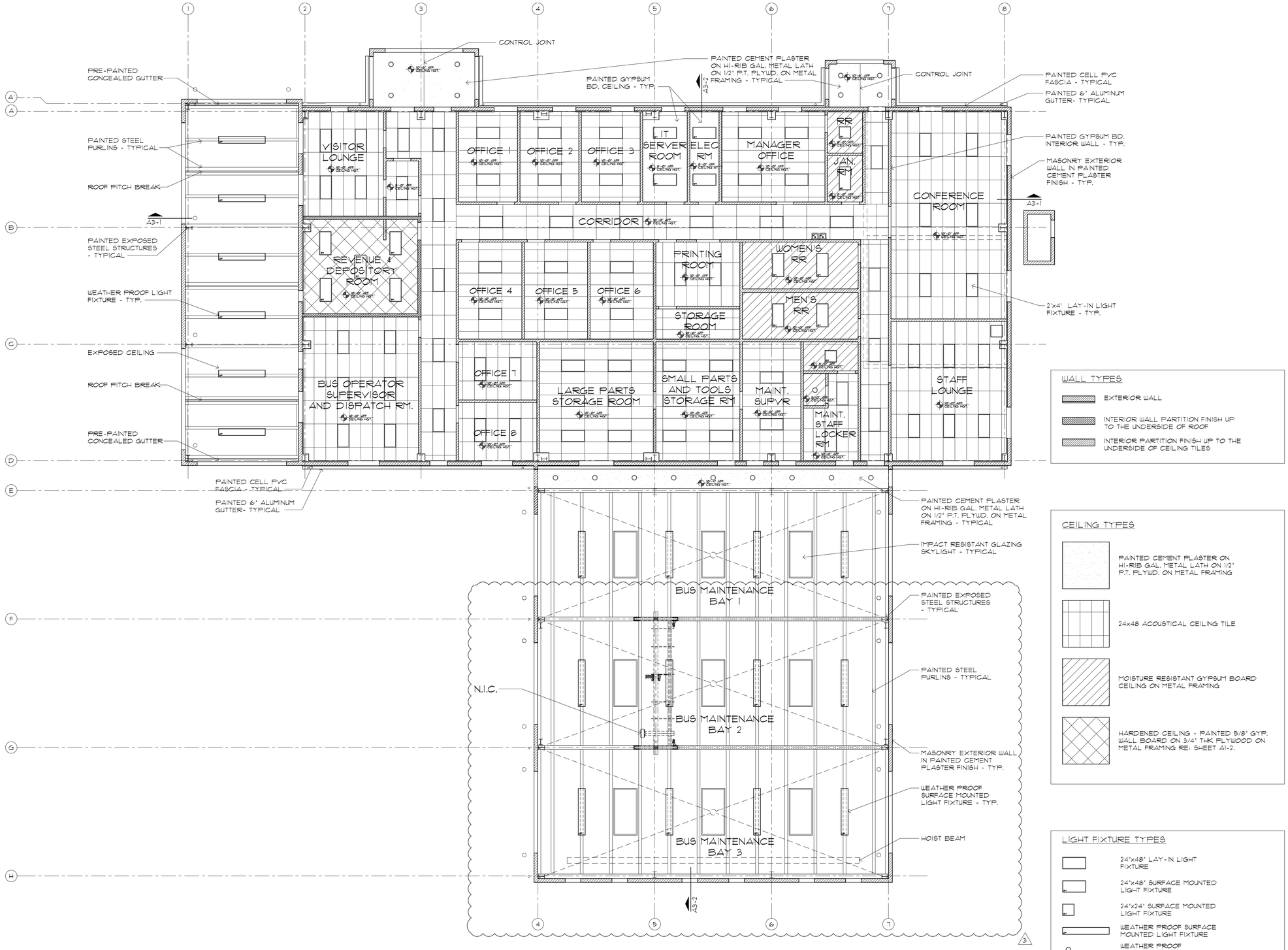
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
RESTROOMS ENLARGED PLANS INTERIOR ELEVATIONS AND ACCESSORIES SCHEDULE

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A17



WALL TYPES

- EXTERIOR WALL
- INTERIOR WALL PARTITION FINISH UP TO THE UNDERSIDE OF ROOF
- INTERIOR PARTITION FINISH UP TO THE UNDERSIDE OF CEILING TILES

CEILING TYPES

- PAINTED CEMENT PLASTER ON HI-RIB GAL. METAL LATH ON 1/2" P.T. PLYWD. ON METAL FRAMING
- 24x48 ACOUSTICAL CEILING TILE
- MOISTURE RESISTANT GYPSUM BOARD CEILING ON METAL FRAMING
- HARDENED CEILING - PAINTED 5/8" GYP. WALL BOARD ON 3/4" THK PLYWOOD ON METAL FRAMING RE: SHEET A1-2.

LIGHT FIXTURE TYPES

- 24"x48" LAY-IN LIGHT FIXTURE
- 24"x48" SURFACE MOUNTED LIGHT FIXTURE
- 24"x24" SURFACE MOUNTED LIGHT FIXTURE
- WEATHER PROOF SURFACE MOUNTED LIGHT FIXTURE
- WEATHER PROOF RECESSED LIGHT FIXTURE

NOTE:
REFER TO ELECTRICAL DRAWINGS FOR LIGHT FIXTURES SCHEDULE 4 TYPES.

NORTH

A18-1 OPERATIONS FACILITY BUILDING REFLECTED PLAN

1/8"=1'-0"

3 REVISION-3 : DATE: 5-22-2018
REVISED RCP PLAN AFTER REMOVING (1) BUS MAINTENANCE BAY.

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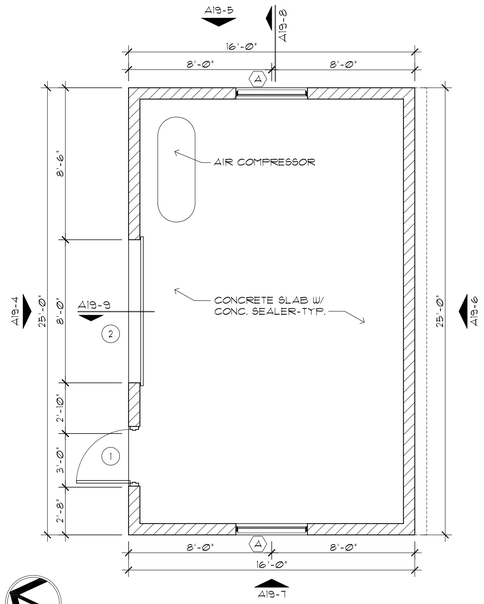
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY BUILDING REFLECTED CEILING PLAN

DATE: 6-30-17
DRAWN BY: STAFF

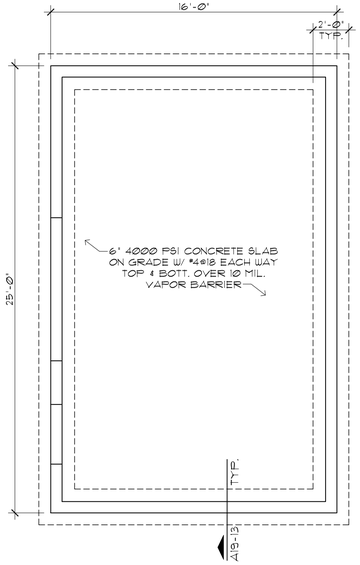
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SHEET NUMBER:
A18

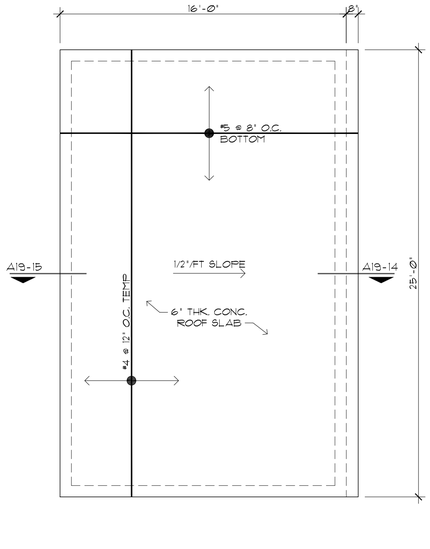


A19-1 TIRE STORAGE FLOOR PLAN
BUILDING-3

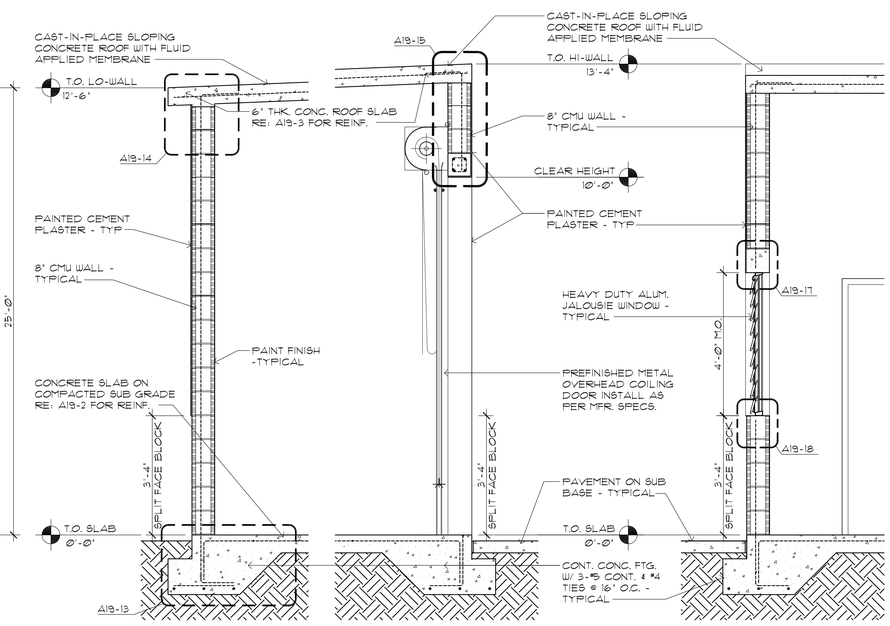
NORTH



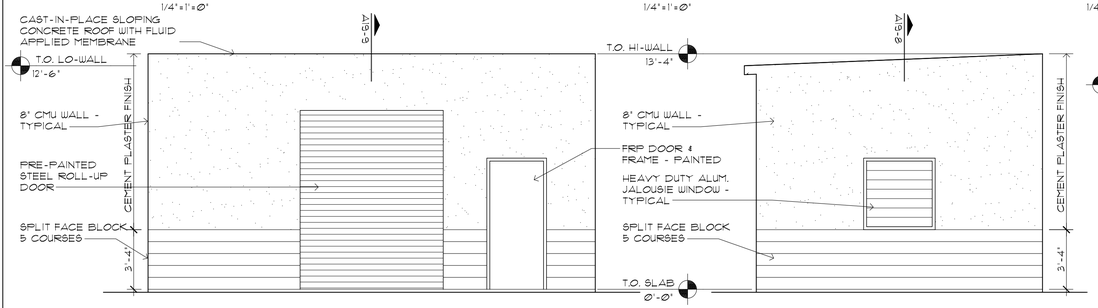
A19-2 TIRE STO. FOUND. PLAN
BUILDING-3



A19-3 TIRE STO. ROOF PLAN
BUILDING-3

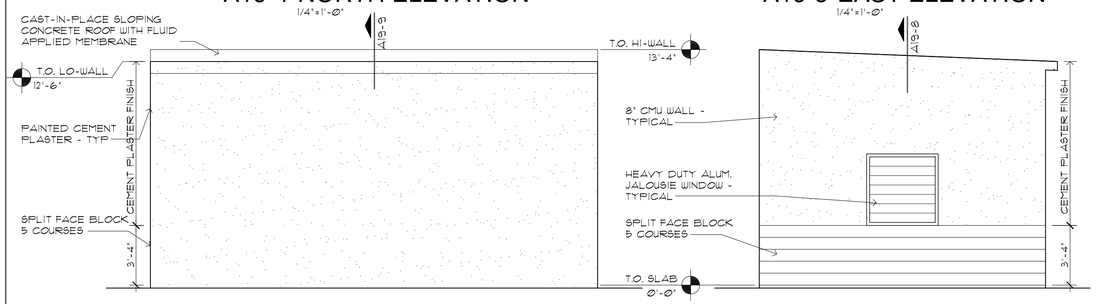


A19-10 WALL SECT. A19-11 WALL SECT. A19-12 WALL SECTION



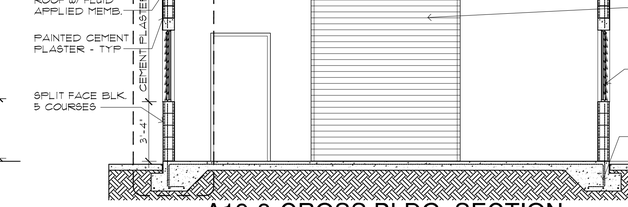
A19-4 NORTH ELEVATION
1/4"=1'-0"

A19-5 EAST ELEVATION
1/4"=1'-0"

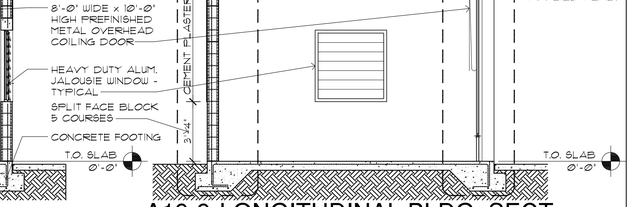


A19-6 SOUTH ELEVATION
1/4"=1'-0"

A19-7 WEST ELEVATION
1/4"=1'-0"

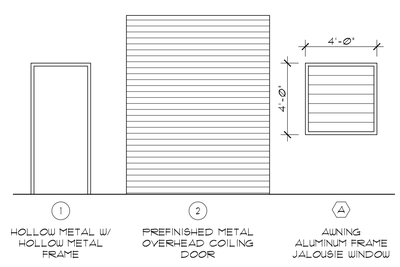


A19-8 CROSS BLDG. SECTION
1/4"=1'-0"



A19-9 LONGITUDINAL BLDG. SECT.
1/4"=1'-0"

DOORS & WINDOW TYPES



1 HOLLOW METAL W/ HOLLOW METAL FRAME
2 PREFINISHED METAL OVERHEAD COILING DOOR
A AUNING ALUMINUM FRAME JALOUSIE WINDOW

DOOR SCHEDULE

MARK	TYPE	SIZE	SILL	JAMB	HEAD	HDWR	REMARK
1	1	3'-0"x7'-4"	A19-20/A	A19-19	A19-20/B	1	-
2	2	8'-0"x10'-0"	-	-	-	-	INSTALL AS PER MFR. SPECIFICATION

WINDOW SCHEDULE

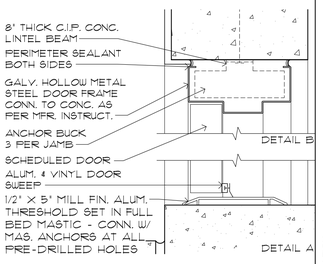
TYPE	M.O. SIZE	HEAD HGT. ABV. FIN.FLR.	TYPE	HEAD	JAMB	SILL	MANUFACTURER
A	4'-0"x4'-0"	7'-4"	AUNING/ JALOUSIE	A19-17	A19-16	A19-18	GIBRALTAR BY CENTERLINE CORP.

HARDWARE SCHEDULE

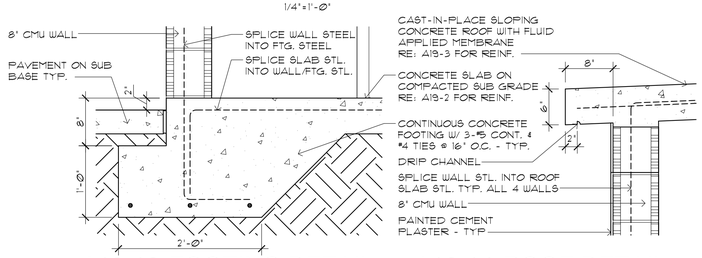
1. KEYED ENTRANCE SET W/ BUTTON RELEASE, KEYED DEADBOLT W/ THUMB TURN INSIDE, 1 1/2 PAIR BUTT HINGES, DOOR CLOSER, ALUMINUM THRESHOLD, ALUM. & VINYL DOOR SWEEP.

NOTES:

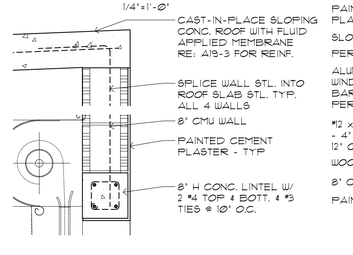
1. INSTALL STEEL ROLL-UP DOOR AS PER MFR. SPECIFICATIONS.



A19-20 DOOR HD/SILL DET.
3"=1'-0"

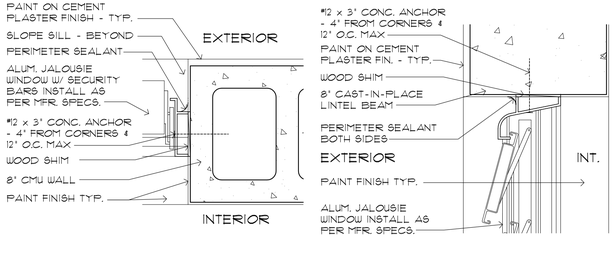


A19-13 FOOTING DETAIL
1"=1'-0"



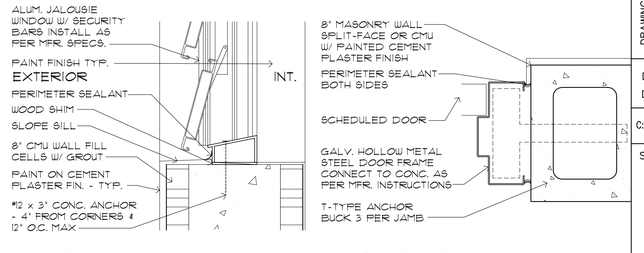
A19-14 ROOF DETAIL
1"=1'-0"

A19-15 ROOF DETAIL
1"=1'-0"



A19-16 WIN. JAMB DET.
3"=1'-0"

A19-17 WIN. HEAD DET.
3"=1'-0"



A19-18 WIN. SILL DET.
3"=1'-0"

A19-19 DOOR JAMB DET.
3"=1'-0"

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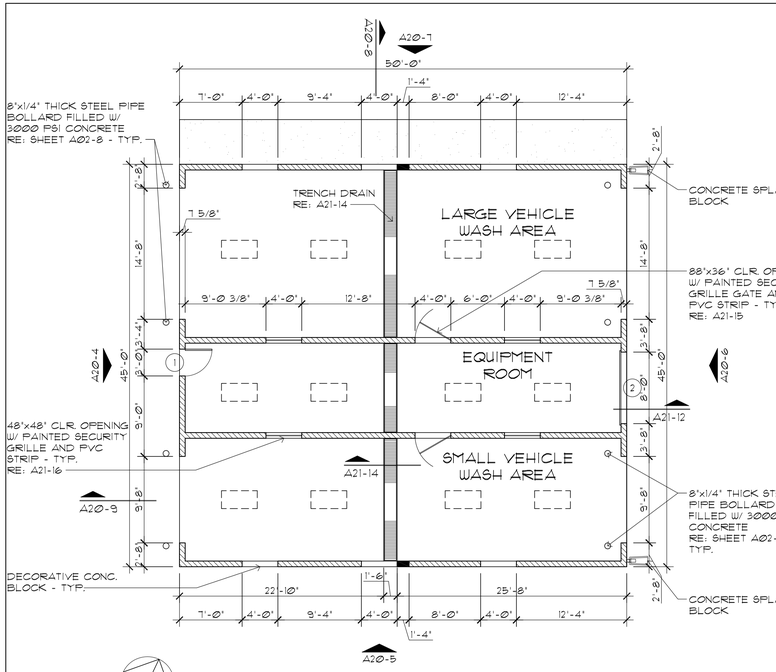
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
TIRE STORAGE - PLANS
EXTERIOR ELEVS., BLDG. SECTS.
WALL SECTIONS & DETAILS

DATE: 6-30-17
DRAWN BY: STAFF

C:\Active Projects\VITRAN\SD

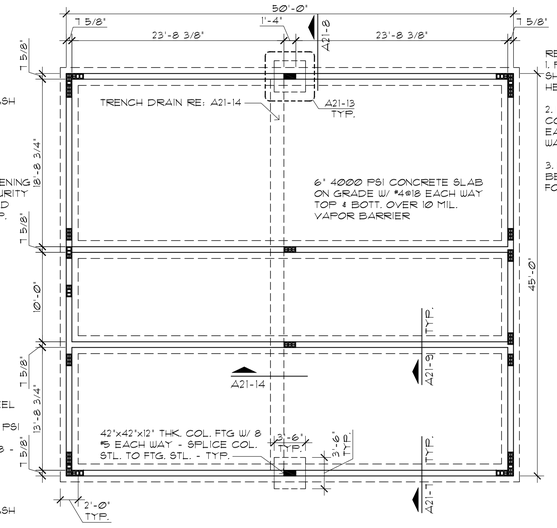
SHEET NUMBER:
A19



A20-1 BUS WASH FLOOR PLAN (BLDG. 2)

1/8"=1'-0"

NORTH

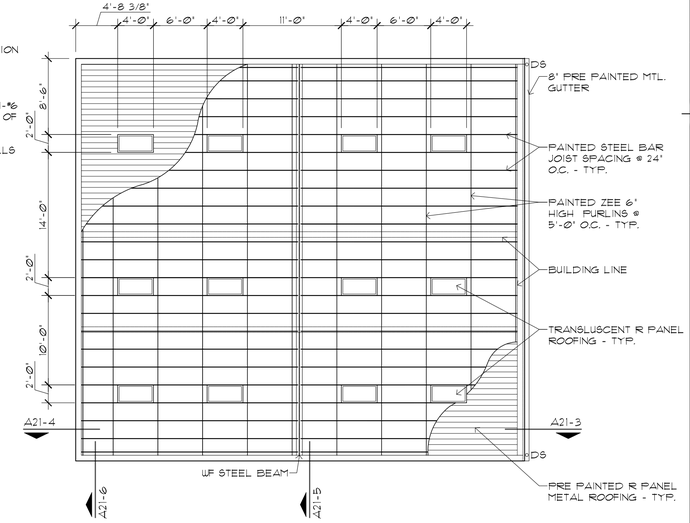


A20-2 BUS WASH FOUNDATION PLAN (BLDG. 2)

1/8"=1'-0"

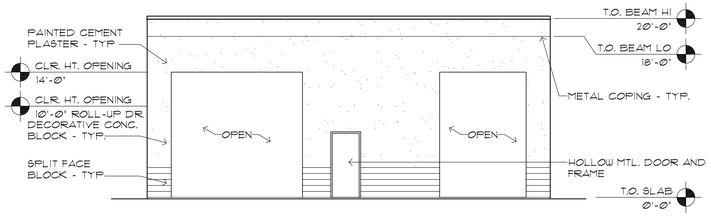
REINFORCED MASONRY NOTES:

1. PROVIDE FILLED CELLS W/ 1-#6 VERT. AT LOCATION SHOWN ON FOUNDATION PLAN ● , FOR FULL STORY HEIGHT.
2. PROVIDE 3-#6 BARS VERTICAL MIN. AT ALL CORNER, 2-#6 VERTICAL AT INTERSECTIONS AND 1-#6 EACH SIDE OF CONTROL JOINTS FOR FULL HEIGHT OF WALL.
3. PROVIDE 1-#6 @ 32" O.C. IN VETICAL FILLED CELLS BETWEEN REINFORCED CELLS DESCRIBE ABOVE, FOR FULL HEIGHT OF WALL.



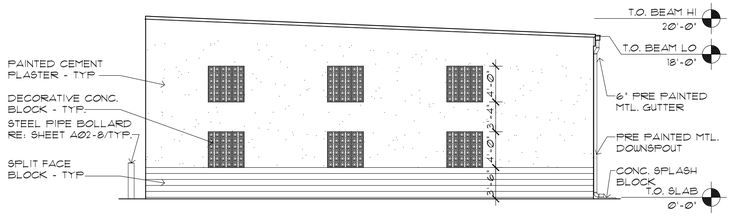
A20-3 BUS WASH FLOOR PLAN (BLDG. 2)

1/8"=1'-0"



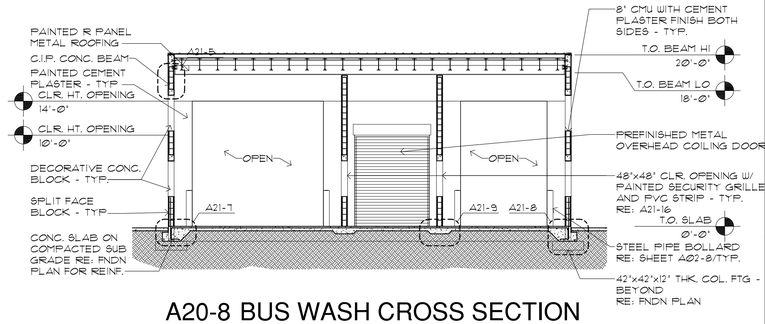
A20-4 NORTH ELEVATION

1/8"=1'-0"



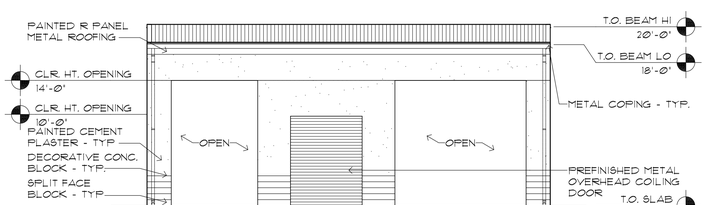
A20-5 EAST ELEVATION

1/8"=1'-0"



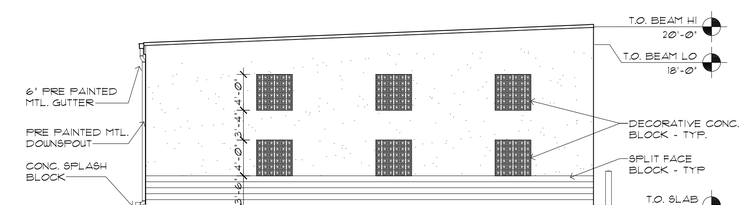
A20-8 BUS WASH CROSS SECTION

1/8"=1'-0"



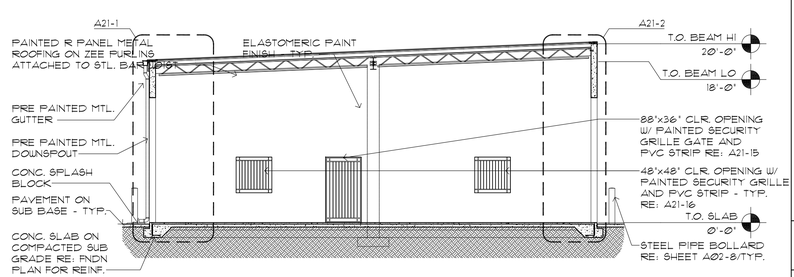
A20-6 SOUTH ELEVATION

1/8"=1'-0"



A20-7 WEST ELEVATION

1/8"=1'-0"



A20-9 BUS WASH LONGITUDINAL SECT.

1/8"=1'-0"

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PROJECT:

VITRAN MAINTENANCE AND OPERATIONS FACILITY

V.I. DEPARTMENT OF PUBLIC WORKS

ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:

BUS WASH PLANS
EXTERIOR ELEVATIONS
AND BUILDING SECTIONS

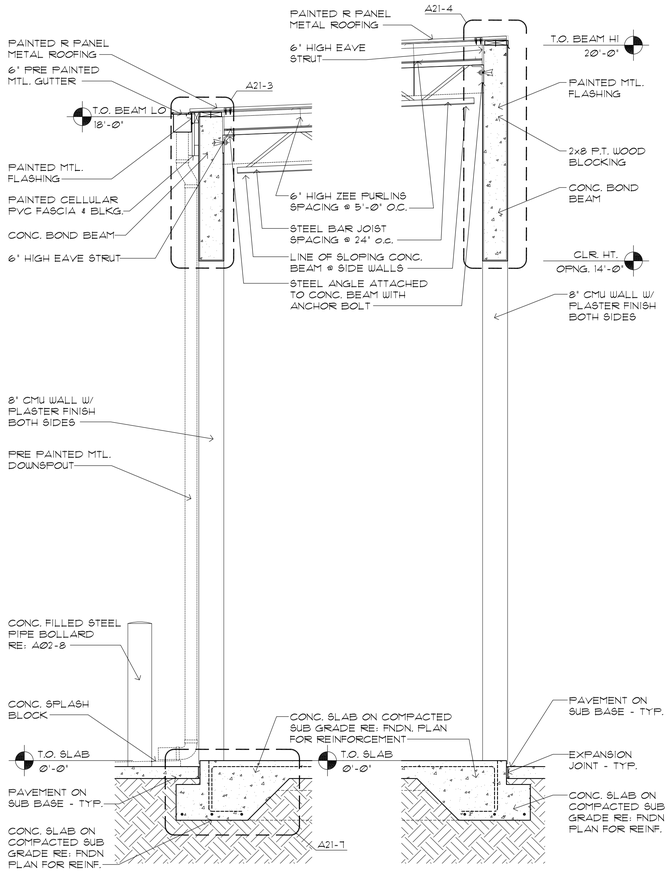
DATE: 6-30-17

DRAWN BY: STAFF

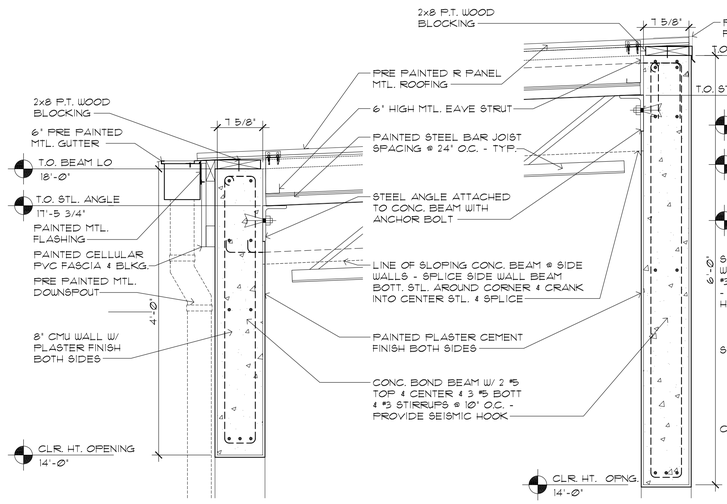
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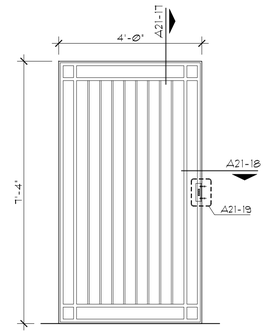
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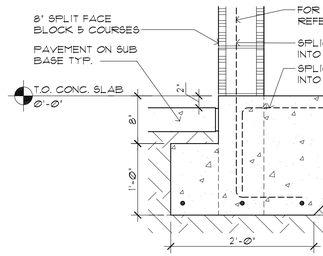
A21-1 WALL SECT. A21-2 WALL SECT.
1/8"=1'-0"



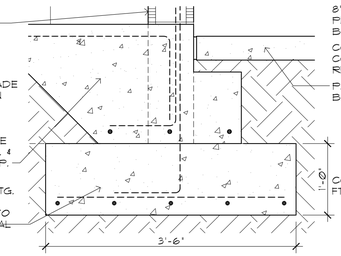
A21-3 ROOF DET. A21-4 ROOF DET. A21-5 ROOF DET. A21-6 ROOF DET.
1/4"=1'-0"



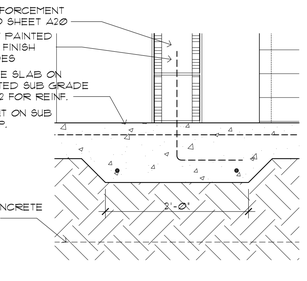
A21-15 SEC. GATE ELEV.



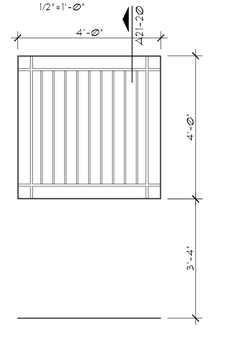
A21-7 FOOTING DETAIL
1/4"=1'-0"



A21-8 COL. FOOTING DETAIL
1/4"=1'-0"

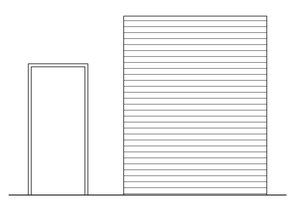


A21-9 FOOTING DETAIL
1/4"=1'-0"



A21-16 SEC. WIN. ELEV.

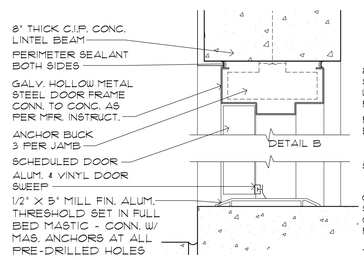
DOORS TYPES



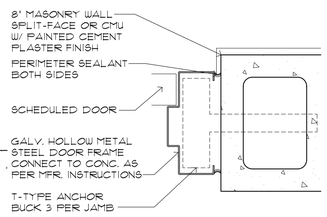
DOOR SCHEDULE							
MARK	TYPE	SIZE	SILL	JAMB	HEAD	HDWR	REMARK
1	1	3'-0"x7'-4"	A21-10/A	A21-11	A21-10/B	1	
2	2	8'-0"x10'-0"	-	-	-	-	INSTALL AS PER MFR. SPECIFICATION

HARDWARE SCHEDULE

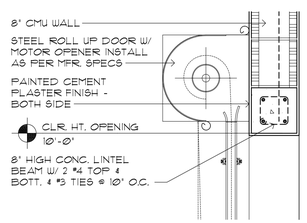
1. KEYED ENTRANCE SET W/ BUTTON RELEASE, KEYED DEADBOLT W/ THUMB TURN INSIDE, 1 1/2 PAIR BUTT HINGES, ALUMINUM THRESHOLD, ALUM. & VINYL DOOR SWEEP.



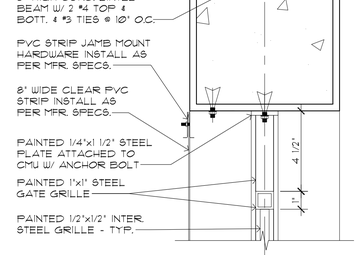
A21-10 DOOR HEAD/SILL DET.
3"=1'-0"



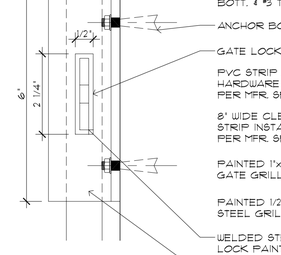
A21-11 DOOR JAMB DET.
3"=1'-0"



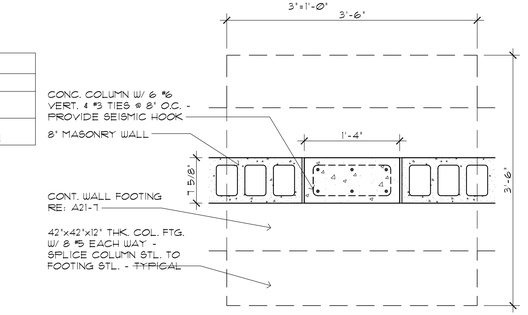
A21-12 ROLL UP DR. DET.
1/4"=1'-0"



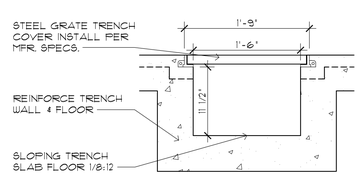
A21-20 SECURITY WIN. DET.
6"=1'-0"



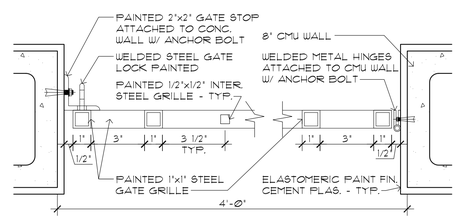
A21-19 SECURITY GATE DET.
6"=1'-0"



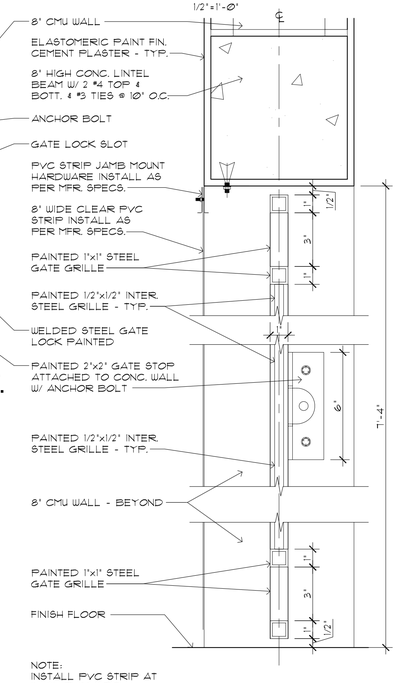
A21-13 COLUMN DETAIL
1/4"=1'-0"



A21-14 TRENCH DETAIL
1/4"=1'-0"



A21-18 SECURITY GATE DETAILS
3"=1'-0"



A21-17 SEC. GATE DETAILS
3"=1'-0"

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
BUS WASH
WALL SECTIONS AND DETAILS

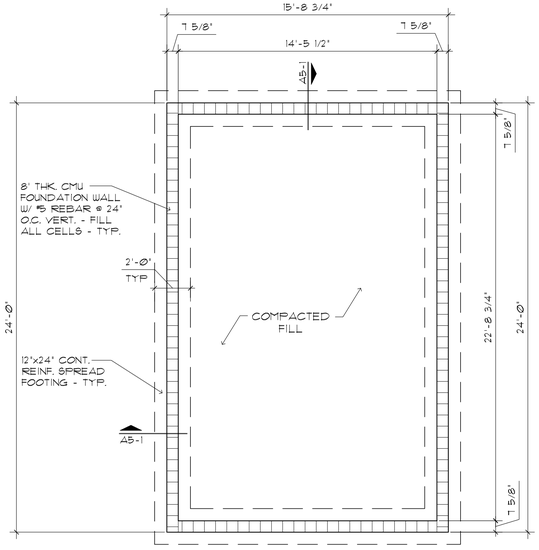
DATE: 6-30-17
DRAWN BY: STAFF

C:\Active Projects\VITRAN\SD

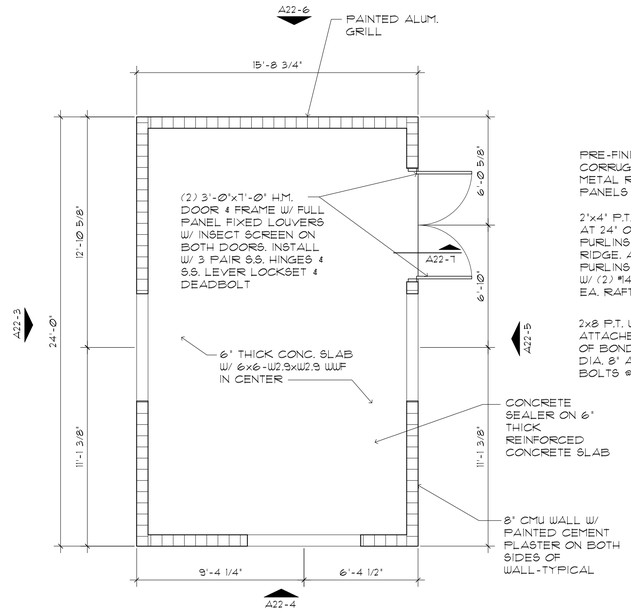
SHEET NUMBER:
A21

GENERAL NOTES:

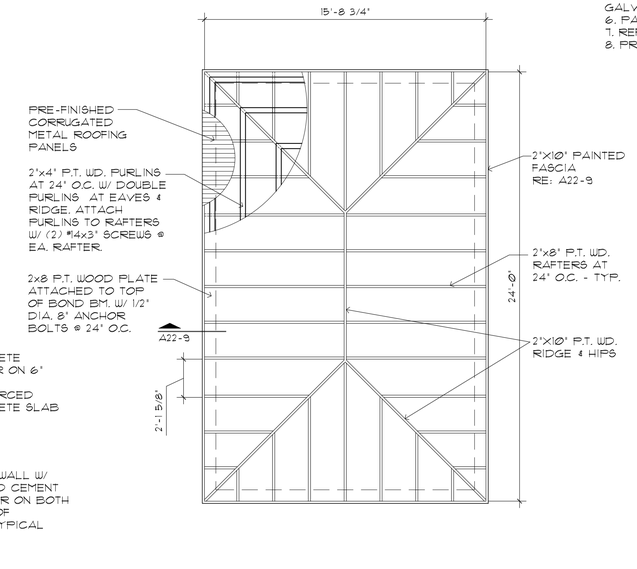
1. EXCAVATE FOR NEW FOOTINGS AS REQUIRED FOR FOOTINGS TO BE CAST ON UNDISTURBED EARTH.
2. ALL WOOD MEMBERS SHALL BE PRESSURE TREATED LUMBER.
3. M.O. UP TO 6'-Ø" WIDE USE 8"x8" LINTEL W/ (2) #5 BOTT.
4. M.O. WIDER THAN 6'-Ø" USE 2 #5 TOP & BOTT. & #3 STIRRUPS @ 12" O.C.
5. ALL METAL FASTENERS AND HARDWARES SHALL BE HOT-DIPPED GALVANIZED STEEL U.N.O.
6. PAINT ALL EXPOSED WOOD SURFACES.
7. REFER TO CONNECTOR SCHEDULE FOR FRAMING CONNECTIONS.
8. PROVIDE 135 DEGREE SEISMIC HOOKS AT ALL BEAM AND COLUMN TIES.



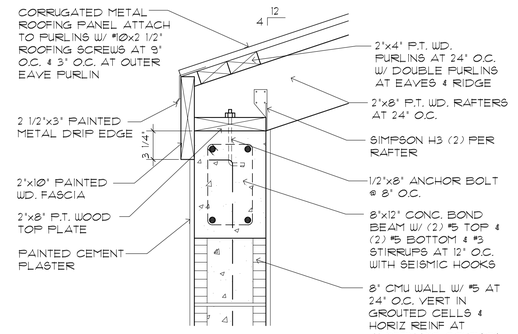
A22-1 FOUNDATION PLAN
1/4"=1'-Ø"



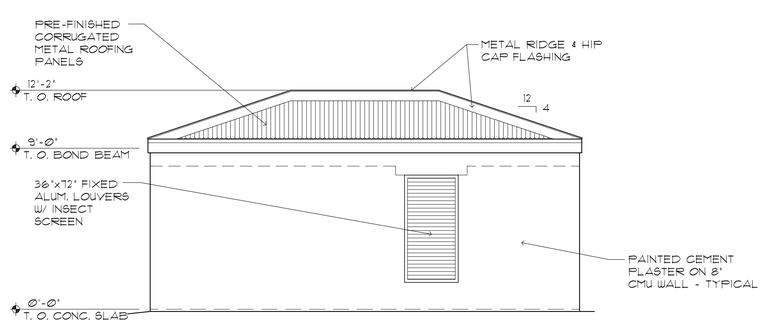
A22-2 FLOOR PLAN
1/4"=1'-Ø"



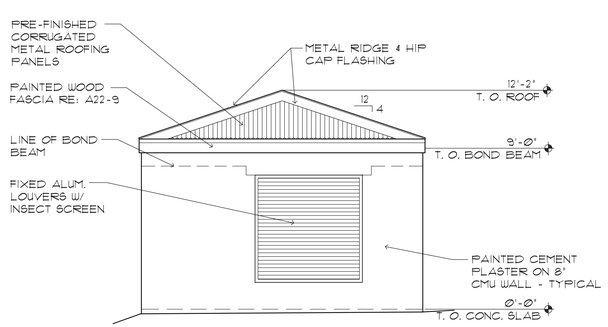
A22-8 FLOOR PLAN
1/4"=1'-Ø"



A22-9 EAVE DETAIL
1 1/2"=1'-Ø"



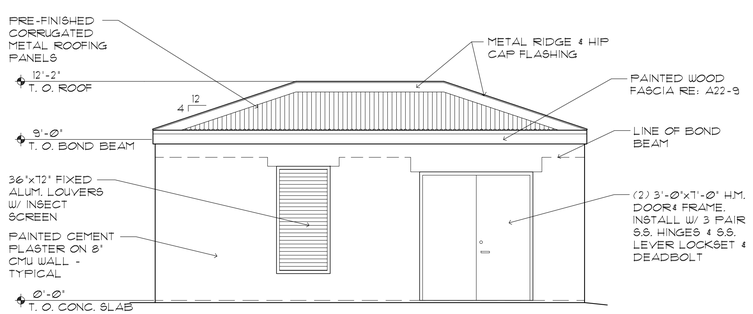
A22-3 FRONT ELEVATION
1/4"=1'-Ø"



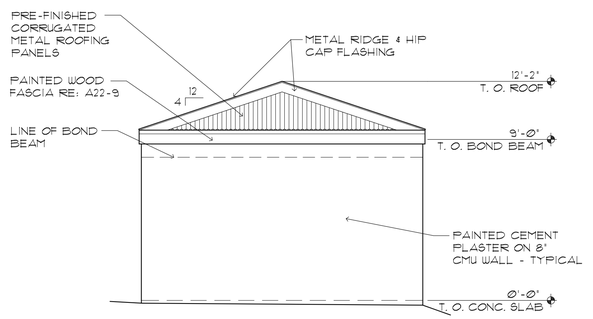
A22-4 SIDE ELEVATION
1/4"=1'-Ø"

CONNECTOR SCHEDULE

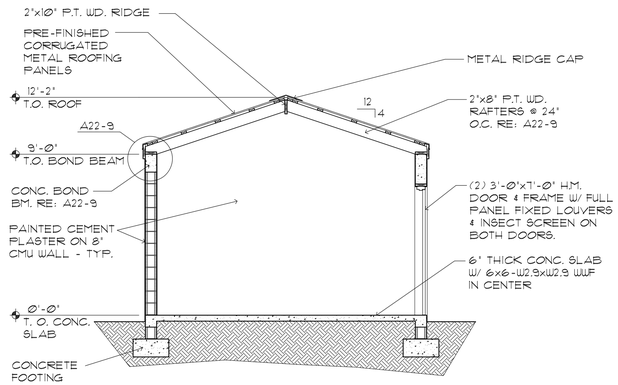
CONDITION	CONNECTOR	REMARKS
PLATE TO BOND BEAM	1/2"x8" AB @ 24"O.C.	
RAFTER TO PLATE	H3	2 PER RAFTER
HIP RAFTER TO BOND BEAM	HTSM16	TO BOND BM W/ MAS ANCHORS
HIP RAFTER TO RIDGE	LSTA18 + A35	
RAFTER TO HIP&RIDGE	LSTA 24	



A22-5 REAR ELEVATION
1/4"=1'-Ø"



A22-6 SIDE ELEVATION
1/4"=1'-Ø"



A22-7 BUILDING SECTION
1/4"=1'-Ø"

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
GENERATOR BUILDING PLANS
EXTERIOR ELEVATIONS, SECTION
NOTES, DETAIL & CONN. SCHED.

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A22

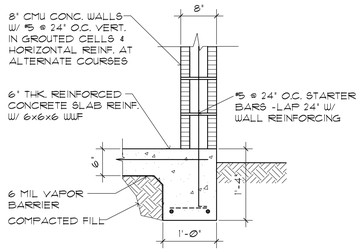
WINDOW SCHEDULE							
MARK	MASONRY OPNG	HEAD HGT. ABV. FIN.FLR	TYPE	HEAD	JAMB	SILL	MANUFACTURER/REMARKS
Q	1'-4" x1'-4"	6'-8"	Q	-	-	-	CENTERLINE, AJ2005

DOOR SCHEDULE							
MARK	SIZE	TYPE	HEAD	JAMB	SILL	HDWR	REMARKS
1	3'-0" x 6'-8"	1	A19-20/A	A19-19	A19-20/B	1	FRP DOOR & FRAME

REFER TO SHEET A19 FOR WINDOW & DOOR TYPES AND HARDWARE SCHEDULE

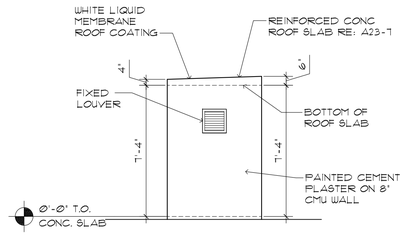
HARDWARE SCHEDULE

1, KEYED ENTRANCE SET W/ BUTTON RELEASE. 1 1/2 PAIR BUTT HINGES, ALUMINUM THRESHOLD, WALL MOUNTED DOOR STOP, ALUM. & VINYL DOOR SWEEP.



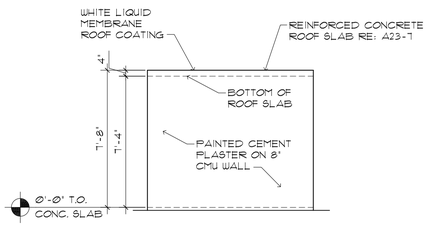
A23-9 FOOTING DETAIL

3/4"=1'-0"



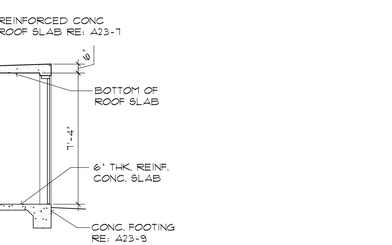
A23-2 NORTH ELEV-PUMPHOUSE

1/4"=1'-0"



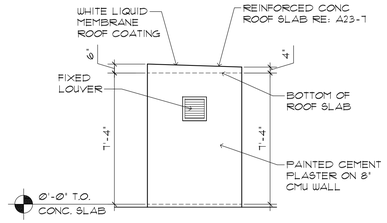
A23-3 EAST ELEV-PUMPHOUSE

1/4"=1'-0"



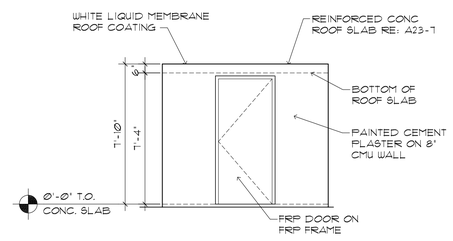
A23-8 SECTION - PUMPHOUSE

1/4"=1'-0"



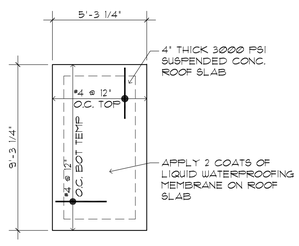
A23-4 SOUTH ELEV-PUMPHOUSE

1/4"=1'-0"



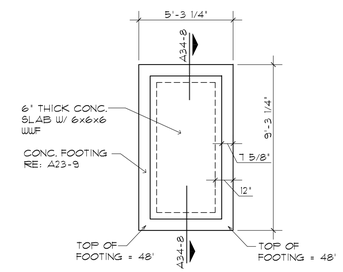
A23-5 WEST ELEV-PUMPHOUSE

1/4"=1'-0"



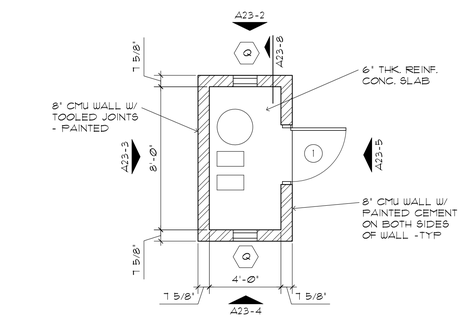
A23-7 ROOF PLAN - PUMPHOUSE

1/4"=1'-0"



A23-6 FOUNDATION PLAN - PUMPHOUSE

1/4"=1'-0"



A23-1 FLOOR PLAN - PUMPHOUSE

1/4"=1'-0"

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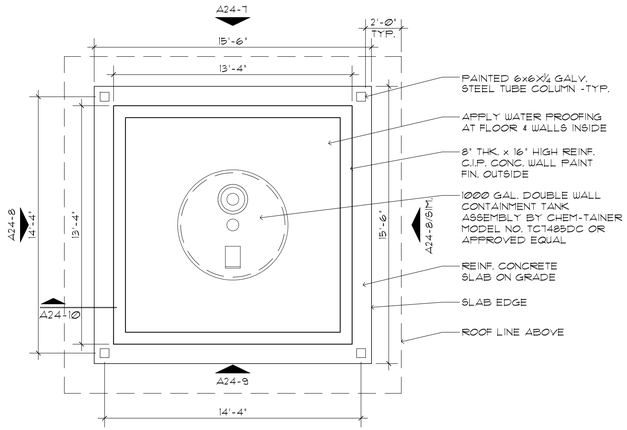
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
PUMP HOUSE FLOOR PLAN
FOUNDATION & ROOF PLAN
ELEVS., SECT., DETAIL & SCHEDS.

DATE: 6-30-17
DRAWN BY: STAFF

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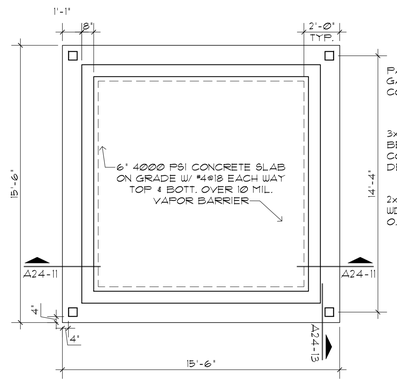
SHEET NUMBER:
A23



A24-4 USED OIL CONT. FOUND. PLAN

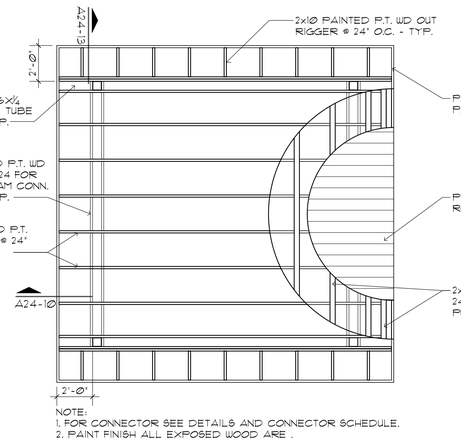
1/4"=1'=Ø"

NORTH



A24-5 USED OIL CONTAINMENT PLAN

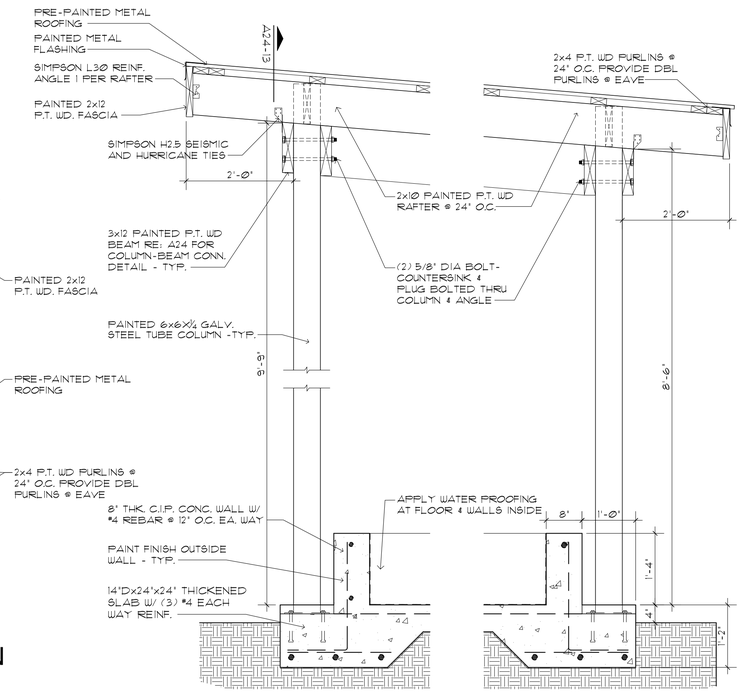
1/4"=1'=Ø"



NOTE:
1. FOR CONNECTOR SEE DETAILS AND CONNECTOR SCHEDULE.
2. PAINT FINISH ALL EXPOSED WOOD ARE .

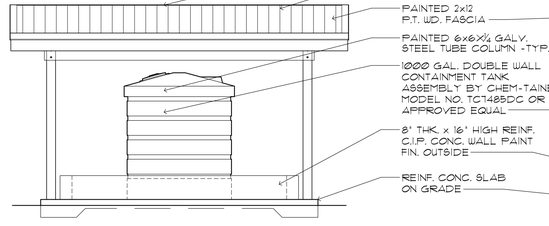
A24-6 USED OIL CONTAINMENT PLAN

1/4"=1'=Ø"



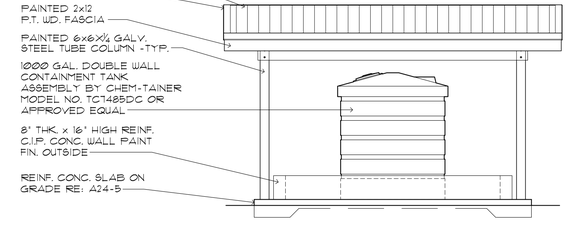
A24-11 USED OIL CONT. SECT. DETAILS

3/4"=1'=Ø"



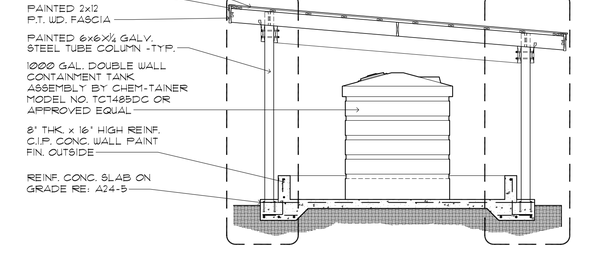
A24-7 USED OIL CONTAINMENT FRONT ELEV.

1/4"=1'=Ø"



A24-8 USED OIL CONTAINMENT SIDE ELEV.

1/4"=1'=Ø"



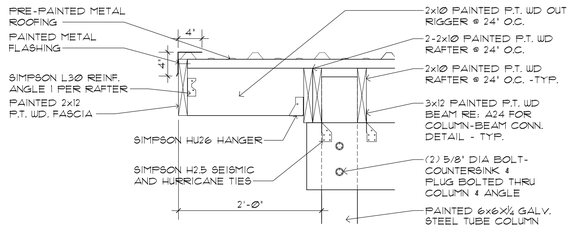
A24-9 USED OIL CONTAINMENT REAR ELEV.

1/4"=1'=Ø"

A24-10 USED OIL CONT. BLDG. SECT.

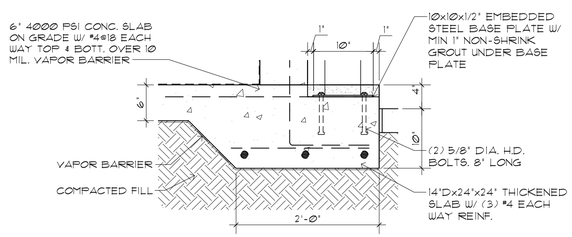
1/4"=1'=Ø"

CONNECTOR SCHEDULE		
CONDITION	CONNECTOR	MFR.
BEAM TO RAFTER	H2.5	SIMPSON
RAFTER TO FASCIA	L3Ø	SIMPSON
RAFTER TO OUT-RIGGER	HU26	SIMPSON



A24-13 DETAIL EAVE DETAIL

1"=1'-Ø"



A24-12 COLUMN/FTG. DETAIL

1"=1'-Ø"

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
USED OIL CONTAINMENT BLDG. PLANS, ELEVS. SECTIONS, DETAILS AND SCHEDULES

DATE: 6-30-17
DRAWN BY: STAFF

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SHEET NUMBER:
A24

MECHANICAL LEGEND

14x18	SQUARE OR RECTANGULAR DUCT. FIRST FIGURE IS DIMENSION OF SIDE SHOWN ON PLAN
14"ø	ROUND DUCT. FIGURE IS DIAMETER OF THE DUCT
	DUCTWORK (POSITIVE PRESSURE)
	DUCTWORK (NEGATIVE PRESSURE)
	CEILING SUPPLY AIR DIFFUSER. SHADED AREA INDICATES BLANKED-OFF SECTION
	CEILING RETURN OR EXHAUST AIR GRILLE/REGISTER
	SIDEWALL SUPPLY AIR REGISTER
	SIDEWALL RETURN AIR GRILLE/REGISTER
	ROUND SPIN-IN TAP W/ MANUAL DAMPER
	ELBOW WITH TURNING VANES
	MANUAL VOLUME DAMPER (MVD)
	MOTORIZED (ELECTRIC OPERATED) DAMPER
F/SD AD	FIRE/SMOKE DAMPER (FS/D) AND SLEEVE PROVIDE ACCESS DOOR (AD)
	FLEXIBLE DUCT
UC 1"	UNDERCUT DOOR 1"
	CONNECTION OF NEW WORK TO EXISTING
A	AIR DISTRIBUTION DEVICE
	THERMOSTAT
	HUMIDISTAT
	DUCT MOUNTED SMOKE DETECTOR
	MANUAL ON/OFF SWITCH
—CD—	CONDENSATE DRAIN PIPING
—G—	GAS PIPING
—CWS—	CHILLED WATER SUPPLY
—CWR—	CHILLED WATER RETURN
—FILL—	FILL LINE
	TEE (PLAN, UP, DOWN)
	ELBOW (90°, 45°)
	ELBOW (UP, DOWN)
MBH	1,000 BRITISH THERMAL UNITS PER HOUR
CFM	CUBIC FEET PER MINUTE
SA	SUPPLY AIR
RA	RETURN AIR
OA	OUTSIDE AIR
TD	TRANSFER DUCT ABOVE CEILING

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWING.

DESIGN CONDITIONS (OFFICE AREA)

	INDOOR	OUTDOOR
SUMMER	75°Fdb / 50%RH	91°Fdb / 78°Fwb (1%)
WINTER	68°Fdb	51°Fdb (99%)

NOTES:
1. db: DRY BULB TEMPERATURE.
2. wb: WET BULB TEMPERATURE.
3. RH: RELATIVE HUMIDITY.
4. SOURCE: 2009 ASHRAE FUNDAMENTALS HANDBOOK.
5. DESIGN LOCATION: VIRGIN ISLANDS

MECHANICAL DRAWING INDEX

SHEET NUMBER	DESCRIPTION
M1	MECHANICAL LEGEND, NOTES AND SCHEDULES
M2	MECHANICAL SPECIFICATIONS
M3	MECHANICAL FLOOR PLAN
M4	MECHANICAL FLOOR PLAN
M5	MECHANICAL DETAILS
–	–
–	–

AIR DISTRIBUTION SCHEDULE

PLAN SYMBOL	TYPE	STYLE	FACE SIZE (IN.)	BASIS OF DESIGN	NOTES
A	CEILING SUPPLY	SQUARE CONE	24x24	TITUS TMS-AA	1,2,3,4,5
B	CEILING SUPPLY	LOUVERED FACE	12x12	TITUS TDC-AA	1,2,3,6
C	CEILING SUPPLY	LOUVERED CORE	12x12	TITUS SG-TDC	1,2,3,4,6,7
D	CEILING RETURN/EXH.	EGGCRATE	24x24	TITUS 50F	1,4,5
E	CEILING RETURN	EGGCRATE	48x24	TITUS 50F	1,4,5
F	CEILING EXHAUST	EGGCRATE	12x12	TITUS 50F	1,4,6
G	CEILING RETURN	LATTICE FACE	12x12	TITUS SG-LFO	1,4,6,7

NOTES:
1. THE FOLLOWING PLAN SYMBOLS DENOTE THE AIR OUTLET TYPE, CFM AND NECK SIZE, EG:
   - A 10"ø / 300 — TYPE A, 10" ROUND NECK, 300 CFM.
   - E 22x22 / 200 — TYPE E, 22"x22" NECK, 200 CFM.
2. ALL DIFFUSERS ARE FOUR WAY UNLESS OTHERWISE INDICATED, 1W FOR ONE WAY, 2W FOR TWO WAY, 3W FOR THREE WAY.
3. PROVIDE OPPOSED BLADE DAMPER AT NECK ON SUPPLY DIFFUSERS AND EXHAUST REGISTERS.
4. PROVIDE SQUARE TO ROUND TRANSITION.
5. LAY-IN TYPE.
6. SURFACE MOUNTED.
7. SECURITY GRILLE.

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

PLAN SYMBOLS INDOOR UNIT	PLAN SYMBOLS OUTDOOR UNIT	AREA SERVED	COOLING 95 db/67 wb TOTAL (MBH)	COOLING 95 db/67 wb SENS. (MBH)	MIN. SEER / EER	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	EXT. S.P. (IN. WG)	INDOOR UNIT MOTOR BHP	INDOOR UNIT FAN FLA	INDOOR UNIT VOLT / PH	INDOOR UNIT AUX. HT. (KW)	INDOOR UNIT BASIS OF DESIGN	OUTDOOR UNIT VOLT / PH	OUTDOOR UNIT MCA	OUTDOOR UNIT MOCP	OUTDOOR UNIT IPLV	OUTDOOR UNIT BASIS OF DESIGN	NOTES
AHU-1	CU-1	WEST OFFICES	90.8	71.1	11.2 / 11.8	3,000	600	0.75	2.4	5.2	208 / 3	N/A	CARRIER 40RUAA08	208 / 3	35	50	N/A	CARRIER 38AUZA08	1,2,3,4,5,8
AHU-2	CU-2	EAST OFFICES	70.2	56.4	11.5 / 12.2	2,400	500	0.75	2.4	5.2	208 / 3	N/A	CARRIER 40RUAA07	208 / 3	28	45	N/A	CARRIER 38AUZA07	1,2,3,4,5,8
AHU-3	CU-3	CONFERENCE ROOM	34.2	27.7	15 / 13	1,200	200	0.50	1/2	4.3	208 / 1	N/A	CARRIER FV4CNF003	208 / 1	18.1	30	N/A	CARRIER 24ACC436	1,2,3,5,8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
1. PROVIDE SHEET METAL HORIZONTAL SLIDE IN/OUT FILTER RACK WITH HINGED ACCESS DOOR BETWEEN RETURN AIR PLENUM BOX AND AIR HANDLING UNIT FILTER BASIS OF DESIGN: PURAFIL PLEATED, MERV 8
2. PROVIDE SINGLE POINT POWER CONNECTION.
3. PROVIDE STARTERS AND DISCONNECT SWITCHES.
4. PROVIDE SMOKE DETECTOR ON SUPPLY OF INDOOR UNIT.
5. PROVIDE AUX. DRAIN PAN W/ FLOAT SWITCH.
6. PROVIDE NORMALLY OPEN AUXILIARY CONTACT FOR INTERLOCKED EQUIPMENT.
7. SELECT UNIT FOR 105%%DF CONDENSING TEMPERATURE.
8. PROVIDE COASTAL COIL COATING ON OUTDOOR UNIT.
9. PROVIDE INDOOR UNIT WITH DIRECT DRIVE, 3-SPEED SUPPLY FAN.
10. PROVIDE CONDENSATE PUMP DRAIN KIT.

GRAVITY VENTILATOR SCHEDULE

MARK	AREA SERVED	CFM	MAX SP (IN. WG)	DAMPER INTERLOCK	THROAT OPENING	WHT (LBS)	MFG.	MODEL	NOTES
GV-1	AHU-1 INTAKE	600	0.08	N/A	-	70	COOK	12PR	1,3,4,5
GV-2	AHU-2 INTAKE	500	0.080	N/A	-	70	COOK	12PR	1,3,4,5
GV-3	AHU-3 INTAKE	150	0.080	N/A	-	70	COOK	06PR	1,3,4,5
GV-4	PARTS STORAGE	600	0.080	N/A	-	70	COOK	12PR	1,3,4,5
-	-	-	-	-	-	-	-	-	-

2

NOTES:
1. GIV - INTAKE VENTILATOR.
2. GRV - RELIEF VENTILATOR.
3. PROVIDE INSULATED ROOF CURB OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM OF 12" FROM FINISHED ROOF TO TOP OF NAILOR. CURB INSUL. SHALL BE 2" DOW STYROFOAM WITH FOIL FACING. CURB SHALL BE ALUM. CONSTRUCTION.
4. PROVIDE ALUMINUM BIRD SCREEN.
5. PROVIDE GRAVITY DAMPER.
6. PROVIDE MOTORIZED DAMPER-120 V.
7. PROVIDE SUPPLY FILTERS IN DUCTWORK.
8. ROOF OPENING DIMENSIONS ARE 2.5 INCHES LARGE THAN THE THROAT OPENING.

DUCTLESS SPLIT SYSTEM SCHEDULE

PLAN SYMBOLS INDOOR UNIT	PLAN SYMBOLS OUTDOOR UNIT	AREA SERVED	COOLING 95 db/76 wb TOTAL (MBH)	COOLING 95 db/76 wb SENS. (MBH)	MIN. SEER / EER	HEATING 47 F db (MBH)	MIN. HSPF / COP	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	INDOOR UNIT VOLT / PH	INDOOR UNIT FLA	INDOOR UNIT AUX. HT. (KW)	INDOOR UNIT BASIS OF DESIGN	OUTDOOR UNIT VOLT / PH	OUTDOOR UNIT MCA	OUTDOOR UNIT MOCP	OUTDOOR UNIT IPLV	OUTDOOR UNIT BASIS OF DESIGN	NOTES
AHU-4	CU-4	SERVER ROOM	12.0	-	16.5	N/A	N/A	240	-	-	-	-	CARRIER 40MHC12	208 / 1	7	15	-	CARRIER 38MHRC12	1,2,5,6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
1. PROVIDE SINGLE POINT POWER CONNECTION C/W DISCONNECT.
2. PROVIDE INTERNAL CONDENSATE PUMP.
3. PROVIDE CHARCOAL FILTER KIT.
4. PROVIDE POWER VENTILATION KIT.
5. PROVIDE 24V REMOTE THERMOSTAT.
6. PROVIDE CONTROLS AND RELAY FOR 24V THERMOSTAT.
7. PROVIDE HAND HELD-INFRARED REMOTE CONTROLLER.

POWER VENTILATOR SCHEDULE

MARK	AREA SERVED	FAN TYPE	WHEEL TYPE	VOLUME (CFM)	SP (in. WC)	FRPM	DRIVE	Hp	VOLTAGE	ROOF OPENING	WGT (LBS)	MFG	MODEL	NOTES
EF-1	TOILETS	ROOF MNTD	CENT	400	0.5	1,390	DIRECT	1/8	120/60/1	13.5"x13.5"	60	COOK	100C15DH	1,3,5,6,7,15,16
EF-2	TOILETS	ROOF MNTD	CENT	140	0.5	1,290	DIRECT	1/8	120/60/1	13.5"x13.5"	60	COOK	90C15DH	1,3,5,6,7,15,16
EF-3	TOILET	ROOF MNTD	CENT	70	0.375	1,375	DIRECT	1/20	120/60/1	13.5"x13.5"	50	COOK	70C15DH	1,3,5,6,7,15,16
EF-4	JANITOR	ROOF MNTD	CENT	50	0.375	1,550	DIRECT	1/20	120/60/1	13.5"x13.5"	50	COOK	70C15DH	1,3,5,6,7,15,16
EF-5	LARGE PARTS ROOM	ROOF MNTD	CENT	649	0.25	1,550	DIRECT	1/8	120/60/1	13.5"x13.5"	60	COOK	90C10DH	1,3,7,11
EF-6	PUMP ROOM	SIDEWALL	PROP	250	0.125	1,270	DIRECT	1/4	120/60/1	N/A	85	COOK	10XW24D	1,6,10,13
EF-7	BUS MAINTENANCE	ROOF MNTD	PROP	5,211	0.25	1,140	DIRECT	3/4	120/60/1	31.5"x31.5"	280	COOK	2411AQ	1,3,5,7,17,18
EF-8	BUS MAINTENANCE	ROOF MNTD	PROP	5,211	0.25	1,140	DIRECT	3/4	120/60/1	31.5"x31.5"	280	COOK	2411AQ	1,3,5,7,17,18
EF-9	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-10	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-11	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-12	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-13	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-14	BUS MAINTENANCE BAYS	CIRCULATING	PROP	3,800	N/A	1,725	DIRECT	1/2	120/60/1	N/A	75	GREENHECK	DF-18	1,12,19,20
EF-15	DELETED	-	-	-	-	-	-	-	-	-	-	-	-	-
EF-16	DELETED	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

3

NOTES:
1. PROVIDE FACTORY MOUNTED AND WIRED POWER DISCONNECT.
2. PROVIDE 120V MOTORIZED DAMPER.
3. PROVIDE ALUM. INSUL. ROOF CURB OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM 12" FROM FINISHED ROOF SURFACE TO TOP OF NAILER. CURB INSULATION SHALL BE 2" DOW STYROFOAM WITH FOIL FACING.
4. PROVIDE SPARK PROOF CONSTRUCTION W/ ALUMINUM BLADES.
5. PROVIDE GRAVITY DAMPER W/ MAGNETIC LATCH.
6. PROVIDE SOLID STATE SPEED CONTROLLER
7. PROVIDE ALUMINUM BIRD SCREEN.
8. PROVIDE ADJUSTABLE BELT DRIVE.
9. PROVIDE EXHAUST ROOF JACK/CAP W/ INSECT SCREEN.
10. FAN SHAL BE CONTROLLED BY WALL MOUNTED THERMOSTAT.
11. FAN SHALL RUN CONTINUOUSLY.
12. PROVIDE OSHA APPROVED INLET AND OUTLET GUARD.
13. PROVIDE WALL BOX, SHUTTER AND WIRE GUARD.
14. PROVIDE HANGING RODS, BRACKETS AND VIBRATION ISOLATORS.
15. PROVIDE TIME DELAY SWITCH
16. INTERLOCK WITH THE LIGHT SWITCH.
17. INTERLOCK WITH THE MANUAL SWITCH AND THE CO SENSOR.
18. PROVIDE INLET GARD.
19. PROVIDE WALL MOUNTED ON/OFF SWITCH FOR EACH FAN.
20. PROVIDE WALL MOUNTED SUPPORT FOR FAN.

WALL LOUVER SCHEDULE

MARK	AREA SERVED	FREE AREA (SF)	WIDTH (IN.)	HGT. (IN.)	MOUNTING HEIGHT (IN.)	DAMPER INTERLOCK	MFG.	MODEL	NOTES
L-1	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-2	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-3	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-4	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-5	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-6	BUS MAINT. BAY 4	5.08	32	48	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8
L-7	PUMP ROOM	1.13	18	18	SEE ARCH DWGS	N/A	GREENHECK	ESD-435X	1 THRU 8

NOTES:
1. LOUVER DIMENSIONS ARE FOR NOMINAL WALL OPENING. ACTUAL LOUVER DIMENSIONS SHOULD BE ADJUSTED TO ALLOW FOR FRAMES.
2. MOUNTING HEIGHT FROM TOP OF FINISHED FLOOR TO BOTTOM OF LOUVER.
3. ANODIZED ALUMINUM. COORDINATE COLOR W/ ARCH. DRAWINGS.
4. INTEGRAL FLANGE FRAME CONSTRUCTION.
5. PROVIDE ALUMINUM BIRD SCREEN.
6. PROVIDE COUNTERBALANCED BACKDRAFT DAMPER.
7. COORDINATE MOUNTING HEIGHT W/ THE ARCHITECT.
8. LOUVER SHALL APPROVED FOR USE IN STATE OF FLORIDA AND HAVE A FLORIDA PRODUCT APPROVAL NUMBER (FL6876.3).

DUCTWORK SPECIFICATIONS

SYSTEM	DUCT TYPE	SEAL CLASS	MATERIAL	LATERAL JOINTS	LONGITUDINAL SEAMS	ELBOWS	TAKE OFF	DUCT REINFORCEMENT	PRESSURE RATING	CODE REFERENCES AND PERFORMANCES	DUCTWORK COMMENTS
SUPPLY, RETURN AND EXHAUST DUCTWORK	RECTANGULAR AND ROUND	SMACNA CLASS "B"	GALVANIZED SHEET METAL	SMACNA FIG. 1-4, TYPES T-17 THROUGH T-19, TYPES T-21 THROUGH T-23	SMACNA – FIG. 1-5 – PITTSBURGH LOCK SEAM	SQUARE TURN WITH SINGLE THICKNESS TURNING VANES – SMACNA FIG. 2-3 OR 1-1/2 RADIUS ROUND ELBOWS.	SMACNA FIG. 2-7 AND 2-8. CONNECTION SHALL BE SEALED FOR AIR TIGHT CONSTRUCTION.	PER LATEST EDITION OF SMACNA DUCT CONSTRUCTION STANDARDS – EXTERNAL ONLY. NO TIE RODS.	LOW – 2 INCH, WG. POSITIVE OR NEGATIVE, VELOCITIES LESS THAN 2,500 FPM	NFPA, ASTM – A167, ASHRAE, SMACNA, UL, ANSI/ASTM – A534, ASTM – E84, ASTM – C177.	1. CONSTRUCT AND SUPPORT TO PERMIT INTERIOR CLEANING BY OPERATING PERSONNEL. PROVIDE SUPPORT SPACING PER SMACNA. 2. SEAL ALL JOINTS AND SEAMS WITH GLASS CLOTH AND DUCT SEALER.

DUCTWORK INSULATION SPECIFICATIONS

SYSTEM	DUCT LOCATION	DUCT SYSTEM	INSULATION MATERIAL	INSULATION THICKNESS	JACKET MATERIAL	JACKET THICKNESS	INSULATION COMMENTS
SUPPLY, RETURN AND EXHAUST DUCTWORK	INDOOR	SUPPLY AIR	MINERAL FIBER WRAP	TWO INCH	FRK FACING	–	1. INSULATION SHALL BE EQUAL TO OWENS CORNING TYPE 100 (1.00 PCF) ALL SERVICE DUCT WRAP. REVIEW MECHANICAL SPECIFICATION.
		RETURN / EXHAUST AIR	MINERAL FIBER WRAP	TWO INCH	FRK FACING	–	2. SEAL ALL SHEET METAL JOINTS PRIOR TO INSULATING DUCTS.
		–	–	–	–	–	3. PROVIDE SEALED VAPOR BARRIER FOR INSULATION.
		–	–	–	–	–	

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
MECHANICAL LEGEND, NOTES AND SCHEDULES

DATE: 05-21-18
DRAWN BY: WMW

C:\Active Projects\Vitran\SD

SHEET NUMBER:
M1

MECHANICAL SPECIFICATIONS

1.0 GENERAL

1.1 REFER TO THE FOLLOWING SPECIFICATIONS TO DETERMINE THE FULL SCOPE OF THE WORK AND ACCOUNT FOR ALL ITEMS NECESSARY FOR A COMPLETE AND PROPERLY–FUNCTIONING HVAC SYSTEM. UPON COMPLETION OF WORK, THOROUGHLY CLEAN THE ENTIRE SYSTEM AND TEST TO ENSURE THAT THE SYSTEM PERFORMS TO REQUIREMENTS. LEAVE WORK IN PERFECT OPERATING CONDITION.

1.2 ALL EQUIPMENT SUPPLIED UNDER THIS DIVISION, WHICH MAY HAVE BEEN DAMAGED OR SCRATCHED, SHALL BE TOUCHED UP WITH THE MANUFACTURER'S PAINT OR COMPLETELY PAINTED IF SO DESIRED BY THE OWNER.

1.3 COOPERATE WITH OTHER TRADES AS REQUIRED. SUPPLY TO THE GENERAL CONTRACTOR, WHERE REQUIRED, THE LOCATIONS OF ALL HOLES, CHASES, ANCHOR BOLTS, SLEEVES AND INSERTS. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST.

1.4 WORK TO EQUAL OR EXCEED MINIMUM STANDARDS FOR MATERIALS, INSTALLATION METHODS AND WORKMANSHIP AS SPECIFIED BY APPLICABLE LOCAL, STATE, AND NATIONAL CONSTRUCTION CODES. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE CURRENT RECOMMENDATIONS SET FORTH IN THE LATEST ASHRAE GUIDELINES. HVAC CONTRACTOR SHALL BE LICENSED AND PERFORM ALL WORK IN A FIRST CLASS WORKMANSHIP MANNER.

1.5 WHERE A MANUFACTURER'S NAME APPEARS, NOTE THAT THE DESIGN IS BASED ON THE DIMENSIONS AND PHYSICAL CONFIGURATION OF THE MANUFACTURER'S EQUIPMENT LISTED.

1.6 MATERIALS AND EQUIPMENT ARE SPECIFICALLY DESCRIBED AND NAMED IN THESE SPECIFICATIONS FOR THE PURPOSE OF ESTABLISHING A STANDARD OF MATERIALS AND WORKMANSHIP. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON SUPPLY AND INSTALLATION OF MATERIALS AND EQUIPMENT AS SPECIFIED. ALTERNATES SHALL BE SUBMITTED AS AN EXTRA OR CREDIT TO THE BASE EQUIPMENT SPECIFIED BASIS.MECHANICAL CONTRACTOR SHALL ACCOMMODATE ELECTRICAL, SERVICE ACCESSIBILITY, SPACE REQUIREMENTS, STRUCTURAL FRAMING RESULTING FROM PROVIDING EQUIPMENT VARYING FROM THE BASIS OF DESIGN.

1.7 ALL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS AND CERTIFIED DRAWINGS OF THE EQUIPMENT MANUFACTURER.

1.8 THE DRAWINGS ARE TO BE CONSIDERED AS DIAGRAMMATICAL ONLY AND DO NOT SHOW ALL THE STRUCTURAL AND CONSTRUCTION DETAILS. ANY INFORMATION INVOLVING ACCURATE MEASUREMENTS OF THE BUILDING SHALL BE TAKEN AT THE SITE. ANY NECESSARY CHANGES OR ADDITIONS TO ACCOMMODATE STRUCTURAL CONDITIONS SHALL BE MADE WITHOUT ADDITIONAL COSTS.

1.9 ALL LOCATIONS ARE APPROXIMATE. OBTAIN DIRECTION FROM THE GENERAL CONTRACTOR FOR FINAL LOCATIONS.

1.10 DO ALL WORK IN ACCORDANCE WITH ALL RULES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION. PROVIDE ALL ADDITIONAL COMPONENTS REQUIRED BY THESE AUTHORITIES.

1.11 ALL MATERIALS AND EQUIPMENT SHALL BE PROTECTED DURING CONSTRUCTION FROM ALL SOURCES OF DAMAGE.

1.12 VISIT THE SITE BEFORE SUBMITTING BID TO DETERMINE EXISTING CONDITIONS AND THE EXTEND TO WHICH THEY WILL AFFECT THE WORK UNDER THIS CONTRACT. FAILURE TO DO SO WILL NOT RELIEVE THIS CONTRACTOR FROM THE COST OF RESULTING ADDITIONAL WORK.

1.13 VERIFY ALL SPACES IN WHICH EQUIPMENT AND DUCTWORK ARE TO BE LOCATED.

1.14 ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED IN REGARD TO ACCEPTED STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF DETAIL.

1.15 ALL DAMAGE TO THE EXISTING STRUCTURE DUE TO MECHANICAL INSTALLATION UNDER THIS PROJECT SHALL BE REPAIRED AND MADE GOOD BY THIS CONTRACTOR.

1.16 ALL CORE DRILLING, CUTTING AND PATCHING OF STRUCTURE SHALL BE CARRIED OUT OUTSIDE NORMAL WORKING HOURS AT A TIME CONVENIENT TO THE PROJECT MANAGER. CUTTING AND CORE DRILLING SHALL NOT BE CARRIED OUT WITHOUT THE PERMISSION OF THE PROJECT STRUCTURAL ENGINEER.

1.17 THE DRAWINGS SHOW THE WORK IN ITS FINAL, COMPLETED FORM. EQUIPMENT REMOVED AND NOT REQUIRED TO SUIT NEW LAYOUT SHALL BE TURNED OVER TO OWNER OR DISPOSED OF AS PER PROJECT MANAGER'S INSTRUCTIONS.

1.18 AT THE END OF THE PROJECT, THE CONTRACTOR MUST PROVIDE TO THE OWNER/ ENGINEER A COMPLETE SET OF "AS–RECORDED" DRAWINGS IN PRINT FORM. FINAL PAYMENT OF THIS CONTRACT WILL BE SUBJECT TO THE OWNER/ENGINEER'S RECEIPT OF THE ABOVE.

1.19 ALL SERVICES SHALL BE INSTALLED PARALLEL TO BUILDING LINES.

1.20 ALL MECHANICAL SYSTEMS INDICATED ON THE DRAWINGS OR WITHIN THE SPECIFICATION ARE NEW. REFER TO ARCHITECTURAL DRAWINGS TO DETERMINE LOCATIONS OF NEW AND FUTURE CONSTRUCTION.

1.21 PRIOR TO ORDERING OR FABRICATING ANY EQUIPMENT, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE ENGINEER.

1.22 MOUNT THE OUTDOOR GROUND MOUNTED EQUIPMENT ON 6–INCH THICK CONCRETE PADS WHICH EXTEND 6–INCHES BEYOND THE EQUIPMENT IN EACH DIRECTION. PROVIDE 6"x6" WWM REINFORCING IN THE SLABS. SECURE EQUIPMENT TO PADS.

1.23 CONTRACTOR SHALL COORDINATE MOUNTING OF UNITS WITH ALL TRADES TO ENSURE THAT UNITS CAN BE SERVICED AS REQUIRED BY ALL APPLICABLE CODES. SERVICING SHALL INCLUDE BUT NOT BE LIMITED TO CHANGING OF FILTERS AND REMOVAL OF COMPRESSORS, FANS AND DRIVES.

1.24 ELECTRICAL EQUIPMENT ROOMS: CAREFULLY COORDINATE THE INSTALLATION OF DUCTWORK AND PIPING WITH ELECTRICAL EQUIPMENT ROOMS TO PROVIDE CODE REQUIRED CLEARANCES IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT.

1.25 PROVIDE AND INSTALL ALL CONTROL WIRING, LOW VOLTAGE AND 120 VOLT, CONTROL CONDUITS, CONTROL DEVICES INCLUDING (BUT NOT LIMITED TO) SENSORS, DAMPER INTERLOCKS AND REMOTE SWITCHES. ALL CONTROL WIRING SHALL BE PLENUM RATED WIRE OR ROUTED WITHIN CONDUIT PER DIVISION 16 SPECIFICATIONS.

1.26 PLENUM RATED WIRE SHALL BE NEATLY BUNDLED IN GROUPS AND SHALL BE COMBINED WHERE APPLICABLE TO FOLLOW A SINGULAR PATH BETWEEN DEVICES. BUNDLES SHALL BE SUPPORTED WITH APPROPRIATE STRAPS INTENDED FOR THIS PURPOSE ON SPACING NOT TO EXCEED 6 FEET. AT RATED WALL ASSEMBLY PENETRATIONS PROVIDE A METAL CONDUIT SLEEVE TO EXTEND A MINIMUM OF ONE FOOT BEYOND EACH SIDE OF THE ASSEMBLY. SEAL CONDUIT ENDS WITH FIRE PROOF PUTTY UPON COMPLETION OF WIRE INSTALLATION.

1.27 EACH WIRE ENTERING THE CONTROL PANEL SHALL BE IDENTIFIED WITH A CODED NUMBER TAG. THE CODED NUMBER SHALL IDENTIFY THE WIRE'S FUNCTION, TYPE OF DEVICE SERVED AND WHERE THE DEVICE IS LOCATED. A LEGEND CARD IDENTIFYING THE NUMBERED CODE SYSTEM SHALL BE PROVIDED. CORRESPONDING NUMBERED TAGS SHALL BE INSTALLED ON ALL WIRES AT INTERVALS NOT TO EXCEED 30 FEET AND AT WALL OUTBOUND WIRE TERMINATIONS.

1.28 COORDINATE EXACT LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH STRUCTURAL DRAWINGS AND OTHER TRADES TO ENSURE PROPER PLACEMENT OF FRAMING.

1.29 COORDINATE EXACT LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH EXISTING STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED.

1.30 CURBS PROVIDED FOR ROOF MOUNTED EQUIPMENT SHALL MATCH ROOF PITCH SUCH THAT NAILER IS LEVEL. SEE SCHEDULES FOR CURB HEIGHT ABOVE ROOF.

1.31 PROVIDE MINIMUM OF 4" X 4" STELL ANGLE BRACING UNDER ALL HVAC CURB. ANGLES ARE TO BE WELDED TO STRUCTURAL STEEL.

1.32 MECHANICAL EQUIPMENT SHALL BE LOCATED A MINIMUM OF 10 FEET FROM THE NEAREST ROOF EDGE. EQUIPMENT LOCATED WITHIN THE 10 FEET FROM THE ROOF EDGE WILL REQUIRE A HANDRAIL ALONG EDGE OF ROOF.

1.33 PROVIDE 1" DIAMETER RED DOT FOR CEILING TO MARK ALL EQUIPMENT LOCATED IN CEILING SPACE SUCH AS AHU'S, VAV'S, FPB'S, OR EUH'S.

1.34 ALL PENETRATIONS THROUGH EXTERIOR WALLS INCLUDING (BUT NOT LIMITED TO) LOUVERS, FANS, PIPING, VENTS AND FLUES SHALL BE CAULKED MOISTURE AND AIR TIGHT.

1.35 PROVIDE FLUE THRU ROOF OR WALL FOR ALL GAS–FIRED WATER HEATERS WHERE APPLICABLE. SEE PLUMBING DRAWINGS FOR FLUE SIZE AND LOCATION WHERE NOT SHOWN ON MECHANICAL. ALL FLUES SHALL BE IN ACCORDANCE WITH NFPA 54.

2.0 HEATING, VENTILATION AND AIR CONDITIONING:

2.1 GENERAL:

2.1.1 PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS INDICATED.

2.1.2 ALL MECHANICAL EQUIPMENT SHALL BE FURNISHED COMPLETE WITH MOTOR STARTERS AND HEATER CONTACTORS. ALL OPERATING CONTROLS AND SAFETIES SHALL BE UL OR ETL LISTED. PROVIDE ELECTRICAL DISCONNECT PER NFPA 70.

2.1.3 PROVIDE SYSTEMS AND EQUIPMENT IDENTIFICATION.

2.1.4 BALANCE RTUS, MAUS, EFS, DIFFUSERS AND GRILLES TO AIR FLOWS SHOWN ON THE DRAWINGS.

2.1.5 SUPPORT AIR CONDITIONING INDOOR UNITS FROM BAR JOISTS WITH MINIMUM OF FOUR THREADED RODS AND SPRING TYPE VIBRATION ISOLATORS.

2.1.6 PROVIDE AUXILIARY CONDENSATE DRAIN PAN BELOW INTERIOR UNITS ABOVE CEILING. AHU'S AUXILIARY DRAIN PAN SHALL EXTEND THREE INCHES BEYOND LENGTH AND WIDTH OF UNIT. PAN SHALL BE CONSTRUCTED OF NOT LESS THAN NO. 24 GAUGE GALVANIZED SHEET METAL. ROUTE CONDENSATE PIPING FROM AUXILIARY DRAIN PANS ON AHU'S TO DISCHARGE OVER HUB DRAIN. CONDENSATE PIPING SHALL BE 3/4–INCH MINIMUM.

2.1.7 WHERE CONDENSING UNITS ARE ROOF SUPPORTED, CURBS MAY BE USED FOR CONDENSING UNIT SUPPORTS IF THEY ARE FASTENED TO THE ROOF AND COVERED WITH THE SAME MEMBRANE MATERIAL AS THE ROOF. A COUNTER–FLASHED SHEET METAL COVER SHALL BE INSTALLED PRIOR TO ANCHORING THE EQUIPMENT.

2.1.8 PROVIDE SUCTION AND LIQUID REFRIGERATION PIPING FOR SPLIT SYSTEMS SIZED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION BASED ON EQUIVALENT LENGTH OF REQUIRED PIPING. PROVIDE 1" ARMAFLEX INSULATION WITH WHITE PVC ASJ JACKET FOR REFRIGERANT SUCTION AND HOT GAS BYPASS LINES.

2.1.9 ADJUST EXACT DIFFUSER, REGISTER AND GRILLE LOCATIONS IN FIELD IN ORDER TO FIT THE CEILING GRID AS ACTUALLY INSTALLED. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS. AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH LIGHT FIXTURES. IN INSTANCES WHERE THE RESULTING AIRFLOW IMPINGES ON LIGHT FIXTURES TO THE EXTENT THAT OBJECTIONABLE LIGHT FIXTURE MOVEMENT IS OBSERVED, THE CONTRACTOR SHALL REMEDY THE SITUATION AT NO ADDITIONAL CHARGE COST BY RELOCATING EITHER THE LIGHT FIXTURE OR THE AIR DISTRIBUTION DEVICE AND ASSOCIATED DUCTWORK, OR BY BRACING THE LIGHT FIXTURE.

2.1.10 AN AIR BALANCING DAMPER MAY NOT BE OMITTED FROM A SUPPLY DIFFUSER EVEN WHEN AN ACCESSIBLE BALANCING DAMPER IS PROVIDED IN THE BRANCH DUCT SERVING THE DIFFUSER.

2.1.11 ALL MECHANICAL AIR MOVING EQUIPMENT, INCLUDING (BUT NOT LIMITED TO) RTU'S, AHU'S, EF'S, SF'S, ECU'S, AND MAU'S SHALL BE WIRED INTO THE FIRE ALARM PANEL AND SHALL SHUTDOWN UPON A RECEIPT OF A GENERAL FIRE ALARM. ALL DUCT–MOUNTED SMOKE DETECTORS SHALL BE WIRED INTO THE FIRE ALARM PANEL. THE ACTIVATION OF A DUCT–MOUNTED SMOKE DETECTOR SHALL: 1) SHUT DOWN THE AIR DISTRIBUTION SYSTEM, 2) ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION VIA THE FIRE ALARM SYSTEM, AND 3) CLOSE MECHANICAL UNIT SMOKE DAMPERS (WHERE APPLICABLE). SMOKE DETECTORS SHALL BE PROVIDED, INSTALLED AND WIRED BY THE MECHANICAL CONTRACTOR. WIRING TO THE CENTRAL FIRE ALARM SHALL BE BY THE MECHANICAL CONTRACTOR. SMOKE DETECTOR SAMPLING TUBE SHALL EXTEND THE FULL WIDTH OF THE DUCT AND AN ACCESS DOOR IS REQUIRED FOR SERVICE AND INSPECTION.

2.1.12 THERMOSTATS SHALL BE LOCATED AT 4'–6" AFF AND AT LOCATION SET BY TENANT (UNLESS INDICATED OTHERWISE).

2.1.13 PROVIDE CONDENSATE DRAIN PIPING FOR ALL RTU'S, AHU'S, AND CRU'S WHETHER SHOWN ON THE PLANS OR NOT. PROVIDE COMPLETE SYSTEM WITH DISPOSAL AS ALLOWED BY CODE. CONDENSATE PIPING SHALL BE PVC TYPE DWV. PROVIDE TRAP IN PIPING AT UNIT.
HVAC CONDENSATE LINES SHALL BE ROUTED TO ROOF DRAIN.
COAT CONDENSATE DRAIN PIPING WITH UV PROTECTANT.

2.1.14 PROVIDE ADJUSTABLE OUTSIDE AIR DAMPER ON UNIT. SET DAMPER TO MEET FMC 0403.3 TABLE 403.3.

2.1.15 ANY RECIRCULATION SYSTEM GREATER THAN 15,000 CFM CAPACITY SERVING A MULTI–STORY FACILITY SHALL BE PROVIDED WITH SMOKE DAMPERS AT EACH STORY UPSTREAM OF ANY CONNECTION BETWEEN RETURN AIR RISER AND AIR DUCTS OR PLENUM.

2.1.16 FLEXIBLE DUCT CONNECTIONS SHALL BE PROVIDED ON ALL DUCT CONNECTIONS TO FANS AND AIR HANDLING / ROOFTOP UNITS.

2.1.17 ALL EQUIPMENT, PIPING AND DUCTWORK SHALL BE SUPPORTED AS DETAILED AND SPECIFIED. ADDITIONAL SUPPORTS SHALL BE PROVIDED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.

2.2 DUCTWORK:

2.2.1 PROVIDE ALL DUCTWORK SHOWN. MAKE ALL NECESSARY CONNECTIONS TO COMPLETE THE SYSTEM. ROUND BRANCH DUCT CONNECTIONS TO RECTANGULAR MAINS SHALL BE MADE WITH CONICAL TAPS. RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR MAINS SHALL BE MADE WITH SHOE FITTINGS. PROVIDE ALL NECESSARY TRANSITIONS TO MAKE FINAL CONNECTIONS TO ALL EQUIPMENT AND DEVICES.

2.2.2 ALL NEW DUCTWORK SHALL BE FABRICATED AND INSTALLED TO THE LATEST STANDARDS PUBLISHED IN ASHRAE AND SMACNA. PROVIDE AIR TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT ELBOWS.

2.2.3 DUCTWORK SHALL BE FREE FROM NOISE AND VIBRATION AND WITH ALL NECESSARY REINFORCEMENT BRACKETS AND GASKETING.

2.2.4 PRIOR TO ORDERING OR FABRICATING ANY NEW EQUIPMENT, THIS CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE PROJECT MANAGER.

2.2.5 ALL DUCTWORK DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS. WHERE DUCT LINER IS SPECIFIED, INCREASE DUCT SIZE TO ACCOMMODATE DUCT LINER THICKNESS.

2.2.6 DUCT CONNECTIONS TO EQUIPMENT INTAKES: TRANSITION FROM DUCT SIZE INDICATED ON PLAN TO THE FULL SIZE ON THE FAN INLET AT CONNECTION TO THE FAN. MAXIMUM TRANSITION IS 30 DEGREES.

2.2.7 PROVIDE CURBS FOR ROOF MOUNTED EQUIPMENT AND DUCT PENETRATIONS TO MATCH ROOF PITCH SUCH THAT NAILER IS LEVEL. ALL ROOF MOUNTED EQUIPMENT SHALL BE PROVIDED WITH CURBS THAT MATCH THE UNIT FROM THE RESPECTIVE EQUIPMENT SUPPLIER OF AT LEAST 12" IN HEIGHT. CURB INSULATION SHALL BE DOW STYROFOAM WITH FOIL FACING. CURB CONSTRUCTION SHALL BE ALUMINUM.

2.2.8 EXTERIOR MOUNTED EQUIPMENT SHALL BE SECURED IN SUCH A WAY TO WITHSTAND 120 MPH WINDS.

2.2.9 COORDINATE FINAL ON SITE LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH ARCHITECTURAL, STRUCTURAL AND ELECTRICAL DRAWINGS.

2.2.10 LOADS SUSPENDED FROM THE ROOF OR FLOOR STRUCTURE ABOVE SHALL HANG DIRECTLY FROM THE STRUCTURAL ROOF MEMBER (CONCRETE TEE BEAM, BAR JOIST, STEEL BEAM, ETC) NOT ROOF DECK. PROVIDE SECONDARY SUPPORT MATERIAL DESIGNED TO CARRY THE LOAD, BETWEEN THE STRUCTURAL MEMBERS. DO NOT SUPPORT LOADS FROM BRIDGING OR ROOF DECK.

2.2.11 THIS CONTRACTOR SHALL COORDINATE MOUNTING OF ALL UNITS WITH ALL TRADES TO INSURE THAT UNITS CAN BE SERVICED IN ACCORDANCE WITH ALL APPLICABLE CODES AND NORMAL GOOD TRADE PRACTICE.

2.2.12 SECURE EQUIPMENT TO SUPPORTS PER LOCAL CODE AUTHORITY. PROVIDE SEISMIC BRACING PER LOCAL CODE AUTHORITY. THIS CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING METHODS INTENDED.

2.2.13 DUCTWORK SHALL BE SUSPENDED IN ACCORDANCE WITH SMACNA STANDARDS. ON INSULATED DUCTWORK, MAINTAIN VAPOR BARRIER INTEGRITY OF DUCTWORK INSULATION. PROTECT INSULATION WITH GALV. STEEL SHIELDS 6" LONG MIN.

2.2.14 REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS TO DETERMINE LOCATIONS OF STRUCTURAL CONSTRUCTION FEATURES.

2.2.15 HANGER RODS SHALL BE THREADED RODS WITH THREADED ENDS.

2.2.16 RUN DUCTWORK PARALLEL TO THE BUILDING STRUCTURE. DUCTWORK SHALL BE INSTALLED TIGHT TO BOTTOM OF STRUCTURE, WALLS AND BEAMS.

2.2.17 SEAL OUTLETS AIR TIGHT TO DUCTWORK.

2.2.18 DUCTWORK SHALL BE IN ACCORDANCE WITH SPECIFICATION ON THIS SHEET, UNLESS NOTED OTHERWISE ON DRAWINGS.

2.2.19 FLEXIBLE DUCTWORK SHALL BE THE SAME SIZE AS THE NECK OF AIR DISTRIBUTION DEVICE WHICH IT SERVES.

2.2.20 FLEX DUCT SHALL BE FLEXMASTER TYPE 8, CLASS I, WITH 1–1/2" EXTERNAL INSULATION AND VAPOR BARRIER JACKET. PROVIDE SPIN–IN TYPE CONNECTION WITH VOLUME DAMPER AND DAMPER LOCKS. MAXIMUM LENGTH OF FLEX DUCT FROM CONNECTION TO THE DIFFUSER SHALL BE 4'–0".

2.2.21 INSIDE OR OUTSIDE SURFACES OF DUCT VISIBLE THRU GRILLES, REGISTERS AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.

2.2.22 FIRE DAMPERS SHALL BE RATED PER HOURLY RATING OF WALLS AND FLOORS AS INDICATED ON ARCHITECTURAL DRAWINGS. PROVIDE RATED FIRE DAMPER OF THE APPROPRIATE FIRE RATING FOR THE INSTALLED LOCATION.

2.2.23 ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED, WHETHER SHOWN OR NOT, FOR OPERATION AND MAINTENANCE OF ALL FANS, DAMPERS, SMOKE DETECTORS AND MECHANICAL EQUIPMENT.

2.2.24 PROVIDE 2" FIBERGLASS ACOUSTIC DUCT LINER IN ALL RETURN AIR DUCTS OPEN TO PLENUM. DUCT LINER SHALL EXTEND AT LEAST PAST THE FIRST ELBOW OR 10 FEET FROM UNIT OPENING, WHICHEVER IS GREATER. PROVIDE 1" HARDWARE CLOTH OVER OPENING.

2.2.25 DO NOT INSTALL VOLUME DAMPERS ON MEDIUM PRESSURE VAV SYSTEMS UPSTREAM OF TERMINAL UNITS.

2.2.26 ALL WALL OPENINGS SHALL BE FRAMED TO CONCEAL EXPOSED GYPSUM. ALL OPENINGS FOR DUCT OR DAMPERS IN RATED WALLS SHALL BE FRAMED.

2.2.27 ALL DUCTWORK ELBOWS SHALL BE 1.5 RADIUS BENDS OR MITERED WITH TURNING VANES.

2.2.28 ALL SUPPLY, RETURN, EXHAUST AND OUTSIDE AIR DUCTWORK SHALL BE FABRICATED FROM SHEETMETAL. ALL DUCT JOINTS SHALL BE SEALED WITH A NON–HARDENING, NON–MIGRATING MASTIC OR LIQUID ELASTIC SEALANT.

2.3 DELETED

2.4 DUCT INSULATION:

2.4.1 SUBMIT MANUFACTURER'S DESCRIPTIVE PRODUCT DATA SHEETS ON CATALOGUED ITEMS TO BE USED.

2.4.2 SUBMIT SHOP DRAWINGS SHOWING DETAILS OF DUCTWORK INSULATION AND DUCTWORK INSULATION COVERINGS.

2.4.3 MATERIALS: UL LISTED; FLAME SPREAD/FUEL CONTRIBUTED/SMOKE DEVELOPED RATING OF 25/50/50 IN ACCORDANCE WITH ASTM E84.

2.4.4 TYPE A: DELETED

2.4.5 TYPE B: MINERAL FIBER BOARD THERMAL INSULATION EQUAL TO "OWENS CORNING 700 SERIES INSULATION" (1.5 pcf) WITH FOIL FACED VAPOR BARRIER (R–6 INSTALLED).

A. ADHERE SHEET TO THE DUCT SURFACE, USING GALVANIZED STEEL PINS AND CUPS AND 100% ADHESIVE COVERAGE. ADJACENT SHEETS SHALL BE APPLIED USING THE COMPRESSION FIT METHOD. APPLY THE ADHESIVE ON BOTH SURFACES TO BE JOINED WITH A BRUSH OR SHORT–NAP ROLLER. JOIN SURFACES AFTER THE ADHESIVE IS DRY TO THE TOUCH.

B. FOR SQUARE AND RECTANGULAR DUCTS, APPLY SHEET INSULATION FIRST ON THE BOTTOM SURFACE, NEATLY FITTING THE WIDTH. EXTEND SIDE INSULATION DOWN OVER THE EDGES OF THE BOTTOM INSULATION. THE TOP INSULATION SHALL EXTEND OVER THE TOP OF THE INSULATION ON BOTH SIDES.

2.4.6 APPLY THE SAME SHEET INSULATION THICKNESS ON STANDING METAL DUCT SEAMS AS INSTALLED ON THE DUCT SURFACE.

2.4.7 ADHESIVES:

A. FIRE RESISTANT ADHESIVE FOR SECURING INSULATION TO METAL DUCTWORK SHALL BE FOSTER 85–20 AS MANUFACTURERED BY H.B. FULLER CO., OR APPROVED EQUAL.

B. ADHESIVE FOR FLEXIBLE SYNTHETIC ELASTOMER DUCT INSULATION APPLICATION AND JOINT SEALER SHALL BE RUBBER BASE CONTACT ADHESIVE #520 AS MANUFACTURED BY ARMSTRONG WORLD INDUSTRIES OR APPROVED EQUAL.

2.4.8 INSTALL EXTERIOR MATERIALS AFTER DUCTWORK HAS BEEN TESTED AND APPROVED.

2.4.9 CLEAN SURFACES FOR ADHESIVES.

2.4.10 INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

2.4.11 MECHANICAL CONTRACTOR SHALL VERIFY ALL DUCTWORK INSULATION THICKNESS HAS BEEN CHECKED FOR R–VALUE AND COMPLIES TO ASHRAE 90.1.

2.4.12 DUCTWORK, INSULATION AND JACKET SHALL BE IN ACCORDANCE WITH THE SPEC. ON THIS SHEET UNLESS NOTED OTHERWISE ON DRAWINGS.

2.4.13 INSULATE NON–INTERNALLY LINED SUPPLY AND RETURN DUCTWORK WHICH IS EXPOSED TO THE NON–AIR CONDITIONED SPACE ABOVE THE CEILING.

2.4.14 INSULATE THE BACKS OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES.

2.5 SHOP DRAWINGS:

2.5.1 CONTRACTOR TO SUBMIT SHOP DRAWINGS ON MECHANICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT FOR REVIEW.

2.5.2 SHOP DRAWINGS: SUBMIT TO THE ENGINEER FOR REVIEW, BEFORE COMMENCING WORK, SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT. THE FOLLOWING APPLIES TO THE SHOP DRAWINGS.

A. SUBMIT DRAWINGS OR CUTS OF ALL MATERIALS AND EQUIPMENT FOR REVIEW BY ENGINEER. SUCH SUBMITTALS MUST CONTAIN OUTLINE DIMENSIONS, OPERATING CLEARANCES, INSTALLATION, OPERATING AND MAINTENANCE INFORMATION AND SUFFICIENT ENGINEERING DATA TO INDICATE SUBSTANTIAL COMPLIANCE WITH SPECIFICATIONS. ALL SHOP DRAWINGS FOR ONE SECTION OF WORK OR ONE MECHANICAL SYSTEM SHALL BE SUBMITTED AT ONE TIME IN LOOSE–LEAF THREE RING BINDERS. NO REVIEW WILL BE GIVEN IF SUBMITTED PIECEMEAL.

B. WHERE SUBCONTRACTOR CONSIDERS ADDITIONAL DETAIL OR SHOP DRAWING ESSENTIAL TO PROPER FABRICATION OR INSTALLATION OF EQUIPMENT AND PIPING, THEY SHALL PREPARE SUCH DRAWINGS AND SUBMIT FOR REVIEW.

C. EQUIPMENT IS GENERALLY SELECTED AT MIDRANGE CAPACITY TO PROVIDE FLEXIBILITY FOR CHANGES. SELECTIONS AT FULL MAXIMUM OR MINIMUM CAPACITY WILL NOT BE ACCEPTED.

D. MANUFACTURERS NAMES AND PRODUCT MODEL NUMBERS INDICATED SERVE TO ESTABLISH THE TYPE, STYLE, QUALITY, PERFORMANCE AND SOUND RATING OF THE DESIRED PRODUCT. SIMILAR ITEMS OF EQUAL QUALITY AND HAVING THE SAME CHARACTERISTICS MAY BE SUBMITTED FOR APPROVAL. BRAND NAME SPECIFICATION IS NOT INTENDED TO RESTRICT COMPETITION.

E. DESIGN IS BASED ON MANUFACTURER NAMED ON DRAWINGS OR IN SPECIFICATIONS. SHOP DRAWINGS SHALL INDICATE EXCEPTIONS TO OR DEVIATIONS FROM THE DESIGN BASIS.

F. CHANGES IN FOUNDATIONS, BASES, CONNECTIONS, CONTROLS, STARTERS, ELECTRICAL EQUIPMENT, WIRING AND CONDUIT, SPACE OPENINGS, WALLS AND CEILINGS, AND SOUND AND VIBRATION ISOLATION REQUIRED FOR PRIOR APPROVED EQUAL EQUIPMENT SHALL BE MADE AT NO COST TO ENGINEER.

G. INDICATE ON EACH SHOP DRAWING THAT SUBCONTRACTOR HAS CHECKED THAT IT COMPLIES WITH THE DRAWINGS AND SPECIFICATIONS BY AFFIXING A STAMP INDICATING THE FOLLOWING: DATE, SPECIFICATION PAGE AND SECTION, DRAWING NOTE INDICATING THAT MANUFACTURER IS AS SPECIFIED OR THAT MANUFACTURER IS TO BE APPROVED AS "OR EQUAL", AND SIGNATURE OF PERSON REVIEWING SHOP DRAWING.

H. SUBCONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND RECEIVE ENGINEER'S REVIEW BEFORE INSTALLING MATERIALS AND EQUIPMENT LISTED.

3.0 PERMITS:

3.1 THE CONTRACTOR WILL MAKE APPLICATION AND PAY ALL FEES, PERMITS, INSPECTIONS, CERTIFICATES, SYSTEM DEMAND CHARGES AND LICENSE FEES IN CONNECTION WITH THEIR WORK.

3.2 PROVIDE COPIES OF CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

4.0 AIRFLOW TEST AND BALANCE:

4.1 ALL AIR DISTRIBUTION SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT TESTING, ADJUSTING AND BALANCING AGENCY AFTER WORK IS COMPLETED. A CERTIFIED TAB REPORT DEMONSTRATING COMPLIANCE WITH THE DESIGN SHALL BE PROVIDED TO AND APPROVED BY THE OWNER / ENGINEER.

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
MECHANICAL SPECIFICATIONS

DATE: 01–15–18
DRAWN BY: WMW

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SHEET NUMBER:
M2

GENERAL NOTES:

1. PROVIDE NECESSARY TRANSITIONS FROM THE INLET AND OUTLET OF AC UNITS TO THE SUPPLY DUCTWORK SIZE SHOWN ON THE PLANS. ALSO PROVIDE NECESSARY TRANSITIONS FROM THE INLET AND OUTLET OF EXHAUST FANS.

2. MAINTAIN A MINIMUM OF 10'–0" BETWEEN ALL BUILDING INTAKE OPENINGS AND EXHAUST AIR OPENINGS.

3. MECHANICAL CONTRACTOR SHALL VISIT SITE AND REVIEW ALL DRAWINGS PRIOR TO BID AND START OF WORK TO DETERMINE ANY CONFLICTS OR ANY DISCREPANCIES BETWEEN DRAWINGS AND INSTALLED EQUIPMENT / DUCT AND NOTIFY ENGINEER OF ANY ISSUES.

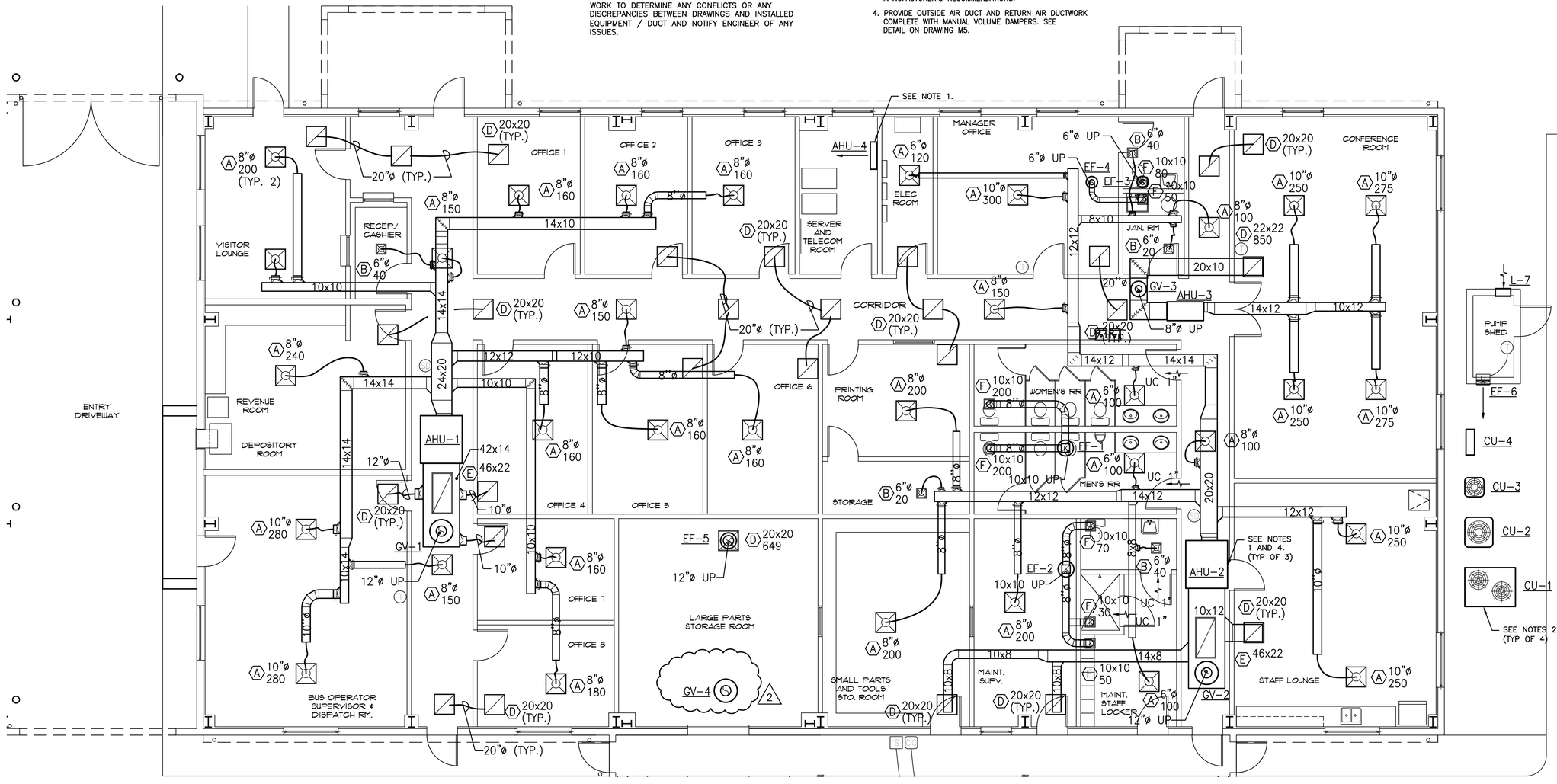
PLAN NOTES:

1. ROUTE CONDENSATE FROM AHU TO CODE APPROVED CONDENSATE DISPOSAL LOCATION. PROVIDE TRAP IN PIPING AT UNIT.

2. PROVIDE CODE APPROVED CONCRETE BASE FOR CONDENSER UNIT. ANCHOR CONDENSING UNIT TO CONCRETE BASE TO WITHSTAND WIND LOADING, VERIFY WIND LOADING REQUIREMENT WITH LOCAL CODE AUTHORITY.

3. ROUTE REFRIGERANT PIPING TO AIR HANDLING UNIT PER MANUFACTURER'S RECOMMENDATIONS.

4. PROVIDE OUTSIDE AIR DUCT AND RETURN AIR DUCTWORK COMPLETE WITH MANUAL VOLUME DAMPERS. SEE DETAIL ON DRAWING M5.



MECHANICAL FLOOR PLAN

SCALE: 3/16" = 1'–0"

N

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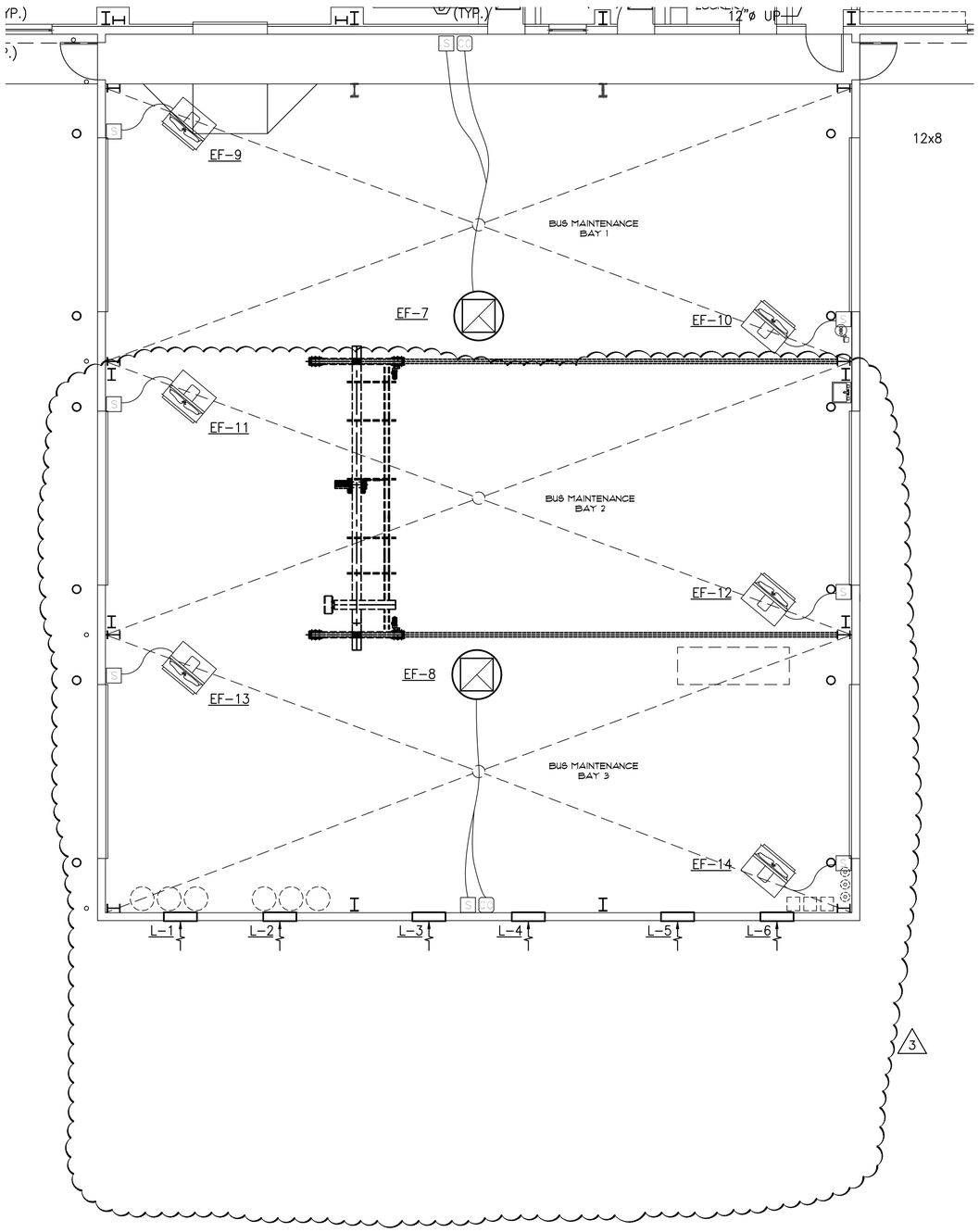
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DRAWING INFORMATION:
MECHANICAL FLOOR PLAN

DATE: 01–15–18
DRAWN BY: WMW

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SHEET NUMBER:
M3



MECHANICAL FLOOR PLAN

SCALE: 3/16" = 1'-0"

N

3 05-21-2018

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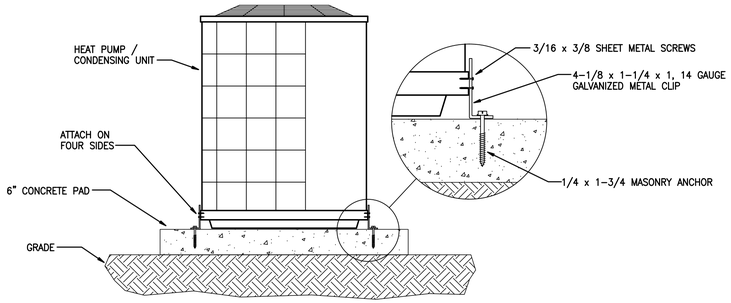
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
MECHANICAL FLOOR PLAN

DATE: 05-21-18
DRAWN BY: WMW

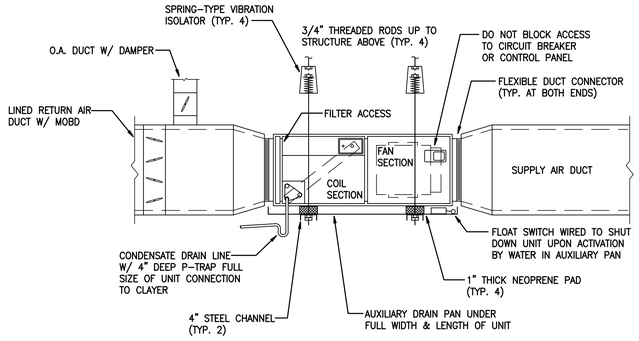
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SHEET NUMBER:
M4



CONDENSING UNIT MOUNTING DETAIL

NOT TO SCALE



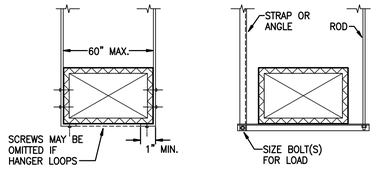
HORIZONTAL AIR HANDLING UNIT DETAIL

NOT TO SCALE

LONGEST DUCT DIMENSION	STRAP HANGERS	TRAPEZE SHELF ANGLE	MAX. SPACING
-18"	1" x 22 GA.	1" x 1" x 1/8"	8'-0"
19"-30"	1" x 20 GA.	1" x 1" x 1/8"	8'-0"
31"-42"	1" x 18 GA.	1-1/2" x 1-1/2" x 1/8"	8'-0"
43"-60"	1" x 16 GA.	1-1/2" x 1-1/2" x 1/8"	8'-0"

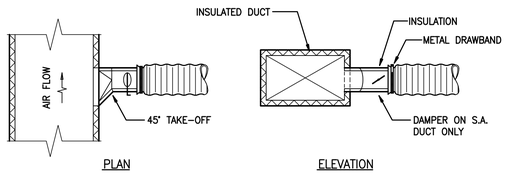
NOTES:

1. ALL HANGERS MUST BE SECURELY ATTACHED TO A STRUCTURAL MEMBER AND NOT TO THE ROOF DECK.
2. SEAL ALL INSULATION PENETRATIONS W/ MASTIC.



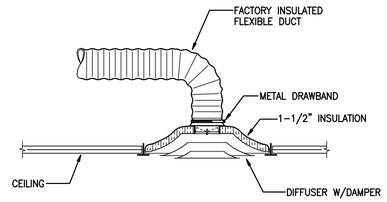
HANGERS FOR RECTANGULAR DUCTS

NOT TO SCALE



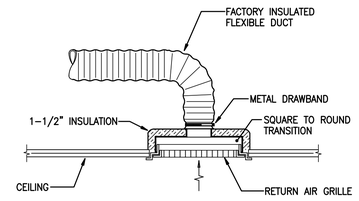
LOW LOSS TAKE-OFF

NOT TO SCALE



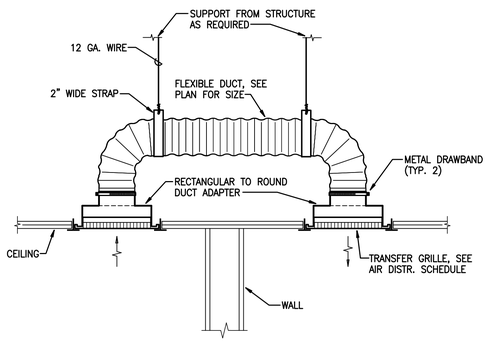
SQUARE CONE FACE DIFFUSER

NOT TO SCALE



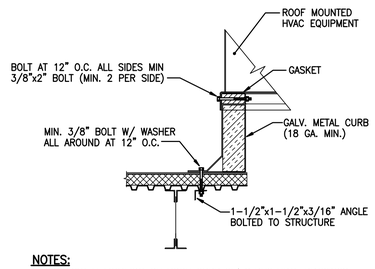
EGG CRATE R.A. GRILLE

NOT TO SCALE



TRANSFER DUCT & GRILLE DETAIL

NOT TO SCALE

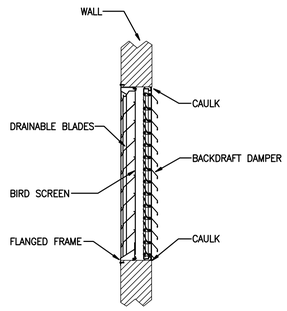


NOTES:

1. COORDINATE LOCATION OF ROOF CURB W/ STRUCTURAL DRAWINGS PRIOR TO INSTALLATION.
2. ROOF CURB BY AIR CONDITIONER/FAN MANUFACTURER. PROVIDE ADDITIONAL BRACING AND SUPPORT AS REQUIRED FOR ROOF CURB INSTALLATION TO WITHSTAND 150 MPH WIND.

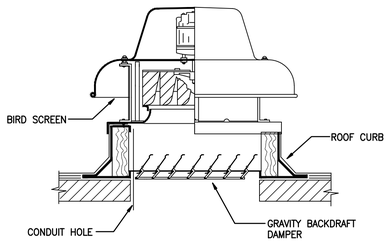
ROOF CURB ATTACHMENT DETAIL

NOT TO SCALE



WALL LOUVER DETAIL

NOT TO SCALE



EXHAUST FAN DETAIL

NOT TO SCALE

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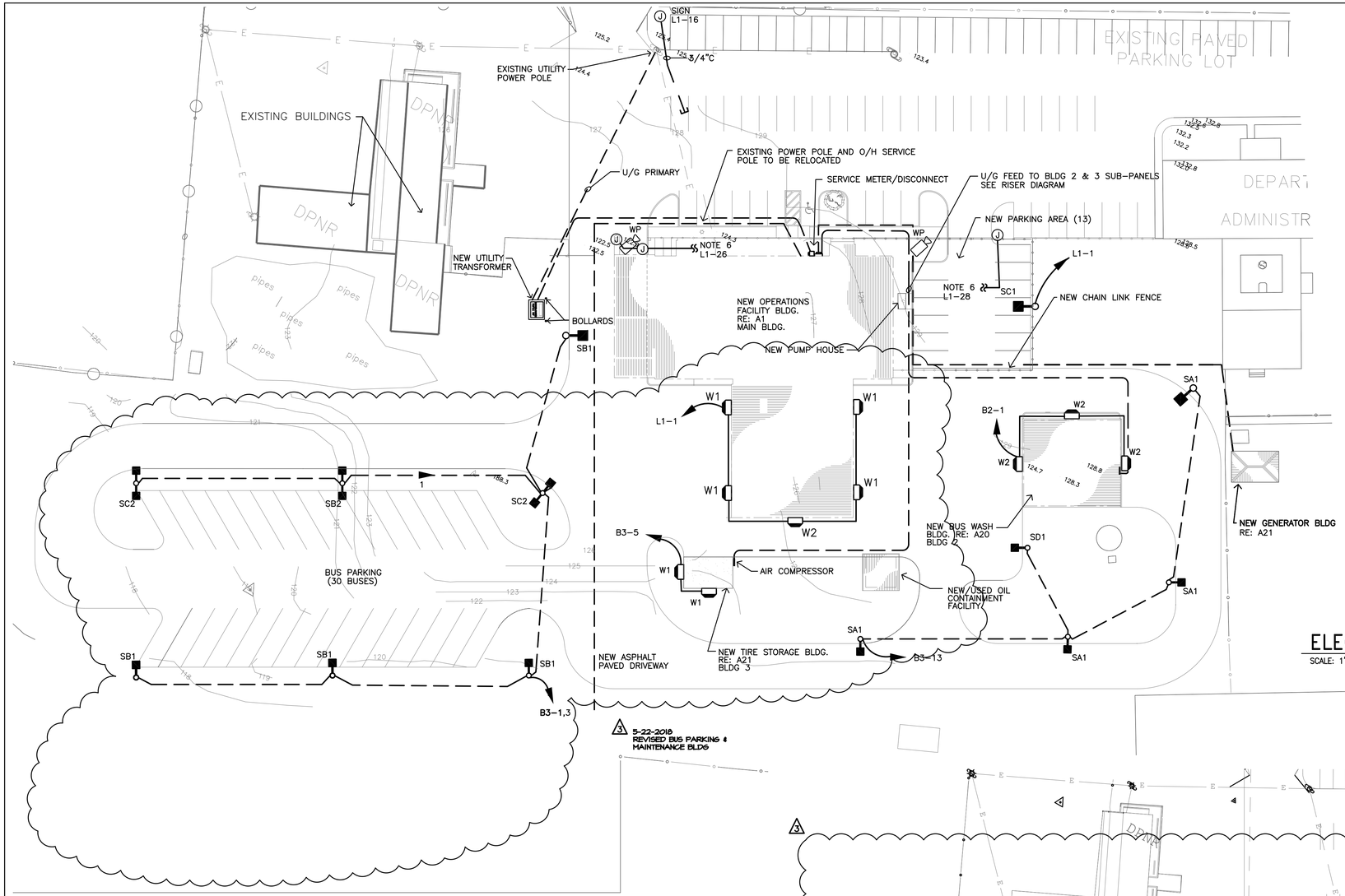
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V.I. DEPARTMENT OF PUBLIC WORKS
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DRAWING INFORMATION:
MECHANICAL DETAILS

DATE: 01-15-18
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SHEET NUMBER:
M5



ELECTRICAL SITE PLAN

SCALE: 1" = 30'-0"

N

NOTES:

1. MOUNT PANEL FS ON A UNISTRUT FRAME.
2. POWER FROM PANEL FS (FUEL STATION) EQUIPMENT BY OTHERS. ALL POWER AND CONTROL WIRING TO FUEL STATION ISLAND SHALL COMPLY WITH NEC. ARTICLE 514.
3. SITE LIGHTS NOT ON CONTROL PANEL. SHALL BE PROVIDED WITH INTEGRAL PHOTOCELL.
4. E.C SHALL PROVIDE AND INSTALL PANEL FS, AND BRANCH CIRCUIT TO SITE LIGHT FS1. FUELING EQUIPMENT, PUMP DISPENSING CONTROLS AND SIMILAR SPECIALIZED EQUIPMENT BY OTHERS.
5. PROVIDE EXPLOSION PROOF SEAL FOR BRANCH FEED TO SITE LIGHT FS1 AND FIXTURE C. SEAL FITTINGS MUST BE INSTALLED WITHIN 18 INCHES OF AN EXPLOSION PROOF ENCLOSURE. THE INSTALLATION SHALL COMPLY WITH ARTICLE 514 OF THE NATIONAL ELECTRIC CODE.
6. PROVIDE 3-1"C WITH PULL-STRING FROM GATE ENTRY TO SERVER/IT ROOM FOR INSTALLATION OF AUTOMATED LOW VOLTAGE GATE ENTRY SYSTEM.
7. PROVIDE 1"C W/PULL-STRING FROM EXTERIOR CAMERAS TO SERVER/IT ROOM FOR SECURITY CONTROL.

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Jacksonville, FL 32259
Phone 904-571-3008

ELECTRICAL DRAWING INDEX

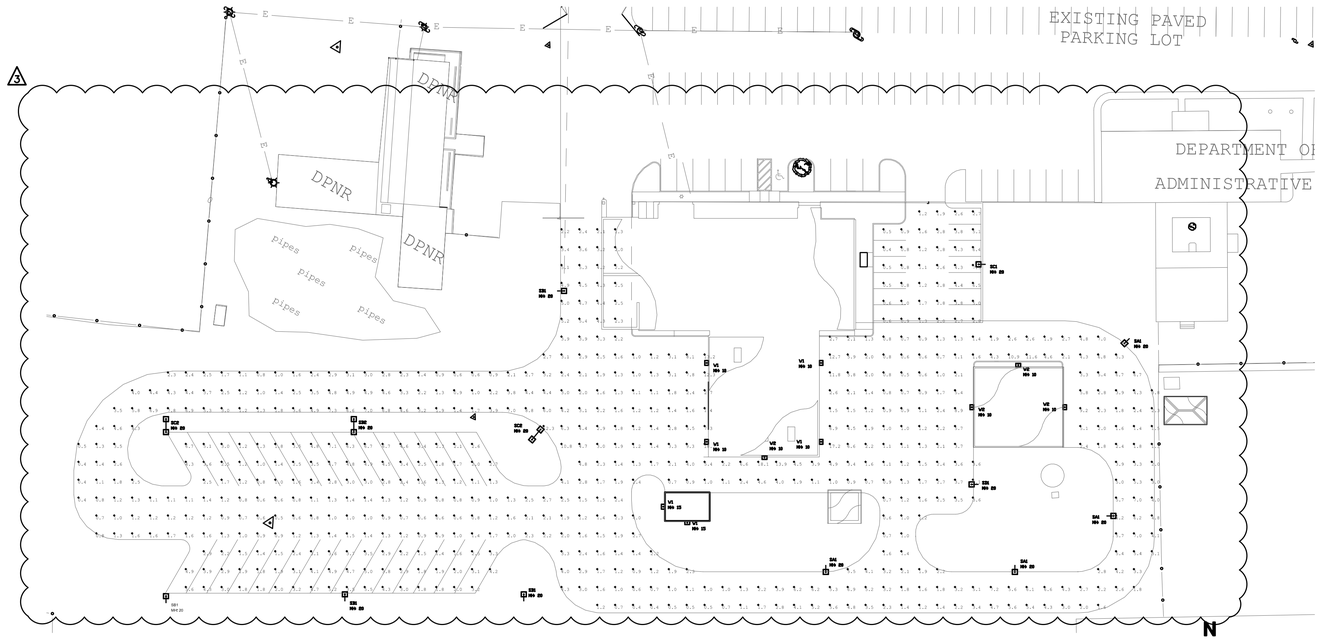
SHEET NUMBER	DESCRIPTION
E1	ELECTRICAL SITE PLAN AND PHOTOMETRIC PLAN
E2	ELECTRICAL PHOTOMETRIC MAIN BLDG PLAN
E3	ELECTRICAL NOTES AND PANEL SCHEDULES
E3.1	ELECTRICAL PANEL SCHEDULES
E4	ELECTRICAL LEGEND AND DETAILS
E5	ELECTRICAL LIGHTING PLAN-MAIN BLDG& SERVICE BLDGS.
E5.1	ELECTRICAL LIGHTING PLAN-SERVICE BLDGS.
E6	ELECTRICAL POWER PLAN-SERVICE BLDGS.
E7	FIRE ALARM PLAN-MAIN BLDG.

CALCULATION SUMMARY

AREA NAME	CALCTYPE	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
BACK AREA SITE	ILLUMINANCE	FC	2.86	18.7	0.4	7.15	46.75
–	–	–	–	–	–	–	–

LUMINAIRE SCHEDULE

TYP	SYMBOL SITE	DESCRIPTION	WATTAGE	ARRANGEMENT	LUMENS	MOUNTING/BALLAST	LLF	QTY
C		NOT USED	–	–	–	–	–	–
FS		NOT USED	–	–	–	–	–	–
SA1		LEOTEK AR18-30M2-MV-NW-2-XX-350	133	SINGLE POLE	16500	20FT MH	0.900	4
SB1		LEOTEK AR18-30M2-MV-NW-3-XX-350	133	SINGLE POLE	16824	20FT MH	0.900	4
SB2		LEOTEK AR18-30M2-MV-NW-3-XX-350	133	BACK-BACK POLE	16824	20FT MH	0.900	1
SC1		LEOTEK AR18-30M2-MV-NW-4-XX-350	133	SINGLE POLE	16662	20FT MH	0.900	1
SC2		LEOTEK AR18-30M2-MV-NW-4-XX-350	133	BACK-BACK	16662	20FT MH	0.900	2
SD1		LEOTEK AR18-30M2-MV-NW-5-XX-350	133	SINGLE POLE	16555	20FT MH	0.900	1
W1		LEOTEK ES1-48H-MV-NW-FT-XX-530	82.7	SINGLE WALL	8466	10FT MH	0.900	6
W2		LEOTEK ES1-48H-MV-NW-W-XX-530	82.3	SINGLE WALL	8707	10FT MH	0.900	4



ELECTRICAL PHOTOMETRIC SITE PLAN

SCALE: 1" = 40'-0"

N

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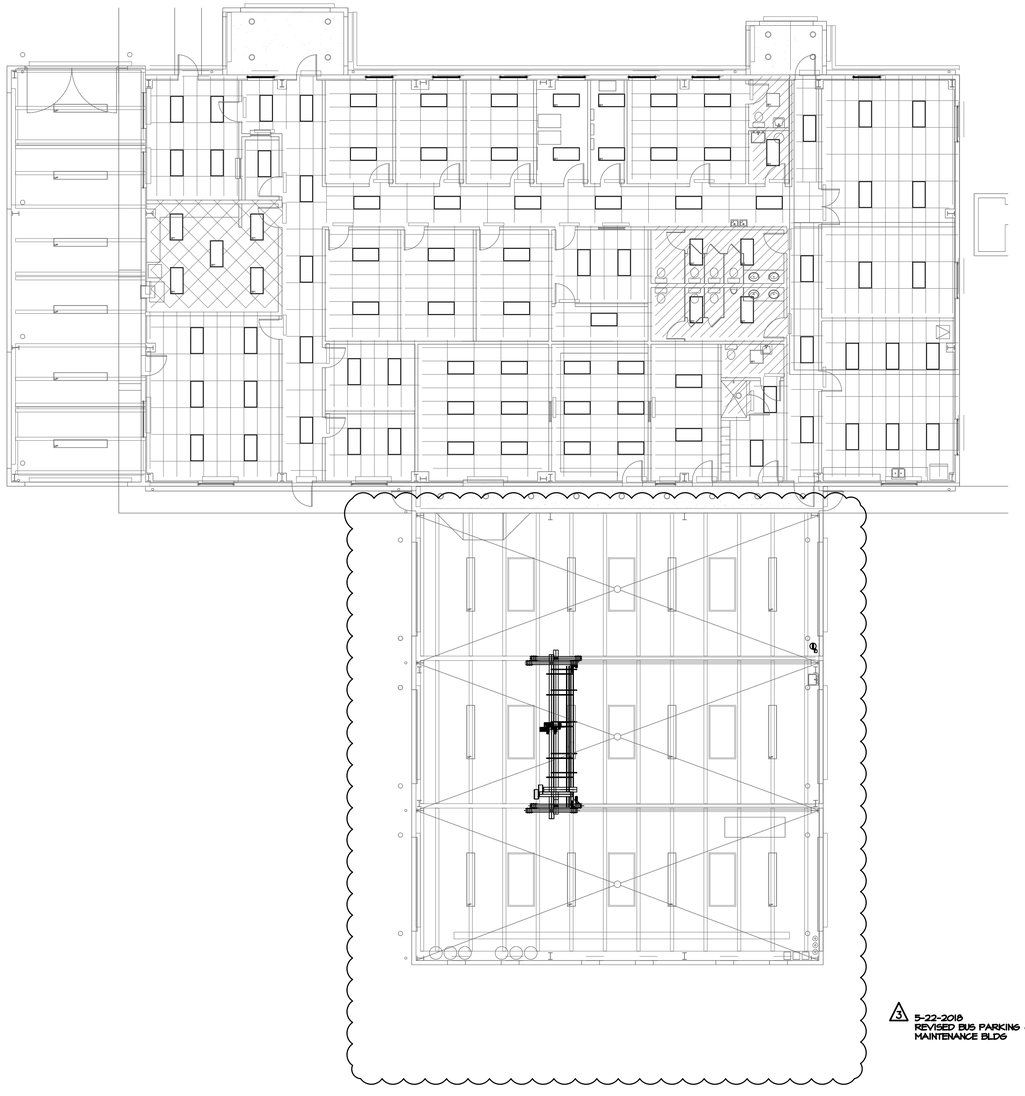
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELECTRICAL SITE PLAN

DATE: 05/04/17
DRAWN BY: SAA

C:\Active Projects\Vitran\SD

SHEET NUMBER:
E1



3 5-22-2018
REVISED BUS PARKING & MAINTENANCE BLDG

NEW ELECTRICAL RCP PLAN–BLDG 1

SCALE: 3/32"=1'-0"

N

LIGHTING FIXTURE SCHEDULE

	TYPE	MANUFACTURER	CATALOG NUMBER	LAMP SIZE	LAMP QUAN.	VOLTS	MTG. HEIGHT	REMARKS
INTERIOR LTG	F1	COLUMBIA	STE24–232G–MPO–EU	F32T8	2	120/277	RECESSED	2x4 FLUORESCENT STRATUS RECESSED
	F1A	COLUMBIA	STE24–232G–MPO–EU–EM	F32T8	2	120/277	RECESSED	2x4 FLUORESCENT STRATUS RECESSED/W EM BALLAST
	F2	COLUMBIA	JT824–232G–FSA12–EB8–PAF	F032/T8	2	120/277	CEILING	2x4 FLUORESCENT W/ A–12 PATTERN ACRYLIC PRISMATIC LENS BAL.
	F2A	COLUMBIA	JT824–232G–FSA12–EB8–PAF–EM	F032/T8	2	120/277	CEILING	2x4 FLUORESCENT W/ A–12 PATTERN ACRYLIC PRISMATIC LENS BAL. W/ EM BALLAST
	F3	COLUMBIA	JT822–232U6G–FSA12–EB8–PAF	F31T8U6	2	120/277	CEILING	2x2 FLUORESCENT ST8 LENSED TROFFER
	F3A	COLUMBIA	JT822–232U6G–FSA12–EB8–PAF–EM	F31T8U6	2	120/277	CEILING	2x2 FLUORESCENT ST8 LENSED TROFFER W/ EM BALLAST
	F4	COLUMBIA	SM24–232–FSA12–EB8	F032/41K	2	120/277	CEILING	2x4 FLUORESCENT SURFACE MNT A–12 PATTERN ACRYLIC PRISMED
	F4A	COLUMBIA	SM24–232–FSA12–EB8–EM	F032/41K	2	120/277	CEILING	2x4 FLUORESCENT SURFACE MNT A–12 PATTERN ACRYLIC PRISMED W/ EM BALLAST
	F5	COLUMBIA	LUN8–232–4EB8	F32/T8	4	120/277	CEILING	LUN INDUSTRIAL 8" x 98" FLUORESCENT 2–LAMP TANDEM/W/CLEA
	F5A	COLUMBIA	LUN8–232–4EB8–EM	F32/T8	4	120/277	CEILING	LUN INDUSTRIAL 8" x 98" FLUORESCENT 2–LAMP TANDEM/W/CLEA W/ EM BALLAST
	F6	PRESCOLITE	LF6CFH132EB/6CFH1PL	CF132DT/E/IN/835	1	120/277	CEILING	6" RECESSED/DOWNLIGHT
	F7	COLUMBIA	LHV4–632–M4RST–EB8HL	F32/T8	6	120/277	CEILING	VERSABAY INDUSTRIAL 21" x 48" 6–LAMP W/ MIR
	F8	HUBBELL LIGHTING	HLF–2RX	F32/T8	2	120/277	EXT. CEILING	HLF SERIES FLUORESCENT–HAZAR EXTERIOR FIXTURE
	EX	DUAL LITE	LXURWEI	5W HAL	1	120/277	WALL/CEILING	EXIT LIGHT
	EM	DUAL LITE	LZ2I	5W HAL	1	120/277	WALL/CEILING	EMERGENCY LIGHT
	EXEM	DUAL LITE (COMBO)	LTURW3I	5W HAL	1	120/277	WALL/CEILING	EMERGENCY/EXIT LIGHT COMBO
	C	NOT USED	–	–	–	–	–	–
	FS	NOT USED	–	–	–	–	–	–
EXTERIOR LTG	SA1	LEOTEK	AR18–30M2–MV–NW–2–XX–350	133W	1	120/277	20'–0" AFG	POLE SITE LIGHT
	SB1	LEOTEK	AR18–30M2–MV–NW–3–XX–350	133W	1	120/277	20'–0" AFG	POLE SITE LIGHT
	SB2	LEOTEK	AR18–30M2–MV–NW–3–XX–350	133W	2	120/277	20'–0" AFG	BACK–BACK POLE SITE LIGHT
	SC1	LEOTEK	AR18–30M2–MV–NW–4–XX–350	133W	1	120/277	20'–0" AFG	POLE SITE LIGHT
	SC2	LEOTEK	AR18–30M2–MV–NW–4–XX–350	133W	2	120/277	20'–0" AFG	BACK–BACK POLE SITE LIGHT
	SD1	LEOTEK	AR18–30M2–MV–NW–5–XX–350	133W	1	120/277	20'–0" AFG	POLE SITE LIGHT
	W1	LEOTEK	ES1–48H–MV–NW–FT–XX–530	82.7W	1	120/277	10'–0" AFG	WALLPACK 150MPH
	W2	LEOTEK	ES1–48H–MV–NW–W–XX–530	82.3W	1	120/277	10'–0" AFG	WALLPACK 150MPH

NOTES:
1. WHERE AVAILABLE, ALL FIXTURES TO BE INSTALLED WITH ELECTRONIC BALLASTS.
2. ALL EGRESS LIGHTING SHALL BE ADA COMPLIANT.
3. FIXTURE MOUNT HEIGHT SHALL BE MEASURED FROM BOTTOM OF FIXTURE.
4. ~~IF DEVIATING FROM FIXTURE SCHEDULE, E.C. SHALL PROVIDE PHOTOMETRICS.~~
5. FOR LIGHT FIXTURE INFORMATION, REFER TO: TIM HUTCHERSON; SESCO LIGHTING JACKSONVILLE BRANCH 8110 CYPRESS PLAZA DR. #301 JACKSONVILLE, FL 32256; (904) 646–4772
6. FIXTURES BY PHILIPS, HE WILLIAMS, AND ILP ARE PRE–APPROVED. IF DEVIATING FROM THE FIXTURE SCHEDULE OR THIS LIST OF MANUFACTURERS, PHOTOMETRICS MUST BE PROVIDED FOR APPROVAL PRIOR TO BID.

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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELEC. PHOTOMETRIC PLAN

DATE: 05-24-11
DRAWN BY: SAA

C:\Active Projects\Vitran\SD

SHEET NUMBER:
E2

ELECTRICAL SPECIFICATIONS (REV-17.1)

PART 1 – GENERAL

THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL NEW ELECTRICAL WORK INDICATED. CONSTRUCTION SHALL BE IN

A. ACCORDANCE WITH DRAWINGS AND APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL ARCHITECT/ENGINEER HAS DIRECTED CORRECTIVE ACTION.

B. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BID AND FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATIONS INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF.

C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE AND ALL CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION. THE SPECIFICATION, CODES AND STANDARDS LISTED BELOW ARE UTILIZED IN THIS PROJECT.

1. NATIONAL ELECTRICAL CODE (NFPA–70)
2. CODE FOR SAFETY TO LIFE (NFPA–101)
3. STANDARD FOR THE INSTALLATION, MAINTENANCE AND USE OF LOCAL PROTECTIVE SIGNALING SYSTEMS (NFPA–72)
4. UNDERWRITERS' LABORATORIES (UL)
5. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
6. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
7. FEDERAL SPECIFICATION (FED. SPEC.)
8. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
9. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
10. ADDITIONALLY, DESIGNS, WORK PRACTICES AND CONDITIONS MUST CONFORM WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (OSHA)
11. AMERICANS WITH DISABILITIES ACT (ADA)

D. DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATION OF ALL EQUIPMENT. CONFIRM WITH OWNER'S REPRESENTATIVE.

E. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

F. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FROM A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.

G. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THERE BY.

H. ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.

I. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTING AS REQUIRED BY AHJ. CONTRACTOR TO OBTAIN PERMIT AND APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT.

J. DO ALL CUTTING AND REPAIRING OF WALLS, FLOORS AND CEILINGS NECESSARY TO INSTALL WORK. DO NOT PIERCE EXTERIOR WALLS. ANY CUTTING OF STRUCTURAL MEMBERS OR FINISHED WORK SHALL HAVE PRIOR ARCHITECT APPROVAL.

K. SUPPORT AND FASTEN ALL EQUIPMENT SECURELY IN PLACE. SPACE, SECURE AND ADJUST HANGERS AND SUPPORTS TO KEEP CONDUITS ALIGNED, TO CARRY THE WEIGHT OF THE CONDUITS WITHOUT DEFLECTION OR SAG. INSERTS IN MASONRY SHALL BE STEEL OR PLASTIC TYPES INSTALLED IN DRILLED HOLES. WOODEN PLUGS, CHAINS STRAPS OR WIRE HANGERS ARE PROHIBITED. PROVIDE STEEL SUPPORTS, FRAMES, BRACING, ETC INCIDENTAL TO THIS SCOPE OF WORK.

L. UPON COMPLETION OF WORK, CONTRACTOR SHALL PROVIDE A CERTIFICATE OF INSPECTION FROM AUTHORITY HAVING JURISDICTION.

M. IDENTIFY ALL EQUIPMENT INSTALLED UNDER THIS CONTRACT WITH ENGRAVED, LAMINATED PHENOLIC PLASTIC NAME PLATE, WHITE CORE, AND BLACK SURFACE, SCREWED IN PLACE. ALL WIRING SHALL BE MARKED WITH BRADY SELF–STICKING WIRE MARKERS. ALL UNDERGROUND CONDUITS SHALL BE CONTINUOUS PLASTIC TAPE MARKER. LOCATE 6" TO 8" BELOW GRADE ABOVE CONDUITS.

N. ELECTRICAL SYSTEM SHALL BE TESTED FOR VOLTAGE, AMMETER READINGS, AND MEGGERED; AND CHECKING OF ALL SYSTEMS. MEG WIRES #6 AND LARGER. SYSTEM SHALL BE MEGGERED WITH 20 MEGGOHM INSTRUMENT PER MANUFACTURER'S RECOMMENDATION.

O. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR BOTH TEMPORARY AND PERMANENT POWER AND PHONE/CABLE CONNECTIONS WITH THE RESPECTIVE UTILITY. CONTRACTOR SHALL COORDINATE AND CONFORM TO THE PHONE/CABLE POWER REQUIREMENTS.

P. E.C. TO SUBMIT APPLICABLE ELECTRICAL SERVICE APPLICATION WITH UTILITY PRIOR TO CONSTRUCTION TO ENSURE UTILITY COMPLIANCE WITH THE PERMIT DRAWINGS.

PART 2 – PRODUCTS

A. MINIMUM WIRE SIZE SHALL BE #12 A.W.G. (EXCEPT AS NOTED OTHERWISE HEREIN). ALL CONDUCTORS SHALL BE COPPER WITH "THHN–THWN" INSULATION UNLESS OTHERWISE NOTED.

B. OUTLET BOXES SHALL BE SIZED PER NEC. SET FLUSH WITH SURFACE. PLASTIC BOXES ARE ACCEPTABLE FOR RESIDENTIAL APPLICATIONS ONLY. INSULATED THROAT CONNECTORS AND/OR INSULATED BUSHINGS IN ALL CONDUITS 2" OR LARGER (TYPICAL STEEL FITTINGS) AT BOX CONNECTION. DEPTH OF OUTLET BOXES AT EXTERIOR WALLS TO BE THIN TYPE (1.5" MAX FURRING PLUS GYPSUM BOARD). WOOD STUD WALLS TO BE NORMAL DEPTH.

C. FOR NON–RESIDENTIAL APPLICATIONS, OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS. EXPOSED WALL MOUNTED OUTLET BOXES SHALL BE CAST METAL TYPE FS OR FD. CEILING MOUNTED BOXES SHALL BE GALVANIZED SHEET STEEL. NON–METALLIC BOXES ARE PERMISSIBLE WITHIN RESIDENTIAL SPACES, WHERE PERMITTED BY AHJ. BOX LOCATIONS MAY BE CHANGED BY OWNER UP TO 10' WITHOUT ADDITIONAL OWNER COST.

D. FUSES SHALL BE STANDARD NEC CARTRIDGE TYPE, DUAL ELEMENT, OR FUSETRON.

E. ALL MATERIALS SHALL BE NEW AND BEAR UNDERWRITERS' LABELS WHERE APPLICABLE.

F. PANELBOARDS:

1. CURRENT CARRYING BUSES SHALL BE COPPER. GROUND BUS BARS SHALL BE COPPER.
2. CIRCUIT BREAKERS USED AS SWITCHES IN FLUORESCENT OR HID LIGHTING CIRCUITS SHALL BE LISTED AND MARKED 'SWD'.
3. ALL CIRCUIT BREAKERS FEEDING MECHANICAL EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
4. SHUNT TRIP BREAKERS SHALL BE USED FOR ELEVATORS (FIRE ALARM CONTROLLED), HOOD SYSTEMS (ANSUL CONTROLLED) AND NON–WATER BASED FIRE PROTECTED SYSTEMS (CONTROLLED SUPPRESSION SYSTEM).
5. A.I.C. RATINGS SHALL BE AS INDICATED ON PANELBOARD SCHEDULES OR PER NEC BASED ON CONDUCTOR SIZE/LENGTH.
6. ALL PANELBOARDS SHALL BE PROVIDED WITH TYPE–WRITTEN DIRECTORY OF CIRCUIT DESIGNATIONS.

G. DISCONNECT SWITCHES SHALL BE H.P. RATED, HEAVY DUTY, QUICK–MAKE, QUICK–BREAK. ENCLOSURES SHALL BE NEMA–1 FOR INDOOR, NEMA 3R FOR OUTDOOR, NEMA 4X FOR CORROSIVE ENVIRONMENTS OR AS OTHERWISE NOTED. GENERAL DUTY DISCONNECTS ARE PERMISSIBLE FOR RESIDENTIAL APPLICATIONS.

H. MOTOR STARTERS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS, WITH OVERLOAD RELAYS IN EACH PHASE.

I. WIRING DEVICES (GENERAL PURPOSE RECEPTACLES AND WALL SWITCHES) SHALL BE WHITE COLOR UNLESS OTHERWISE SPECIFIED BY THE OWNER. FACEPLATES SHALL BE MATCHING COLOR, SMOOTH, NYLON. PROVIDE DECORA DECORATIVE SERIES SWITCHES. RECEPTACLES AND COVERPLATES OR EQUAL FOR RESIDENTIAL APPLICATION.

J. ELECTRICAL METALLIC TUBING (EMT) SHALL BE OF BEST QUALITY STEEL, SMOOTH INSIDE AND OUT AND SHALL BE H.D. GALVANIZED.

K. INDOOR FEEDER AND BRANCH CONDUITS SHALL BE EMT EXCEPT WHERE SUBJECT TO PHYSICAL DAMAGE AND SHALL BE CONCEALED ABOVE CEILINGS OR IN WALLS. LIQUIDTIGHT FLEXIBLE CONDUIT (1/2" MINIMUM) SHALL BE INSTALLED FOR ALL CONNECTIONS TO MOTORS, MECHANICAL EQUIPMENT, ETC.

L. NO. 10 WIRE AND SMALLER SHALL BE SOLID; NO. 8 AND LARGER SHALL BE STRANDED. UNDESIGNATED CONDUIT RUNS INDICATE UP TO 4 #12 AWG CONDUCTORS IN EACH CONDUIT.

M. NEMA 4X ENCLOSURES AND RIGID, NON–METALIC CONDUIT SHALL BE USED IN CORROSIVE ENVIRONMENTS.

N. E.C. SHALL ENSURE SELECTIVE COORDINATION HAS BEEN ACHIEVED VIA MANUFACTURER'S DATA.

O. ALL MAIN BREAKERS SHALL BE 100% RATED.

P. ALL CONDUITS/CONDUCTORS SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING WALLS/STEEL, BOTH VERTICALLY AND HORIZONTALLY (NO DIAGONAL RUNS).

Q. ELECTRICAL DEVICES MOUNTED TO WALLS, CEILINGS, AND FLOORS OF ADJOINING TENANT SPACES SHALL BE SEALED WITH A PERMANENTLY FLEXIBLE SEALANT FOR NOISE INSULATION. ADDITIONALLY THE E.C. SHALL FOAM WIRE PENETRATIONS IN THE SAME AREAS.

PART 3 – EXECUTION

COLOR CODING OF CONDUCTORS SHALL BE AS FOLLOWS:

A. 1. 208/120 VOLTS, 3 PHASE, 4–WIRE SYSTEM: UNGROUNDED CONDUCTORS: 1 BLACK, 1 RED AND 1 BLUE. GROUNDED (NEUTRAL) CONDUCTOR; WHITE. GROUNDING CONDUCTORS SHALL BE GREEN.

2. BRANCH CIRCUIT WIRING (#6 AND SMALLER) SHALL BE COLOR CODED BY CONTINUOUS INSULATION COLOR AND FEEDERS AND SERVICES (#4 AND LARGER) SHALL BE CODED AT ALL JUNCTION OR PULL POINTS (EXCEPT LB'S OR LBD'S) USING COLOR MARKERS OR PLASTIC TAPE MANUFACTURED FOR THE PURPOSE.

WIRING METHODS

B. 1. SCHEDULE 40 PVC CONDUIT, WITH FITTINGS AND COUPLINGS APPROPRIATE FOR THE USE, SHALL BE INSTALLED UNDERGROUND OR BELOW SLABS ON GRADE. SCHEDULE 80 SHALL BE USED FOR AREAS SUBJECT TO DAMAGE OR HEAVY TRAFFIC. PVC CONDUIT SHALL BE USED IN DAMP LOCATION.

2. TYPE MC CABLE WITH ALUMINUM ARMOR AND INTERNAL GROUND IS ACCEPTABLE FOR USE AS GENERAL BRANCH CIRCUIT WIRING FOR CIRCUITS 20 AMPERES OR LESS AND CONCEALED IN WALLS OR ABOVE SUSPENDED CEILING AND AS APPROVED BY THE AUTHORITY HAVING JURISDICTION. MC CABLE IS NOT PERMISSIBLE FOR HOME RUNS.

3. NEUTRAL WIRES SHALL BE SIZED IDENTICALLY WITH PHASE CONDUCTORS, UNLESS OTHERWISE SPECIFIED. NEUTRALS SHALL NOT BE SHARED ACROSS MULTIPLE BRANCH CIRCUITS. EACH CIRCUIT SHALL BE RUN WITH A GROUND WIRE.

4. FOR RESIDENTIAL BRANCH CIRCUITS, WHERE PERMISSABLE PER THE NEC, NON–METALIC CABLE (i.e. ROMEX) IS ALLOWABLE FOR BRANCH CIRCUITS SIZED #14 AWG OR LARGER. CONDUCTOR SIZING SHALL BE ADJUSTED FOR THE ALLOWABLE AMPACITY BASED ON NEC, ARTICLE 334.80.

5. FOR RESIDENTIAL APPLICATIONS, TYPE SE SERVICE CABLE MAY BE USED AS FEEDER CONDUCTORS FROM METER CENTER TO TENANT PANELS PROVIDED THE CABLES ARE INSTALLED IN ACCORDANCE WITH PARTS I AND II OF ARTICLE 334 OF THE NEC. IN SUCH CASES, THE GROUNDED CONDUCTOR OF THE SE CABLE SHALL BE INSULATED (NOT BARE).

6. CLUBHOUSE AND PLACES OF ASSEMBLY SHALL NOT USE TYPE NM CABLING.

7. WIRING EXPOSED IN AIR PLENUM AREAS SHALL BE PLENUM RATED.

C. ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDED PER THE LATEST EDITION OF THE N.E.C. AND LOCAL CODES.

D. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTED BY ENGINEER/ARCHITECT.

E. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.

F. GROUND ALL FIXED AND PORTABLE APPLIANCES AND EQUIPMENT CONNECTED UNDER THIS CONTRACT WITH A GREEN GROUNDING CONDUCTOR, CONNECTED TO PANELBOARD GROUND BUS.

G. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES, AND WIRING DEVICES, FOR ALL OUTLETS.

H. MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SUCH AS APPEAR ON THE UL LIST OF APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF NEC, NEMA, AND ICEA.

I. CONTRACTOR SHALL SUBMIT PDF SET OF SHOP DRAWINGS OR CUT SHEETS OF LIGHTING FIXTURES, SWITCHES, AND OTHER ELECTRICAL ITEMS FOR APPROVAL BY ENGINEER/ARCHITECT.

J. LIGHTING SYSTEM SHALL BE FURNISHED AND INSTALLED COMPLETE, INCLUDING ALL LIGHTING FIXTURES, LAMPS, SUPPORTING MEMBERS, HANGERS, ETC. REFER TO "FIXTURE SCHEDULE" ON THE DRAWINGS. LIGHTING FIXTURES SHALL BE PROPERLY AND CAREFULLY ALIGNED AND SUPPORTED PER NEC. LIGHTING FIXTURES SHALL BE UL APPROVED, CLEAN AND LAMPED WITH NEW LAMPS AT TIME OF FINAL INSPECTION UNLESS OTHERWISE SPECIFIED. EACH FLUORESCENT FIXTURE SHALL BE SELF–CONTAINED COMPLETE WITH BALLAST, FLUORESCENT BALLAST SHALL BE INTEGRATED ELECTRONIC TYPE; UL APPROVED, ENERGY SAVING, ETL, HPF, PROTECTED WITH AUTOMATIC RESETTING THERMAL PROTECTOR. FLUORESCENT LAMPS SHALL BE 35K, OCTRON TYPE (F032/35K) RAPID START TYPE. EACH HID FIXTURE SHALL BE SELF–CONTAINED COMPLETE WITH BALLAST. HID BALLAST SHALL BE UL APPROVED, ETL, HPF, PROTECTED BY INTEGRAL FUSING, SOUND RATING 'A' AS RECOMMENDED BY FIXTURE MANUFACTURER. HID LAMPS SHALL BE AS REQUIRED; SYLVANIA SUPER METALARC METAL HALIDE, PHOSPHOR COATED, SYLVANIA HPS LUMLUX. ALL RELATED PARTS REQUIRED TO EFFECT A COMPLETE INSTALLATION SHALL BE FURNISHED WHETHER OR NOT SPECIFICALLY MENTIONED.

K. CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS AND PROVIDE ALL NECESSARY CONTROL WIRING. ALL ELECTRICAL POWER WIRING FOR THE HVAC SYSTEM INCLUDING WIRING THRU LINE VOLTAGE CONTROL DEVICES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. COORDINATE WITH MECHANICAL DRAWINGS FOR DISCONNECTS TO BE PROVIDED WITH EQUIPMENT SPECIFIED UNDER DIVISION 15, OR TO BE PROVIDED UNDER DIVISION 16 FOR DIVISION 15 EQUIPMENT. E.C. OS RESPONSIBLE FOR PROVIDING ALL BRANCH CIRCUITING AND CONNECTIONS TO SPECIFIED EQUIPMENT.

L. CONDUCTORS FOR BRANCH CIRCUITS SHALL BE SIZED TO PREVENT VOLTAGE DROP EXCEEDING 3 PERCENT AT THE FARTHEST OUTLET OF POWER. IF VOLTAGE DROP EXCEEDS THIS VALUE THE CONTRACTOR SHALL INCREASE CONDUCTOR SIZE AS REQUIRED.

M. CONTRACTOR SHALL CONFIRM ANY AND ALL REQUIREMENTS SUCH AS: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, TRANSFORMER SIZE, AND SCHEDULE ALL REQUIRED DOWN TIME FOR OWNERS CONFIRMATION. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.

N. ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE CIRCUIT BREAKER, CONDUCTOR AND CONDUIT ARE ADEQUATELY SIZED FOR THE NAMEPLATE RATING ON THE EQUIPMENT.

O. ALL BRANCH CIRCUITS PROVIDING SINGLE PHASE, 120V POWER TO BEDROOMS, DINING ROOMS, LIVING ROOMS, CLOSETS, HALLWAYS AND SIMILAR ROOMS SHALL BE AFCI PROTECTED.

P. RECEPTACLES SHALL BE TAMPER–RESISTANT WITHIN DWELLING UNITS AS REQUIRED BY CODE.

Q. TYPICAL MOUNTING HEIGHT OF ELECTRICAL EQUIPMENT SHALL BE AS FOLLOWS:

–DEVICE–	–MOUNTING HEIGHT–
PANELBOARDS/SAFETY SWITCHES	6'–6"
SAFETY SWITCHES (OUTDOOR)/TOGGLE SWITCHES (4" FROM DOOR TRIM)	4'–0"
RECEPTACLES/PHONE OUTLETS/DATA OUTLETS	1'–6"

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

PANEL P1 (BLDG 1)

120/208 VOLTS 3 PHASE 4 WIRE
225 AMP MAIN LUGS ONLY

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA
1	RECPT, OFFICES	12	12	3/4	1	20	1.0
3	RECPT, OFFICES	12			1	20	1.0
5	RECPT, OFFICES	12			1	20	1.0
7	SPARE				1	20	
9	SPARE				1	20	
11	BATH	12	12	1/2	1	20	0.2
13	RECPT, OFFICE/HALL	12	12	3/4	1	20	1.0
15	RECPT, CONFERENCE	12			1	20	1.0
17	RECPT, CONFERENCE	12			1	20	0.6
19	RECPT, BATH/HALL	12	12	1/2	1	20	0.4
21	RECPT, BATH/HALL	12			1	20	0.4
23	RECPT, OFFICE	12	12	1/2	1	20	1.0
25	RECPT, OFFICE	12			1	20	1.0
27	RECPT, OFFICE	12	12	3/4	1	20	0.8
29	RECPT, OFFICE	12			1	20	0.8
31	SPARE	12			1	20	
33	RECPT, PRINTER	12	12	1/2	1	20	1.2
35	RECPT, PRINTER	12			1	20	1.2
37	STORAGE DOOR	12	12	1/2	1	20	1.6
39	DEPOSITORY	12	12	1/2	1	20	0.2
41	IT ROOM	12	12	1/2	1	20	0.6
	TOTAL KVA 38.5						

KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1.5	20	1	1/2	12	12	APPLIANCE	2
1.0	20	1	3/4	12	12	VENDING	4
1.2	20	1			12	RECPT, LOUNGE	6
1.0	20	1	1/2	12	12	RECPT, REVENUE	8
1.0	20	1			12	RECPT, DISPATCH	10
1.0	20	1	1/2	12	12	RECPT, OFFICE	12
1.0	20	1			12	RECPT, OFFICE	14
1.0	20	1	1/2	12	12	HAND DRYER	16
1.0	20	1			12	HAND DRYER	18
0.8	20	1	1/2	12	12	RECPT, PARTS STORAGE	20
1.0	20	1			12	RECPT, PARTS STORAGE	22
0.6	20	1	1/2	12	12	RECPT, STAFF LOUNGE	24
0.6	20	1			12	RECPT, STAFF LOUNGE	26
1.5	20	1	1/2	12	12	APPLIANCE	28
1.5	20	1			12	APPLIANCE	30
1.2	20	1	1/2	12	12	VENDING	32
1.2	20	1			12	VENDING	34
1.2	20	1	3/4	12	12	IT ROOM	36
1.2	20	1			12	IT ROOM	38
1.0	20	1	1/2	12	12	AUTO WRAPPER	40
1.5	20	1	1/2	12	12	APPLIANCE	42

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

PANEL L1 (BLDG 1)

120/208VOLTS 3 PHASE 4 WIRE
225 AMP MAIN LUGS ONLY

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA
1	SITE LIGHTS	10	10	3/4	2	20	1.4
3		10					
5	EXTERIOR LIGHTS	12	12	1/2	1	20	0.4
7	SPARE				1	20	
9	BAY LIGHTS	12	12	1/2	1	20	0.8
11	BAY LIGHTS	10	10	1/2	1	20	1.1
13	BAY LIGHTS	10			1	20	1.1
15	EMERGENCY/EXIT	12	12	1/2	1	20	0.2
17	BAY LIGHTS	12	12	1/2	1	20	0.8
19	SPARE				1	20	
21	SPARE				1	20	
23	SPARE				1	20	
25	GP RECPT	12	12	3/4	1	20	0.4
27	GP RECPT	12			1	20	0.4
29	GP RECPT	12			1	20	0.4
31	GFI PROBE RECPT	12	12	1/2	1	20	0.2
33	SPARE				1	20	
35	SPARE				1	20	
37	SPARE				1	20	
39	SPARE				1	20	
41	SPARE				1	20	
	TOTAL KVA 17.9						

KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1.1	20	1	1/2	12	12	LIGHTS/OFFICE LOUNGE	2
0.6	20	1			12	LIGHTS/OFFICE	4
1.1	20	1	1/2	12	12	LIGHTS/HALL	6
	20	1				SPARE	8
1.1	20	1	1/2	12	12	LTG,LOUNGE/PARTS STOR	10
1.2	20	1			12	LIGHTS,LOUNGE/LOCKER	12
0.8	20	1	1/2	12	12	LIGHTS, CONFERENCE	14
1.2	20	1	3/4	10	10	SIGN	16
	20	1				SPARE	18
	20	1				SPARE	20
0.5	20	1	1/2	12	12	PHONEBOARD	22
0.6	20	1	1/2	12	12	FACP	24
0.6	20	1	1	10	10	GATE POWER	26
0.6	20	1	1	10	10	GATE POWER	28
						PROVISIONS	30
0.5	20	1	1/2	12	12	EWC	32
0.6	20	1	1/2	12	12	ELEC ROOM RECPT	34
							36
							38
							40
							42

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

PANEL MDP

SURFACE MTD. CIRCUIT BREAKER TYPE
SQUARE D

120/208 VOLTS 3 PHASE 4 WIRE
1000 AMP MAIN LUGS ONLY
COIL 65,000 AIC 100% RATED UL 'SE'
LABLE AND LISTED

CKT	POLE	TRIP	KVA	WIRE	GRD	COND	DESIGNATION
1	3	20	2.3	3–#12	12	3/4	AHU–1
2	3	50	12.3	3–#8	10	1	CU–1
3	3	20	2.3	3–#12	12	3/4	AHU–2
4	3	40	9.6	3–#8	10	1	CU–2
5	2	20	0.5	2–#12	12	1/2	AHU–3
6	2	30	3.8	2–#10	10	3/4	CU–3
7	3	200	12.5	SEE RISER	6	2.5	PANEL PH
8	3	200	38.5	SEE RISER	6	2.5	PANEL P1
9	3	200	12.9	SEE RISER	6	2.5	PANEL L1
10	3	225	70.8	SEE RISER	6	2.5	PANEL BM1
11	2	20	1.7	2–#12	12	3/4	CU–4/AHU–4
12	3	400	72.9	SEE RISER	4	3	PANEL B2
13	3	200	32.1	SEE RISER	6	2.5	PANEL B3
14	–	–	–	–	–	–	PROVISIONS
15	–	–	–	–	–	–	PROVISIONS
16	2	30	4.5	2–#10	10	3/4	WATER HEATER
17	2	20	3.0	2–#12	12	3/4	IT ROOM
18	2	20	3.0	2–#12	12	3/4	IT ROOM
19	3	60					TVSS
		TOTAL	42,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING				

ELECTRICAL LOAD SUMMARY

PROPERTY ADDRESS CHRISTIANSTED ST. CROIX, U.S.V.I. 00822
PROJECT VITRAN MAINTENANCE AND OPERATIONS FACILITY PERMIT
USE OF BUILDING
COMMERCIAL X NUMBER of METERS 1 UNDERGROUND YES

LIGHTING

OFFICE	6175SF x 3.5VA/SFx 1.25	=	27016	VA
GARAGE	3080VA x 125%	=	3850	VA
STORAGE	1705F x 0.25VA/SF	=	1875	VA
SITE LIGHTING	3300VA x 125%	=	4125	VA
SIGN		=	1200	VA
		=	37,066	VA

LIGHTING TOTALS

RECEPTACLES

GP 102 x 180VA			
10KVA @ 100%	=	10000	VA
8360KVA @ 50%	=	4180	VA
DEDICATED RECEPTACLES			
WATER HEATER	=	7500	VA
EWC	=	500	VA
FACP/SERVER/PHONE	=	400	VA
COPIER	=	1200	VA
VENDING (8 @ 1000VA)	=	8000	VA
APPLIANCE (7 @ 1500VA)	=	10500	VA
	=	42,280	VA

RECEPTACLES TOTALS

EQUIPMENT

LIFT 3 X 208V x 2.1A x 1.732	=	25938	VA
DRILL PRESS	=	1200	VA
BENCH GRINDER	=	1200	VA
WELDER 208V x 22.5A	=	4680	VA
COMPRESSOR 208V x 78A x 1.732	=	28100	VA
HIT 5000 TIRE CHANGER	=	4200	VA
HYDRAULIC PRESS 1200 x 16A	=	1420	VA
CRANE HOIST 120V x 26.5A	=	3180	VA
AUTO–WRAPPER 120V x 10A	=	1200	VA
ROLL–UP DOORS 10 x 120V x 8A	=	9600	VA
BOOSTER PUMP (5HP)	=	6000	VA
HYDRAULIC PUMP (10HP)	=	11100	VA
PRESSURE WASHER (2 @10HP)	=	22200	VA
TWC 208V x 24A	=	5000	VA
RECLAIMING CONSOLE 208V x 16A x 1.732	=	5800	VA
ECO POWER BRUSH 208V x 12A x 1.732	=	4325	VA
CRANE	=	6016	VA
DOSING PUMP	=	2400	VA
BOOSTER PUMP	=	9835	VA
GENERATOR	=	5000	VA
TIRE CHANGER	=	9400	VA
25% MAX MOTOR	=	7025	VA
	=	174,819	VA

EQUIPMENT TOTALS

HVAC

EXHAUST FANS			
EF–1 TO EF–5	=	1200	VA
EF–6 TO EF–9	=	3200	VA
EF–10 TO EF–17	=	9360	VA
CU–1 208V x 34.2A x 1.732	=	12320	VA
CU–2 208V x 26.7A x 1.732	=	9618	VA
CU–3 208V x 18.1A	=	3765	VA
AHU–1	=	2270	VA
AHU–2	=	2270	VA
AHU–3	=	500	VA
CU–4/AHU–4	=	1664	VA
	=	46,167	VA

HVAC TOTALS

TOTAL LOAD = 300,332 VA

3 5-22-2018 REVISED BUS PARKING & MAINTENANCE BLDG

CONDUIT/CABLE SCHEDULE

A. 3 SETS 3"C (SCH 40 PVC) 4–#400KC

PANEL B2 (BLDG 2)

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

120/208VOLTS 3 PHASE 4 WIRE
400 AMP MAIN BREAKER

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	SITE LIGHTS	12	12	3/4	2	20	0.2	6.0	15	3	3/4	10	10	BOOSTER PUMP	2
3	SPARE				1	20							10		4
5	BAY LIGHTS–BUS WASH	12	12	3/4	1	20	1.2						10		6
7	BAY LIGHTS–BUS WASH	12	–	–	1	20	0.9	11.1	50	3	1	10	8	HYDRAULIC PUMP	8
9	BAY LIGHTS–BUS WASH	12	–	–	1	20	1.2						8		10
11	LIFT	10	10	3/4	3	30	8.6						8		12
13		10						11.1	50	3	1	10	8	PRESSURE WASHER	14
15		10											8		16
17	GP RECEPTACLE	12	12	1/2	1	20	0.6						8		18
19	GP RECEPTACLE	12			1	20	0.6	11.1	50	3	1	10	8	PRESSURE WASHER	20
21	GP RECEPTACLE	12	12	1/2	1	20	0.6						8		22
23	SPARE				1	20							8		24
25	RECLAIM CONSOLE	12	12	3/4	3	20	5.8	0.4	20	1	1/2	12	12	EF–9	26
27		12						1.2	20	2	1/2	12	12	DOSING PUMP	28
29		12											12		30
31	ECO POWER BRUSH	12	12	3/4	3	20	4.3	1.8	20	1	1/2	12	12	ROLLUP–DOOR	32
33		12						5.0	30	2	3/4	10	10	TRUCK WASH CONTROL	34
35		12											10	(TWG)	36
37	PROVISIONS							1.2	20	2	1/2	12	12	DOSING PUMP	38
39	PROVISIONS												12		40
41	PROVISIONS													PROVISIONS	42

TOTAL KVA 72.9

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

PANEL BM1

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

120/208VOLTS 3 PHASE 4 WIRE
225 AMP MAIN LUGS ONLY

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	EXHAUST FAN	12	12	3/4	1	20	1.4	8.6	30	3	3/4	10	10	LIFT	2
3	EXHAUST FAN	12	12	–	1	20	1.4						10		4
5	PROVISIONS												10		6
7	LIFT	10	10	3/4	3	30	8.6	1.8	20	1	1/2	12	12	ROLL–UP DOOR	8
9		10						4.7	30	2	3/4	10	10	WELDER	10
11		10											10		12
13	GP RECEPTACLES	12	12	3/4	1	20	0.8	1.9	20	1	1/2	12	12	HYDRAULIC PRESS	14
15	GP RECEPTACLES	12			1	20	0.6	1.2	20	1	1/2	12	12	EF–9	16
17	GP RECEPTACLES	12			1	20	0.6	3.2	40	1	1	8	8	CHAIN HOIST	18
19	RECPT WORKBENCH	12	12	3/4	1	20	0.8	1.6	20	1	3/4	12	12	EF–7	20
21	RECPT WORKBENCH	12			1	20	0.8	1.6	20	1			12	EF–8	22
23	RECPT WORKBENCH	12			1	20	0.8	6.0	25	3	1	10	10	CRANE	24
25	ROLL–UP DOOR	12	12	1/2	1	20	1.5						10		26
27	TIRE CHANGER	8	10	1	3	35	9.4						10		28
29		8						1.2	20	1	1/2	12	12	EF–11	30
31		8						1.2	20	1	1/2	12	12	EF–13	32
33	WATER HEATER	12	12	1/2	2	20	3.0		20	1				SPARE	34
35	WH–2	12						1.2	20	1	1/2	12	12	EF–10	36
37	ROLL–UP DOOR	12	12	1/2	2	20	1.4	1.2	20	1			12	EF–12	38
39	ROLL–UP DOOR	12	12	1/2	1	20	1.4	1.2	20	1	1/2	12	12	EF–14	40
41	ROLL–UP DOOR	12	12	1/2	1	20	1.4		20	1				SPARE	42

TOTAL KVA 70.8

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

3 5-22-2018
REVISED BUS PARKING & MAINTENANCE BLDG

PANEL FS

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD, NEMA 4

120/208VOLTS 3 PHASE 4 WIRE
225 AMP MAIN BREAKER

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	DISP #1	12	12	3/4	2	20	0.6	2.7	20	2	3/4	12	12	STP #1 REG.	2
3	(NOTE 2)	12											12		4
5	DISP #2	12	12	3/4	2	20	0.6	2.7	20	2	3/4	12	12	STP #2 DIESEL	6
7	(NOTE 2)	12											12		8
9	DISP #3	12	12	3/4	2	20	0.6	20.8	115	3	1.5	6	2	OFF LOADING PUMP	10
11	(NOTE 2)	12											2	(15HP)	12
13	DISP #4	12	12	3/4	2	20	0.6						2		14
15	(NOTE 2)	12						0.8	20	1	1/2	12	12	CANOPY LIGHTS	16
17	TL5	12	12	3/4	1	20	0.3	0.8	20	1	1/2	12	12	CANPOY LIGHTS	18
19	CARD READER	12	12	3/4	1	20	0.3	1.2	20	1	1/2	12	12	CANOPY LIGHTS	20
21	MISC. CONTROLS	12	12	3/4	1	20	0.3	0.8	20	1	1/2	12	12	FUTURE LIFT PUMP	22
23	LV DISP	12	12	3/4	2	20	0.4		20	1				SPARE	24
25		12							20	1				SPARE	26
27	SPARE				1	20			20	1				SPARE	28
29	SPARE				1	20			20	1				SPARE	30

TOTAL KVA 33.5

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

PANEL B3 (BLDG 3)

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

120/208VOLTS 3 PHASE 4 WIRE
225 AMP MAIN LUGS ONLY

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	POLE LIGHTS	10	10	3/4	1	20	0.9	0.6	20	1	1/2	12	12	RECEPTACLES	2
3	POLE LIGHTS	10			1	20	0.8	0.6	20	1	1/2	12	12	RECEPTACLES	4
5	LIGHTS	12	12	1/2	1	20	0.3	–	20	1	–	–	–	SPARE	6
7	COMPRESSOR	2	6	1.5	3	110	28.1	–	20	1	–	–	–	SPARE	8
9		2												PROVISIONS	10
11		2												PROVISIONS	12
13	POLE LIGHTS	10	10	3/4	1	20	0.8							PROVISIONS	14
15	SPARE				1	20								PROVISIONS	16
17	SPARE				1	20								PROVISIONS	18
19	SPARE				1	20								PROVISIONS	20

TOTAL KVA 32.1

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

PANEL G

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

120/208VOLTS 3 PHASE 4 WIRE
100 AMP MAIN LUGS ONLY

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	GP RECPT	12	12	1/2	1	20	0.6	0.6	20	1	1/2	12	12	LIGHTS	2
3	BATTERY CHARGER	10	10	3/4	2	30	3.8	–	20	1	–	–	–	SPARE	4
5	(NOTE 1)	10	–	–	–	–	–	–	20	1	–	–	–	SPARE	6
7	PROVISIONS							–	20	1	–	–	–	SPARE	8
9	PROVISIONS													PROVISIONS	10
11	PROVISIONS													PROVISIONS	12
13	PROVISIONS													PROVISIONS	14
15	PROVISIONS													PROVISIONS	16
17	PROVISIONS													PROVISIONS	18
19	PROVISIONS													PROVISIONS	20

TOTAL KVA 5.0

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

NOTE:
1. VERIFY REQUIREMENTS FOR GENERATOR BATTERY POWER WITH OEM.

PANEL PH

MTD. CIRCUIT BREAKER TYPE
SQ. 'D' TYPE NQOD

120/208VOLTS 3 PHASE 4 WIRE
200 AMP MAIN BREAKER

CKT No.	DESIGNATION	CIRCUIT WIRE	CIRCUIT GND	CIRCUIT COND	CIRCUIT BREAKER POLE	CIRCUIT BREAKER TRIP	KVA	KVA	CIRCUIT BREAKER TRIP	CIRCUIT BREAKER POLE	CIRCUIT COND	CIRCUIT GND	CIRCUIT WIRE	DESIGNATION	CKT No.
1	GP RECPT	12	12	1/2	1	20	0.6	0.6	20	1	1/2	12	12	LIGHTS/EF–6	2
3	BOOSTER	10	10	3/4	3	30	3.8	6.0	45	3	1	10	8	BOOSTER	4
5	PUMP	10											8	PUMP	6
7		10											8		8
9	PROVISIONS							5.0	100	3		SEE RISER		PANEL G	10
11	PROVISIONS													(NOTE 4)	12
13	PROVISIONS														14
15	PROVISIONS								20	1				SPARE	16
17	PROVISIONS								20	1				SPARE	18
19	PROVISIONS								20	1				SPARE	20
21	PROVISIONS														22
23	PROVISIONS														24
25	PROVISIONS														26
27	PROVISIONS														28
29	PROVISIONS														30

TOTAL KVA 12.5

22,000 AMP. RMS. SYMMETRICAL SHORT CIRCUIT CURRENT RATING

MAINTENANCE EQUIPMENT SCHEDULE

ITEM	QTY	DESCRIPTION	ELECTRICAL VOLTS	PHASE	HORSE POWER	AMPS		NOTES
A	1	BOOSTER PUMP	208	3	5	–		LOCATED IN BUS WASH
B	1	HYDRAULIC PUMP	208	3	10	–		LOCATED IN BUS WASH
C	2	PRESSURE WASHER	208	3	10	–		LOCATED IN BUS WASH
D	2	TRUCK WASH CONTROL	208	1		30		LOCATED IN BUS WASH
E	1	RECLAIM CONSOLE	208	3		20		LOCATED IN BUS WASH
F	1	ACC ECO–POWER BRUSH	208	3		15		LOCATED IN BUS WASH
G	1	AUTO WRAPPER	120	1		16		LOCATED IN REVENUE ROOM
H	1	COMPRESSOR (CHAMPION)	208	3	25	–		LOCATED IN TIRE STORAGE
J	1	ARI–HETRA LIFT	208	3		24		LOCATED IN BAYS 1, 2, AND 5
K	1	OTC 1845 HYDRAULIC PRESS	120	1		16		LOCATED IN BAY 3
L	1	5K694 DRILL PRESS	120	1		10		LOCATED IN BAY 3 (BENCHTOP)
M	1	12–853M BENCH GRINDER	120	1		10		LOCATED IN BAY 3 (BENCHTOP)
N	1	MIG–180 CLARKE WELDER	208	1		22.5		LOCATED IN BAY 3
P	1	HIT 5000 TIRE CHANGER	208	1		16		LOCATED IN BAY 4
R	1	HIT 5060AX TIRE CHANGER	120	1		10		LOCATED IN BAY 4
S	4	ROLL–UP DOOR MOTOR	120	1		8		LOCATED IN BAYS 1–4, BUS WASH
T	1	CRANE HOIST (2000 LB)	120	1		2.25		LOCATED IN BAY 3
V	1	1.5 TON CRANE	208	3	5			LOCATED IN BAY 3

LIGHTING CONTROL RELAY PANEL

	DESCRIPTION	RELAY	CKT #	PNL/CKT
C1	EXTERIOR CANOPY	⊣⊢	1	L1–5
C3	SITE LIGHTS	⊣⊢	3	L1–1
C5	SITE LIGHTS	⊣⊢	5	L1–3
C7	BAY LIGHTS	⊣⊢	7	L1–17
–	–	⊣⊢	9	–
–	–	⊣⊢	11	
–	–	⊣⊢	13	–
–	–	⊣⊢	15	–

PNL/CKT	CKT #	RELAY	DESCRIPTION	
L1–16	2	⊣⊢	EXTERIOR SIGN	C2
L1–9	4	⊣⊢	BAY LIGHTS	C4
L1–11	6	⊣⊢	BAY LIGHTS	C6
L1–13	8	⊣⊢	BAY LIGHTS	C8
–	10	⊣⊢	–	–
–	12	⊣⊢	–	–
–	14	⊣⊢	–	–
–	16	⊣⊢	–	–

NOTES:

1. SITE LIGHTS FED FROM PANELS B2 AND B3 TO BE PHOTOCELL CONTROLLED.
2. SWITCH NEUTRAL REQUIRED.
3. ALL EXTERIOR LIGHTS TO BE PHOTOCELL CONTROLLED.
4. VERIFY GENERATOR PANEL REQUIREMENTS WITH GENERATOR MANUFACTURER.

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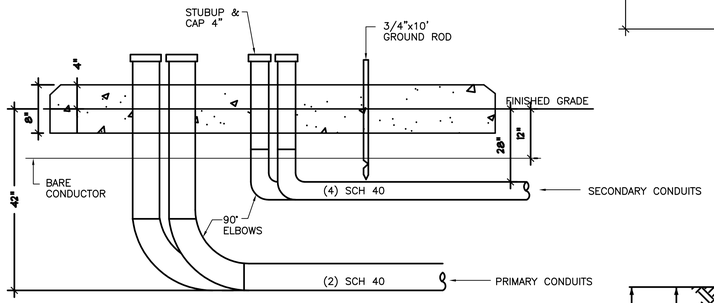
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELEC. NOTES AND SCHEDULES

DATE: 05-04-17
DRAWN BY: SAA

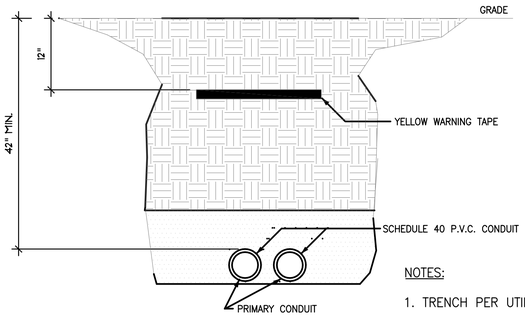
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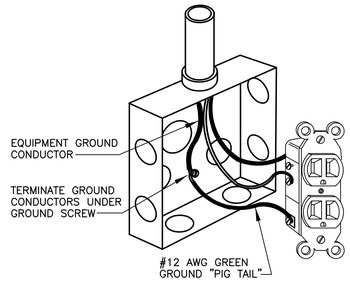
NOTES:
1. PAD DRAWING FOR THREE PHASE PAD TRANSFORMERS 300 KVA AND 500 KV.
2. PRIMARY AND SECONDARY DUCTS SHALL EXTEND BEYOND THE BOTTOM EDGE OF THE PAD IN RESPECTIVE DIRECTIONS OF INCOMING CABLES.
3. THE PAD SHALL HAVE A MINIMUM CLEARANCE OF 10' FROM ALL BUILDINGS. TO PROVIDE SUFFICIENT COOLING. A MINIMUM CLEARANCE OF 3' SHALL BE MAINTINED FROM ALL OBSTRUCTIONS.
4. REINFORCE WITH #4 BARS WITH A 12" X 12" GRID. INSTALL 4" BELOW TOP OF PAD.
5. CONCRETE SHALL HAVE A MINIMUM ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 LBS. PAD SHALL BE CURED NOT LESS THAN 72 HOURS.
6. THE BARE CONDUCTOR SHOULD BE SIZE #4 CU. MINIMUM. IT SHOULD BE 12" BELOW THE FINAL GRADE.
7. TIE BARE CONDUCTORS TO THE GROUND RODS USING COMPRESSION CLAMPS OR CADWELD.

TYPICAL 3 PHASE TRANSFORMER PAD (FRONT VIEW)
NOT TO SCALE

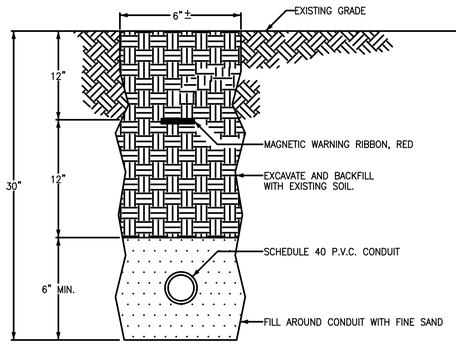


NOTES:
1. TRENCH PER UTILITY REQUIREMENTS.

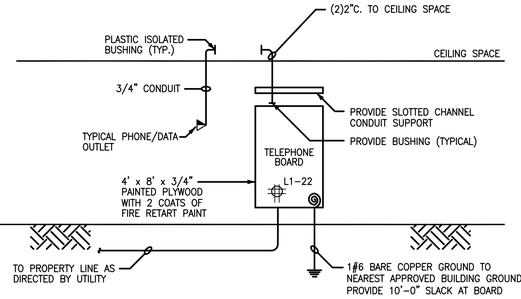
TRENCH DETAIL
NOT TO SCALE



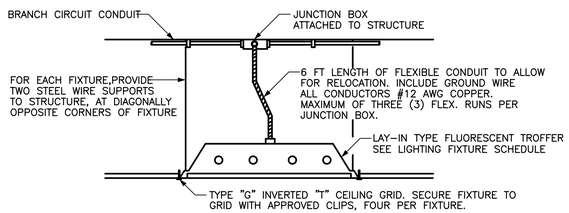
RECEPTACLE INSTALLATION DETAIL
NOT TO SCALE



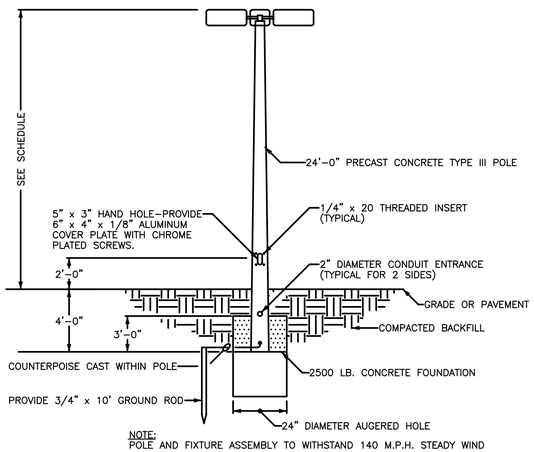
DIRECT BURIED CONDUIT DETAIL
NOT TO SCALE



TELEPHONE RISER DIAGRAM
NOT TO SCALE



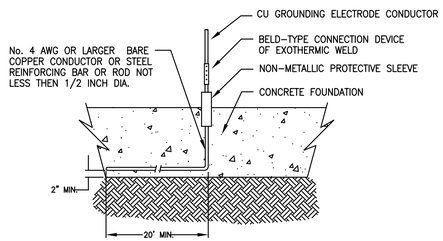
DETAIL-TYPICAL LAY-IN FIXTURE INSTALLATION
NOT TO SCALE



NOTE:
POLE AND FIXTURE ASSEMBLY TO WITHSTAND 140 M.P.H. STEADY WIND

POLE BASE DETAIL
NOT TO SCALE

NOTE
THE SLAB GROUND MUST CONSIST OF A 20 FOOT SECTION OF 1/2 INCH OR LARGER REBAR 20 FOOT LONG BURIED IN THE SLAB OR FOOTER OF THE BUILDING. THE END OF THIS PIECE OF REBAR MUST BE TURNED UP AND OUT OF THE CONCRETE IN AN INTERIOR WALL AND MUST BE SLEEVED WITH A NON-METALLIC PROTECTIVE SLEEVE WITH ENOUGH ROD EXPOSED TO ALLOW THE ELECTRICIAN TO ATTACH THE ELECTRICAL GROUND CONNECTION.



SERVICE GROUNDING
NOT TO SCALE

ELECTRICAL LEGEND

- 2 x 4 FLUORESCENT LUMINAIRE
- CEILING MOUNT HID LUMINAIRE
- EMERGENCY 2 x 4 FLUORESCENT LUMINAIRE
- WALL MOUNTED LUMINAIRE
- RECESSED OR PENDANT MOUNTED LUMINAIRE
- POLE MOUNTED AREA LIGHT (ONE LUMINAIRE SHOWN)
- BUILDING MOUNTED WALL PACK
- EMERGENCY BATTERY PACK WITH TWO INTEGRAL LIGHTS
- EXIT LIGHT
- LIGHT FIXTURE-SITE LIGHT, POLE MOUNT
- $ SINGLE POLE SINGLE THROW SWITCH (SPST)
- $3 THREE WAY SPST SWITCH
- $M SWITCH W/INTEGRAL MOTION SENSOR
- $T TIMER SWITCH WITH INTEGRAL/MOTION SENSOR
- (M) LIGHTING MOTION SENSOR
- DUPLEX RECEPTACLE WALL MOUNTED
- QUADRAPLEX RECEPTACLE WALL MOUNTED
- DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER
- SPECIAL RECEPTACLE-
- POWER RECEPTACLE STRIP ON B/U GENERATOR
- TELEPHONE AND DATA WALL OUTLET
- (TV) TV/CABLE WALL OUTLET
- (J) JUNCTION BOX (SIZE PER N.E.C.)
- DISCONNECT SWITCH (FRAME SIZE/# POLES/ENCLOSURE)
- PANELBOARD (SEE SCHEDULE FOR CONFIGURATION)
- UNDERGROUND CONDUIT
- CONDUIT
- (25) MOTOR - NUMBER DENOTES HORSEPOWER
- FACP FIRE ALARM CONTROL PANEL
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- CAMERA
- (P) FIRE ALARM PULL STATION
- (H) FIRE ALARM HORN
- (S) FIRE ALARM SPEAKER STROBE DEVICE
- (L) FIRE ALARM STROBE DEVICE
- (H) FIRE ALARM HORN STROBE
- (S) SMOKE DETECTOR
- (S)DUCT DUCT SMOKE DETECTOR
- (H) HEAT DETECTOR
- TS TAMPER SWITCH - ELECTRICALLY SUPERVISED
- (M) MONITOR MODULE (SINGLE)
- (M) DUAL MONTIOR MODULE (DUAL)
- (R) INTELLIGENT RELAY
- AFF ABOVE FINISHED FLOOR
- AFG ABOVE FINISHED GRADE
- CU COPPER
- GFCI GROUND FAULT CIRCUIT INTERRUPTER
- WP WEATHERPROOF
- PUSH BUTTON SWITCH

B/U GEN. SYMBOLS

- 110 VOLT ELECT. OUTLET 18"AFF ON BACK UP GENERATOR
- 110 VOLT ELECT. OUTLET @ COUNTER TOP LEVEL ON BACK UP GENERATOR
- QUADRAPLEX RECEPTACLE 16" AFF ON BACK UP GENERATOR
- OPEN/CLOSED SIGN ON BACK UP GENERATOR

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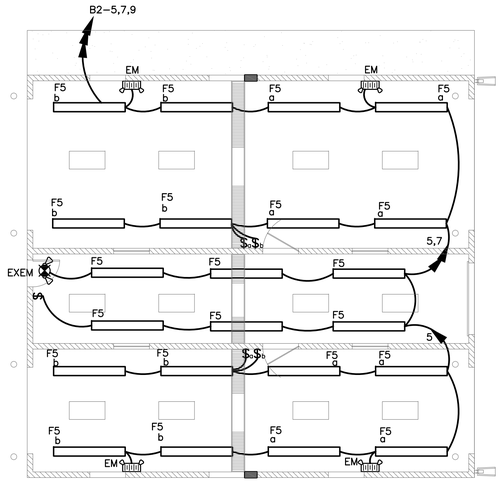
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELEC. LEGEND AND DETAILS

DATE: 05-04-17
DRAWN BY: SAA

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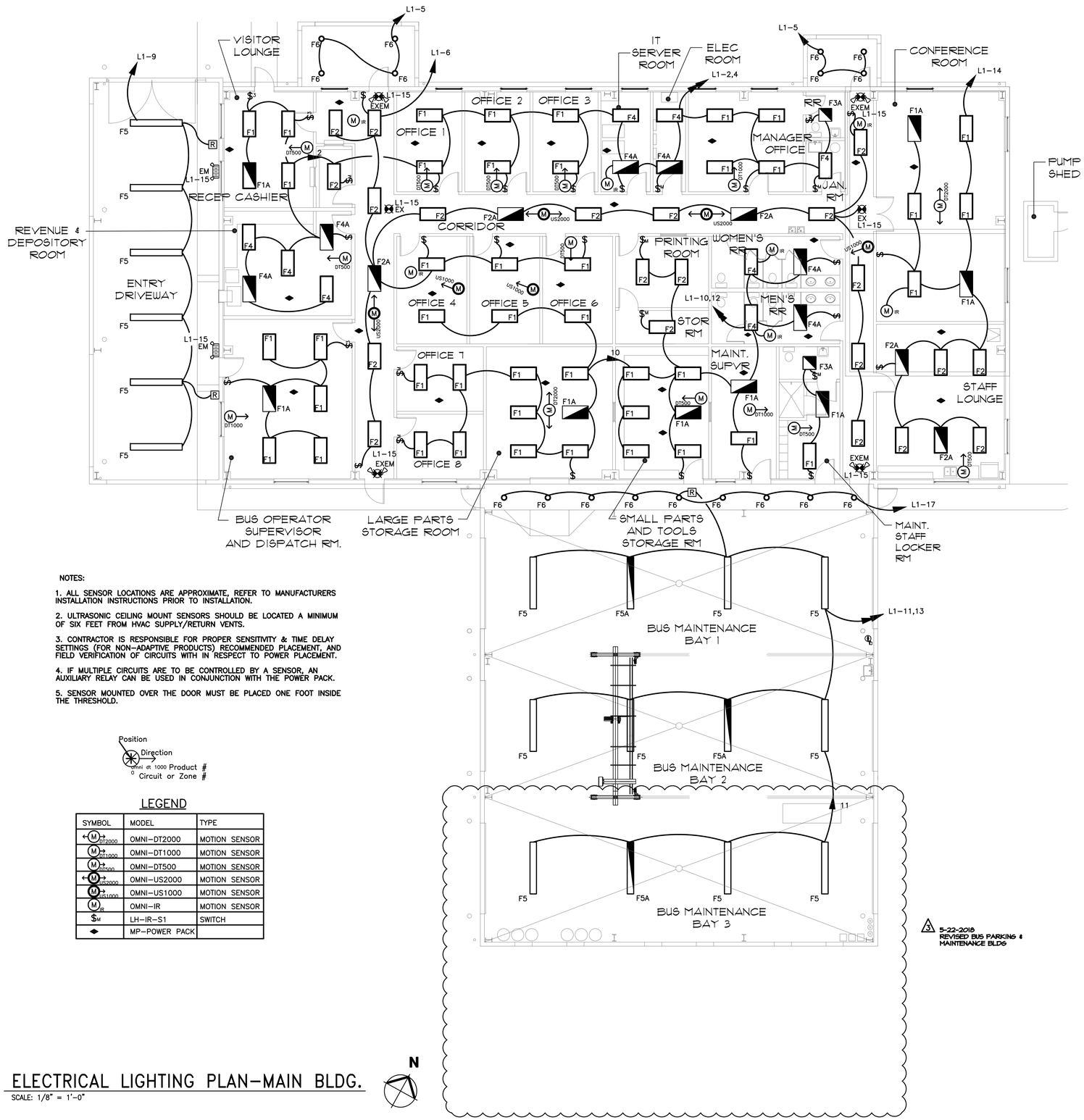
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ELECTRICAL LIGHTING PLAN-BUS WASH BLDG.

SCALE: 1/8" = 1'-0"

N



NOTES:

1. ALL SENSOR LOCATIONS ARE APPROXIMATE, REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION.
2. ULTRASONIC CEILING MOUNT SENSORS SHOULD BE LOCATED A MINIMUM OF SIX FEET FROM HVAC SUPPLY/RETURN VENTS.
3. CONTRACTOR IS RESPONSIBLE FOR PROPER SENSITIVITY & TIME DELAY SETTINGS (FOR NON-ADAPTIVE PRODUCTS) RECOMMENDED PLACEMENT, AND FIELD VERIFICATION OF CIRCUITS WITH IN RESPECT TO POWER PLACEMENT.
4. IF MULTIPLE CIRCUITS ARE TO BE CONTROLLED BY A SENSOR, AN AUXILIARY RELAY CAN BE USED IN CONJUNCTION WITH THE POWER PACK.
5. SENSOR MOUNTED OVER THE DOOR MUST BE PLACED ONE FOOT INSIDE THE THRESHOLD.

Position
Direction
omni at 1000 Product #
Circuit or Zone #

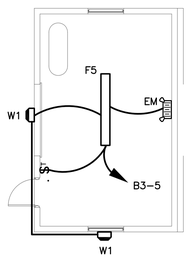
LEGEND

SYMBOL	MODEL	TYPE
M DT2000	OMNI-DT2000	MOTION SENSOR
M DT1000	OMNI-DT1000	MOTION SENSOR
M DT500	OMNI-DT500	MOTION SENSOR
M US2000	OMNI-US2000	MOTION SENSOR
M US1000	OMNI-US1000	MOTION SENSOR
M IR	OMNI-IR	MOTION SENSOR
$M	LH-IR-S1	SWITCH
◆	MP-POWER PACK	

ELECTRICAL LIGHTING PLAN-MAIN BLDG.

SCALE: 1/8" = 1'-0"

N



ELECTRICAL LIGHTING PLAN-TIRE STORAGE BLDG.

SCALE: 1/8" = 1'-0"

N

△5 5-22-2018 REVISED BUS PARKING & MAINTENANCE BLDG

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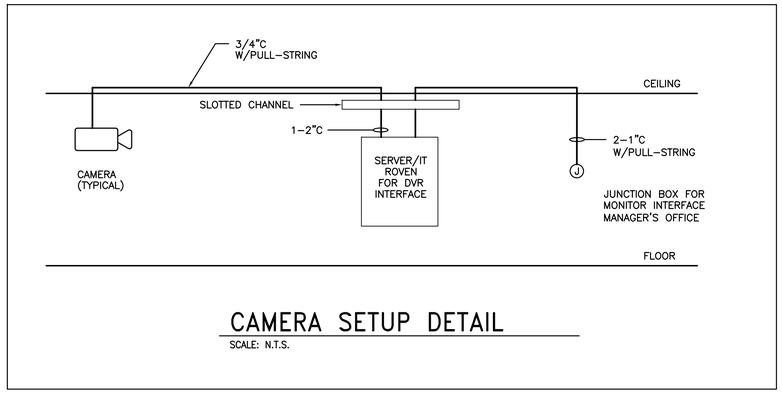
PROJECT:
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V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELECTRICAL LIGHTING PLAN

DATE: 05-04-17
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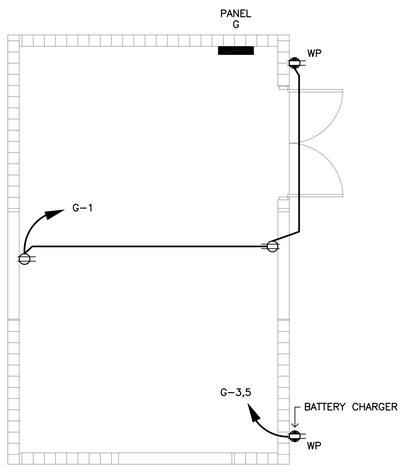
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CAMERA SETUP DETAIL

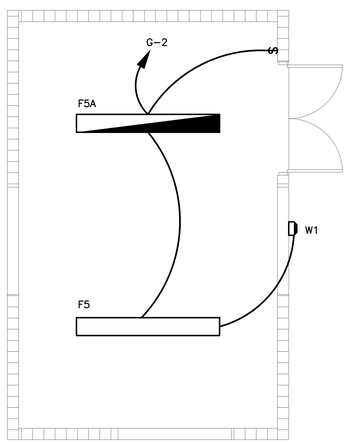
SCALE: N.T.S.

3 5-22-2018
REVISED BUS PARKING & MAINTENANCE BLDG



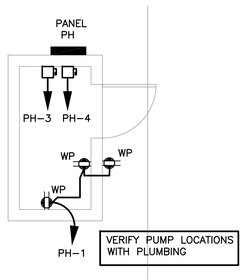
GENERATOR BUILDING-POWER PLAN

SCALE: 1/4" = 1'-0"



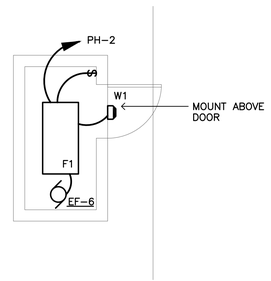
GENERATOR BUILDING-LIGHTING PLAN

SCALE: 1/4" = 1'-0"



PUMP HOUSE-POWER PLAN

SCALE: 1/4" = 1'-0"



PUMP HOUSE-LIGHTING PLAN

SCALE: 1/4" = 1'-0"

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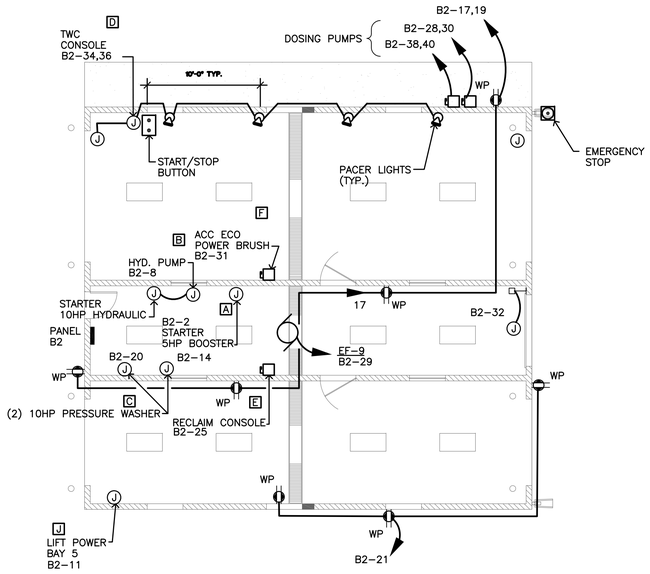
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V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
SERVICE BUILDINGS
ELEC. POWER/LIGHTING PLANS

DATE: 05-04-17
DRAWN BY: SAA

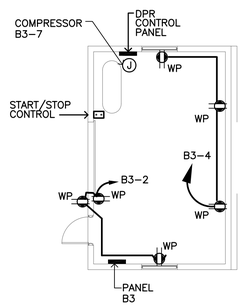
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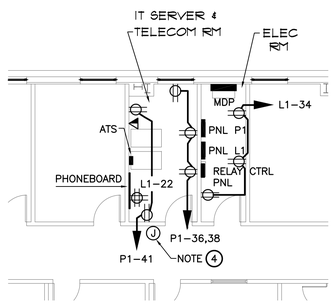
ELECTRICAL POWER PLAN–BUS WASH BLDG.

SCALE: 1/8" = 1'-0"



ELECTRICAL POWER PLAN–TIRE STORAGE BLDG.

SCALE: 1/8" = 1'-0"

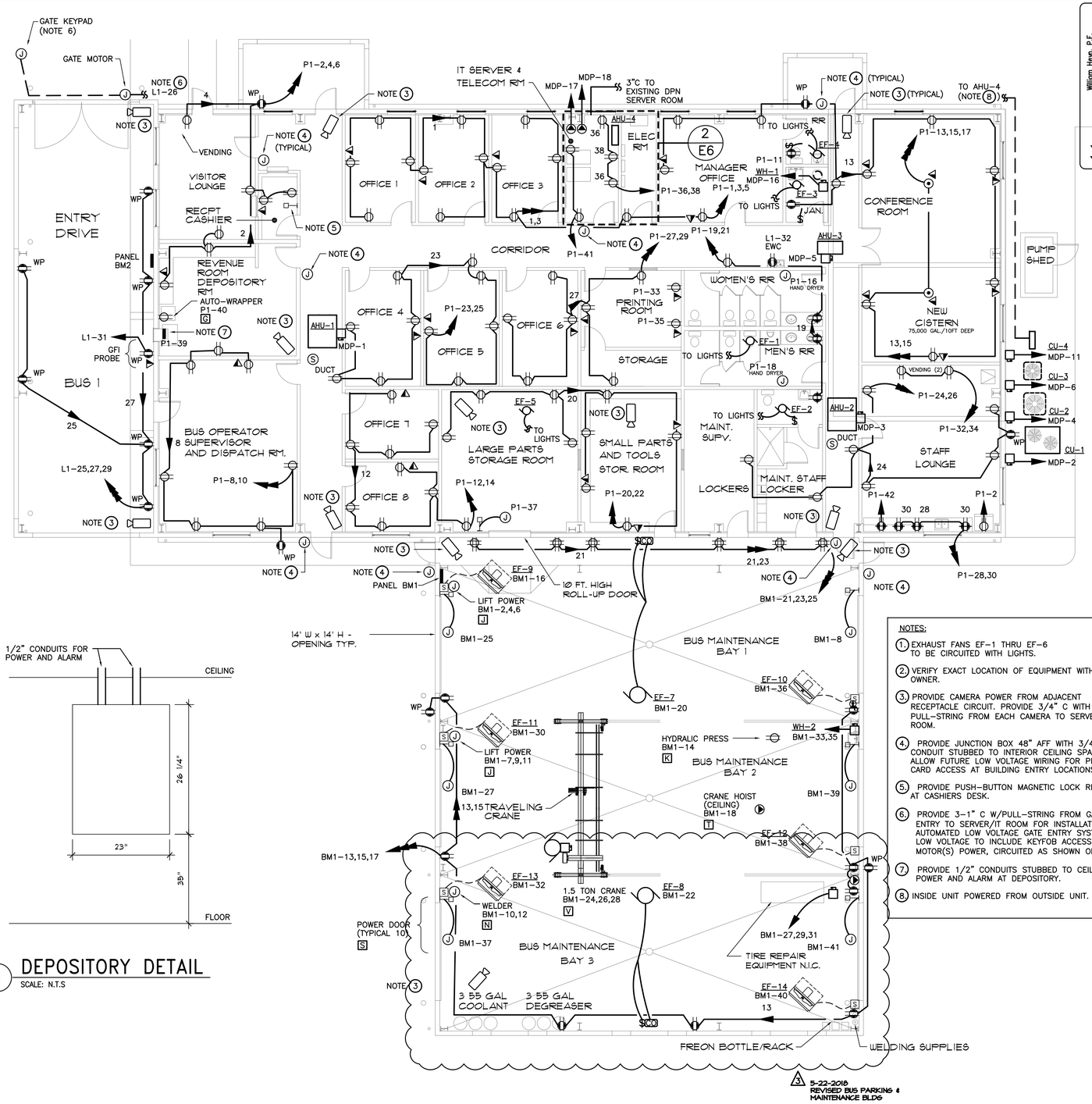


2 SERVER AND TELECOM ROOM DETAIL

SCALE: 1/8" = 1'-0"

1 DEPOSITORY DETAIL

SCALE: N.T.S



ELECTRICAL POWER PLAN–MAIN BLDG.

SCALE: 1/8" = 1'-0"

NOTES:

1. EXHAUST FANS EF-1 THRU EF-6 TO BE CIRCUITED WITH LIGHTS.
2. VERIFY EXACT LOCATION OF EQUIPMENT WITH OWNER.
3. PROVIDE CAMERA POWER FROM ADJACENT RECEPTACLE CIRCUIT. PROVIDE 3/4" C WITH PULL-STRING FROM EACH CAMERA TO SERVER/IT ROOM.
4. PROVIDE JUNCTION BOX 48" AFF WITH 3/4" CONDUIT STUBBED TO INTERIOR CEILING SPACE TO ALLOW FUTURE LOW VOLTAGE WIRING FOR PROXIMITY CARD ACCESS AT BUILDING ENTRY LOCATIONS.
5. PROVIDE PUSH-BUTTON MAGNETIC LOCK RELEASE AT CASHIERS DESK.
6. PROVIDE 3-1" C W/PULL-STRING FROM GATE ENTRY TO SERVER/IT ROOM FOR INSTALLATION OF AUTOMATED LOW VOLTAGE GATE ENTRY SYSTEM. LOW VOLTAGE TO INCLUDE KEYFOB ACCESS AND MOTOR(S) POWER, CIRCUITED AS SHOWN ON PLANS.
7. PROVIDE 1/2" CONDUITS STUBBED TO CEILING FOR POWER AND ALARM AT DEPOSITORY.
8. INSIDE UNIT POWERED FROM OUTSIDE UNIT.

3 5-22-2018 REVISED BUS PARKING & MAINTENANCE BLDG

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DRAWING INFORMATION:
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ELECTRICAL POWER PLAN

DATE: 05-04-17
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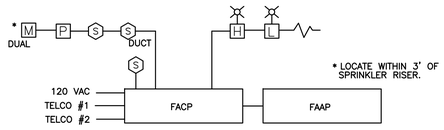
FIRE ALARM SYSTEM NOTES

1. FURNISH COMPLETE SYSTEM INCLUDING FIRE ALARM PANEL, DEVICES, POWER SUPPLIES, BATTERIES, ANNUNCIATOR, AND ALL NECESSARY EQUIPMENT FOR COMPLETE OPERABLE SYSTEM.
2. SYSTEM INSTALLATION AND COMPONENTS SHALL BE IN ACCORDANCE TO NFPA 72, NFPA 101, NEC, AND THE REGULATION OF FIRE MARSHALL. PROVIDE SYSTEM CERTIFICATION. SYSTEM SHALL BE APPROVED BY FIRE MARSHALL.
3. ALL WIRES SHALL BE IN CONDUITS. WIRE TYPES AND SIZES PER NFPA 101 AND FIRE ALARM MANUFACTURER'S REQUIREMENTS. PROVIDE SHOP DRAWINGS SHOWING LOCATION OF DEVICES, WIRES, CONDUITS, AND INSTALLATION DETAILS.
4. ACCEPTABLE MANUFACTURERS: SIMPLEX, EDWARDS SYSTEM TECHNOLOGY, SIEMENS, NOTIFIER OR SILENT KNIGHT.
5. ACTIVATION OF FIRE ALARM DEVICE SHALL SHUT DOWN ALL AIR HANDLING UNITS, PROVIDE ANNUNCIATORS, ACTIVATE ALL AUDIBLE AND VISUAL DEVICES, SEND SIGNAL TO 3RD PARTY MONITORING STATION.
6. FIRE ALARM PANELBOARD SHALL BE PROVIDED WITH POWER SUPPLY, BATTERIES, HORN CARDS, ZONE CARD, AND SHUTDOWN RELAYS.
7. MANUAL FIRE ALARM PULL STATION SHALL BE SINGLE ACTION, SEMI FLUSH, RED.
8. HORN/STROBE UNIT SHALL BE SEMI FLUSH. 103db AT 10 FEET. STROBE INTENSITY SHALL BE 15/75 CANDELA; STROBE IN WAREHOUSE/MANUFACTURING AREAS SHALL BE 110 CANDELA (UNLESS OTHERWISE SPECIFIED).
9. DUCT TYPE SMOKE DETECTORS SHALL BE IONIZATION TYPE WITH SAMPLING TUBE. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION.
10. STROBE UNITS SHALL BE 15/75 CANDELA, SEMI FLUSH UNITS (UNLESS OTHERWISE SPECIFIED).
11. ALL WIRES SHALL BE COLOR CODED. UPON COMPLETION TEST SYSTEM IN THE PRESENCE OF AHJ.

GENERAL NOTES

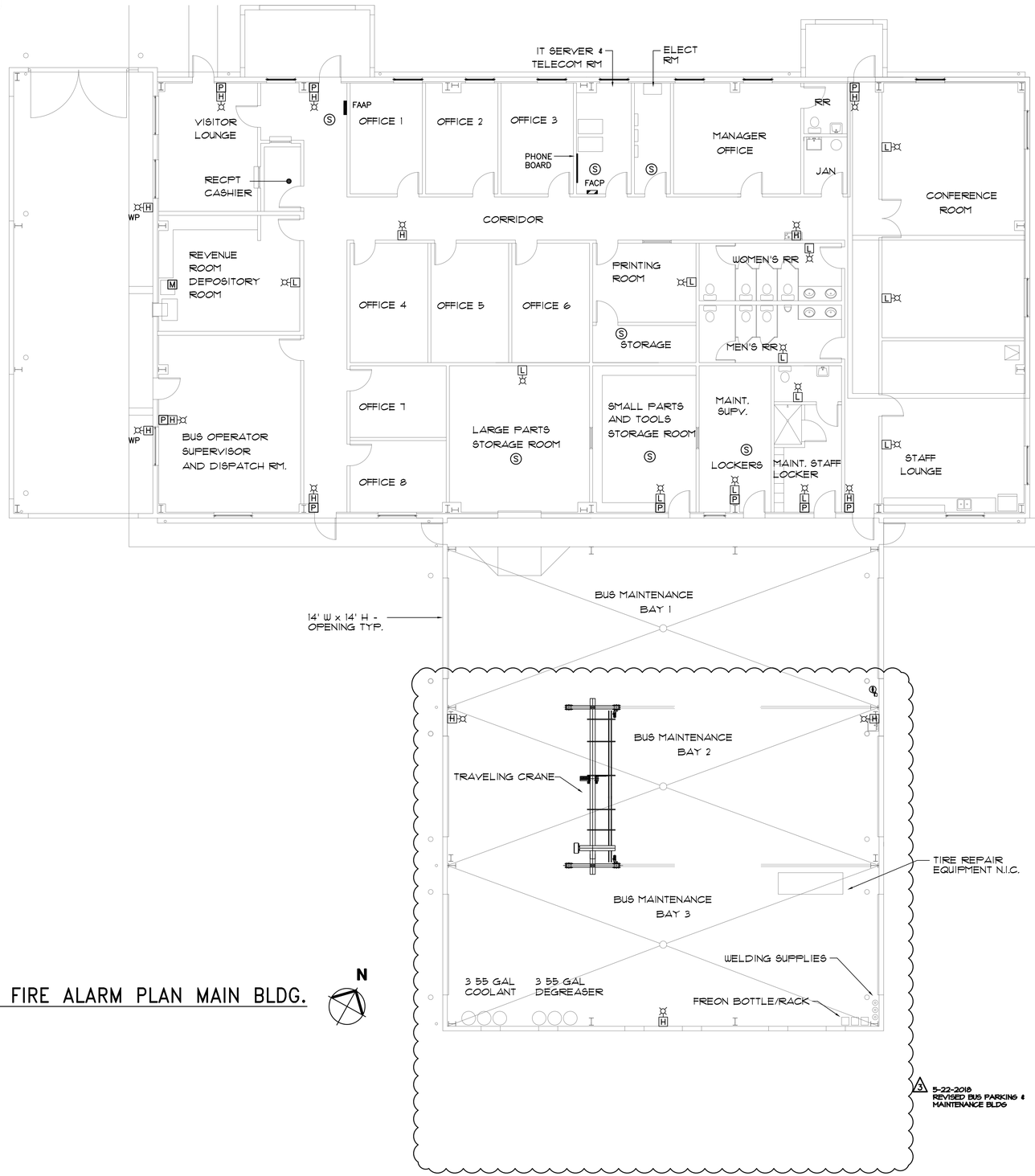
1. SYSTEM SHALL BE INSTALLED PER NFPA 72, NFPA 101, NFPA 90A. NEC AND ALL OTHER APPLICABLE STATE AND LOCAL CODES, AND AS PER MANUFACTURERS RECOMMENDATIONS.
2. 120VAC FACP POWER SHALL BE OBTAINED FROM A DEDICATED UNSWITCHABLE SOURCE AND THE CIRCUIT BREAKER SHALL BE PAINTED OR MARKED RED, AND DENOTED "FIRE ALARM".
3. ALL SMOKE DETECTORS SHALL BE MOUNTED A MINIMUM OF 3 FEET FROM ANY HVAC DIFFUSERS
4. ALL SHIELDS SHALL BE CONTINUOUS AND FREE FROM ANY GROUND LOOPS. SHIELD TERMINATIONS SHALL BE AS PER MANUFACTURERS RECOMMENDATIONS.
5. CONDUIT AND WIRING ROUTING ARE SHOWN FOR INTENT. ACTUAL ROUTING MAY DIFFER TO ACCOMODATE FIELD CONDITIONS. DEVIATIONS WILL BE REFLECTED ON AS-BUILT DRAWINGS.
6. ALL WIRING SHALL BE FREE OF IMPROPER SPLICES (4 OR LESS WIRES UNDER ONE WIRE NUT).
7. DEVICE AND PANEL LOCATIONS ARE APPROXIMATE. ACTUAL PLACEMENTS TO BE COORDINATED IN FIELD. FINAL PLACEMENTS WILL BE REFLECTED ON AS-BUILT DRAWINGS.
8. ALL JUNCTION BOXES ABOVE THE CEILING CONTAINING FIRE ALARM WIRING SHALL BE MARKED
9. SEE MECHANICAL DRAWINGS FOR QUANITTY OF DUCT DETECTORS. THE DUCT DETECTORS WILL BE FURNISHED AND MONITORED BY FIRE ALARM CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.
10. PROVIDE SMOKE AND HEAT DETECTORS AS WELL AS 3 RELAY MODULES IN EACH ELEVATOR ROOM. CONNECT BACK TO ELEVATOR LOBBY SMOKE DETECTOR.
11. ALL VISUAL DEVICES ARE 75CD UNLESS OTHERWISE NOTED AT THE DEVICE.
12. RELAY MODULE WILL REMOVE LOCK POWER WHEN FIRE ALARM IS ACTIVATED.

THIS DRAWING IS PROVIDED TO ILLUSTRATE THE GENERAL DESIGN CONCEPT/INTENT OF THE FIRE ALARM SYSTEM. IT IS NOT INTENDED TO SHOW EACH AND EVERY DEVICE. REFER TO FLOOR PLANS FOR EXACT LOCATIONS AND QUANTITIES.



FIRE ALARM RISER

NOT TO SCALE



ELECTRICAL FIRE ALARM PLAN MAIN BLDG.

SCALE: 1/8" = 1'-0"

3 5-22-2018 REVISED BUS PARKING & MAINTENANCE BLDG

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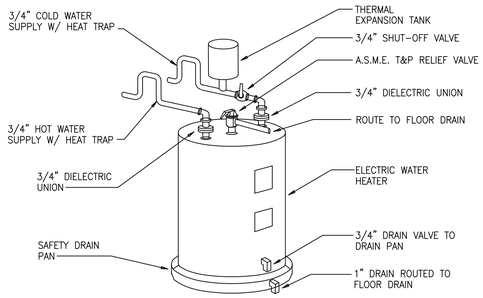
PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
OPERATIONS FACILITY
ELEC. FIRE ALARM PLAN
MAIN BUILDING

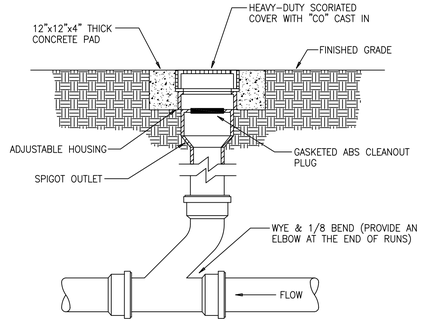
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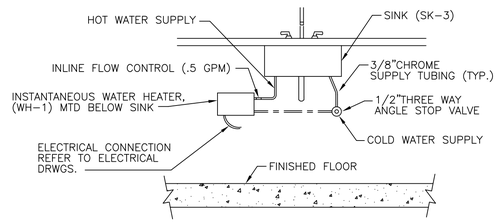
SHEET NUMBER:
E7



1 WATER HEATER DETAIL
NOT TO SCALE



2 CLEANOUT ON GRADE DETAIL
NOT TO SCALE



3 BELOW COUNTER INSTANTANEOUS WATER HEATER DETAIL
NOT TO SCALE

PLUMBING NOTES

1. PRIOR TO ORDERING OR FABRICATING ANY NEW EQUIPMENT THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE ENGINEER.
2. ALL PIPE SIZES ARE NOT SHOWN ON PLANS. REFER TO RISER DIAGRAMS FOR COMPLETE PIPE SIZING AND CONFIGURATION.
3. VERIFY ALL ROUGH-IN SIZES AND LOCATIONS FROM MANUFACTURER'S CUT SHEETS BEFORE INSTALLATION.
4. ALL PIPING AND EQUIPMENT SHALL BE COORDINATED WITH MECHANICAL, ELECTRICAL, STRUCTURAL AND GENERAL CONTRACTORS BEFORE INSTALLATION.
5. OFFSET VENTS THROUGH ROOF AS REQUIRED TO MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL DISTANCE FROM OUTSIDE AIR INTAKES. REFER TO MECHANICAL DRAWINGS FOR COORDINATION.
6. PROVIDE ALL PLUMBING ROUGH-IN AND FINAL CONNECTIONS, INCLUDING ANY INTER-CONNECTING PIPING REQUIRED. MOUNT ALL FAUCETS, ETC. AND PROVIDE ANY TRAPS, VALVES, FITTINGS, VACUUM BREAKERS, BACKFLOW PREVENTERS, PRESSURE GAUGES, TEMPERATURE GAUGES OR PRESSURE REGULATORS NECESSARY FOR A COMPLETE PLUMBING INSTALLATION WHICH MEETS CODE.
7. PROVIDE ALL FLOOR DRAINS WITH DEEP SEAL TRAPS.
8. PROVIDE ALL VENTS WITH EFFECTIVE RODENT SCREENS.
9. ALL FLOOR DRAIN TRAPS AND CLEANOUTS BELOW GRADE SHALL BE ENCASED IN CONCRETE.
10. FLOOR DRAINS AND CLEANOUTS SHALL NOT BE LOCATED NEAR DOORS OR IN LINE WITH PATHWAYS OF DOORS AND HEAVY TRAFFIC AREAS.
11. SHOP DRAWINGS: SUBMIT TO THE ENGINEER FOR APPROVAL, BEFORE COMMENCING WORK, SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT. THE FOLLOWING APPLIES TO THE SHOP DRAWINGS:
    A. DESIGN IS BASED ON MANUFACTURER NAMED DRAWINGS OR IN SPECIFICATIONS. SHOP DRAWINGS SHALL INDICATE EXCEPTIONS TO OR DEVIATIONS FROM THE DESIGN BASIS.
    B. EQUIPMENT IS GENERALLY SELECTED AT MIDRANGE CAPACITY TO PROVIDE FLEXIBILITY FOR CHANGES. SELECTIONS AT FULL MAXIMUM OR MINIMUM CAPACITY WILL NOT BE ACCEPTED.
12. SECURE EQUIPMENT TO SUPPORTS PER LOCAL CODE AUTHORITY. PROVIDE SEISMIC BRACING PER LOCAL CODE AUTHORITY. PLUMBING SUBCONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING METHODS INTENDED.
13. OWNER SHALL BE RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THE SEWAGE TREATMENT PROVIDER REGARDING THE LIQUID WASTE ENTERING THE PROVIDER'S SYSTEM.
14. ANY LOAD SUSPENDED FROM THE ROOF OR FLOOR STRUCTURE ABOVE SHALL HANG DIRECTLY FROM THE BAR JOIST OR STRUCTURAL MEMBER; OTHERWISE, PROVIDE ADDITIONAL SUPPORT MATERIAL DESIGNED TO CARRY THE LOAD BETWEEN THE STRUCTURAL MEMBERS. DO NOT SUPPORT LOADS FROM BRIDGING.
15. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES, STRAINERS, TRAP PRIMERS, SHOCK ABSORBERS ETC.
16. ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC. INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
17. WATER HEATERS SHALL BE INSTALLED WITH DRAIN PANS UNDER HEATERS. ROUTE DRAINS TO NEAREST FLOOR DRAIN OR TO GRADE OUTDOORS.
18. PROVIDE ISOLATION VALVES AT TAKEOFF FROM MAIN, AT ALL EQUIPMENT CONNECTIONS, AND WHERE SHOWN ON DRAWINGS OR REQUIRED BY LOCAL AUTHORITIES. PROVIDE A UNION AT EACH THREADED VALVE OR CONNECTION.
19. THE PLUMBING CONTRACTOR SHALL FURNISH "AS-BUILT" DRAWINGS INDICATING ACTUAL INSTALLATION FEATURES, EQUIPMENT LOCATIONS, PIPE ROUTINGS AND OFFSETS TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE PLUMBING INSTALLATION.

PLUMBING LEGEND

———	SANITARY PIPING (S)
———	WASTE PIPING (W)
- - - - - -	VENT PIPING (V)
— — — —	COLD WATER PIPING (CW)
—— - - ——	HOT WATER PIPING (HW)
———	HOT WATER RETURN PIPING (HWR)
——CD——	CONDENSATE DRAIN PIPING
——A——	COMPRESSED AIR PIPING
——G——	GAS PIPING
	TEE (PLAN, UP, DOWN)
	ELBOW (90°, 45°)
	ELBOW (UP, DOWN)
	GATE VALVE (GV)
	BALL VALVE (BV)
	GLOBE VALVE (GLV)
	CHECK VALVE (CV)
	STRAINER (STR)
	VALVE IN VERTICAL RUN
	UNION, SCREWED (UN)
	CAP ON END OF PIPE
	HOSE BIBB
	FREEZELESS HYDRANT
	SHOCK ARRESTOR (SA), LETTER INDICATES PDI RATING
	FLOOR DRAIN
	HUB DRAIN
	FLOOR CLEAN-OUT
	WALL CLEAN-OUT
	VENT THRU ROOF (VTR)
	CONNECTION OF NEW WORK TO EXISTING

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWING.

PLUMBING DRAWING INDEX

SHEET NUMBER	DESCRIPTION
P-1	PLUMBING SCHEDULES, NOTES, DETAILS
P-2	OPERATIONS FACILITY PLUMBING FLOOR PLAN
P-3	ENLARGED PLUMBING FLOOR PLANS & RISERS
P-4	BUS WASH FACILITY, SEPTIC TANK AND DRAINFIELD PLAN

ELECTRIC WATER HEATER SCHEDULE

PLAN SYMBOL	LOCATION / SERVICE	STORAGE (GAL)	RECOVERY (GPH)	EWT (°F)	LWT (°F)	KW	VOLT/PH	RELIEF	BASIS OF DESIGN	NOTES
WH-1	MECH EQUIPMENT ROOM	50	20	50	120	4.5	208/1	3/4"	STATE P6-50-20RT-W	1,2,3,4,5
WH-2	MAINTENANCE BAY	IN-LINE	–	50	120	3	208/1	–	EEMAX SP3208	4,5

NOTES:
1. PROVIDE SAFETY DRAIN PAN WITH 1" DRAIN LINE ROUTED TO FD OR TO ABOVE EXTERIOR GRADE.
2. ROUTE T&P RELIEF TO FD OR TO ABOVE EXTERIOR GRADE WITH TURN DOWN.
3. ELECTRIC HEATING ELEMENTS SHALL BE NON-SIMULTANEOUS OPERATION.
4. PROVIDE THERMAL EXPANSION TANK AS REQUIRED BY LOCAL CODE.
5. PROVIDE HEAT TRAPS AS REQUIRED BY LOCAL CODE.

PLUMBING FIXTURE SCHEDULE

PLAN SYMBOL	DESCRIPTION	COLD WATER	HOT WATER	WASTE	VENT	MANUFACTURER & MODEL NO.
WC-1	WATER CLOSET FLOOR MTD., FLUSH TANK	1/2"	–	3"	2"	AMERICAN STANDARD #2898.012 CADET II EL ELONGATED BOWL TOILET & TANK W/ OLSONITE #95 OPEN FRONT SEAT LESS COVER
WC-1A	WATER CLOSET ADA COMPLIANT FLOOR MTD., FLUSH TANK	1/2"	–	3"	2"	AMERICAN STANDARD #2998.012 CADET II 16-1/8"H EL ELONGATED BOWL TOILET & TANK, 16-1/8" RIM HEIGHT W/ OLSONITE #95 OPEN FRONT SEAT LESS COVER
UR-2	URINAL	3/4"	–	2"	1-1/2"	AMERICAN STANDARD #6561.017 TRIMBROOK URINAL W/ SLOAN ROYAL 186-1 FLUSH VALVE
LAV-3	COUNTERTOP LAVATORY ADA COMPLIANT	1/2"	1/2"	1-1/4"	1-1/4"	AMERICAN STANDARD #0476.028 AQUALYN WHITE COUNTERTOP LAVATORY WITH AMERICAN STANDARD 2385.130 FAUCET, OFFSET DRAIN W/ INSULATED P-TRAP, WASTE ARM & SUPPLY LINES
SK-4	DOUBLE COMPARTMENT S.S. SINK (33"x22")	1/2"	1/2"	1-1/2"	1-1/2"	ELKAY PSR-3322, TWO FAUCET HOLES 4" O.C. W/ SPEAKMAN SC-3085-LD GOOSENECK FAUCET AND ELKAY LK-35 STRAINER
SK-4A	SERVICE SINK	1/2"	1/2"	3"	1-1/2"	ELJER "ROLLINS" SERVICE SINK #242-0155 ENAMELED CAST IRON, DRILLED BACK WITH RIM GUARD AND WALL HANGER W/ ELJER #749-1200 FAUCET AND #804-1020 S-TRAP
SH-5	SHOWER VALVE & DRAIN ADA COMPLIANT	1/2"	1/2"	2"	1-1/2"	AMERICAN STANDARD #1662.601 SHOWER SYTEM COMPLETE WITH HANDSHOWER, HOSE, WALL SUPPLY, SLIDE BAR, ULTRAMIX VALVE #1331.120. PROVIDE 2" DRAIN W/ STRAINER #8303.026
JAN-6	MOP SINK	1/2"	1/2"	3"	1-1/2"	FIAT PRECAST 32"x32" TERRAZZO, W/ S.S. CAPS, MODEL # TSBC-601 W/ #830-AA SERVICE FAUCET, #832-AA HOSE & BRACKET, #1453-BB S.S. STRAINET & #889-CC MOP HANGER
EWC-7	WATER COOLER, TWO LEVEL, ADA COMPLIANT	1/2"	–	1-1/4"	1-1/4"	ELKAY, ADA DUAL HEIGHT COMPLIANT, MODEL # EZTL-8-C, 3.7 FLA, 120V/1/60, 8.0 GPH TO 50°F AT 80°F INLET WATER TEMPERATURE, STAINLESS STEEL FINISH
EEW-8	EMERGENCY EYE/FACE WASH, ADA COMPLIANT	1/2"	–	1-1/2"	1-1/2"	HAWS 7000BT, WALL MOUNTED EYE/FACE WASH WITH TRAP
HB	HOSE BIBB	3/4"	–	–	–	WOODFORD 24P-3/4, VACCUM BREAKER-BACKFLOW PROTECTED ROUGH BRASS WALL FAUCET
FD	FLOOR DRAIN	–	–	–	–	WADE 1100STD, CAST IRON FLOOR DRAIN W/ FLANGE, NICKEL BRONZE STRAINER AND 1/2" TRAP PRIMER TAPPING
CO	FLOOR CLEANOUT	–	–	–	–	WADE 6000, CAST IRON CLEANOUT W/ NICKEL BRONZE TOP, COORDINATE TOP TYPE W/ FLOOR COVERING

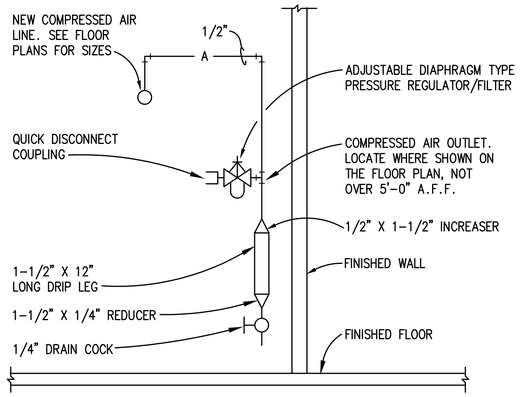
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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
PLUMBING SCHEDULES, LEGEND DETAILS & NOTES

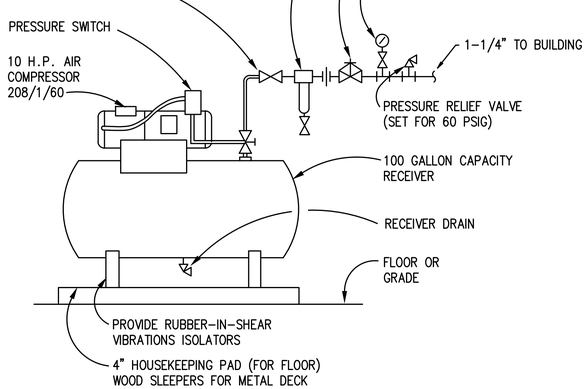
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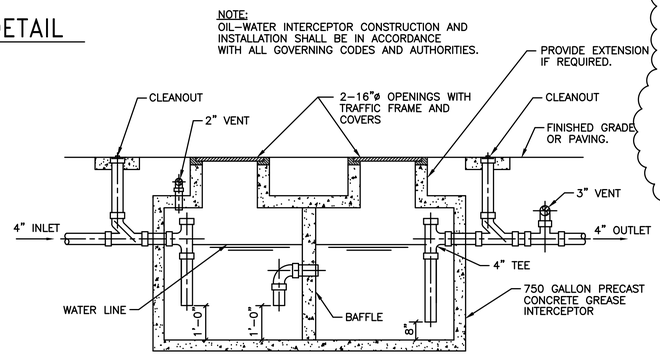
1 COMPRESSED AIR OUTLET DETAIL

SCALE: N.T.S.



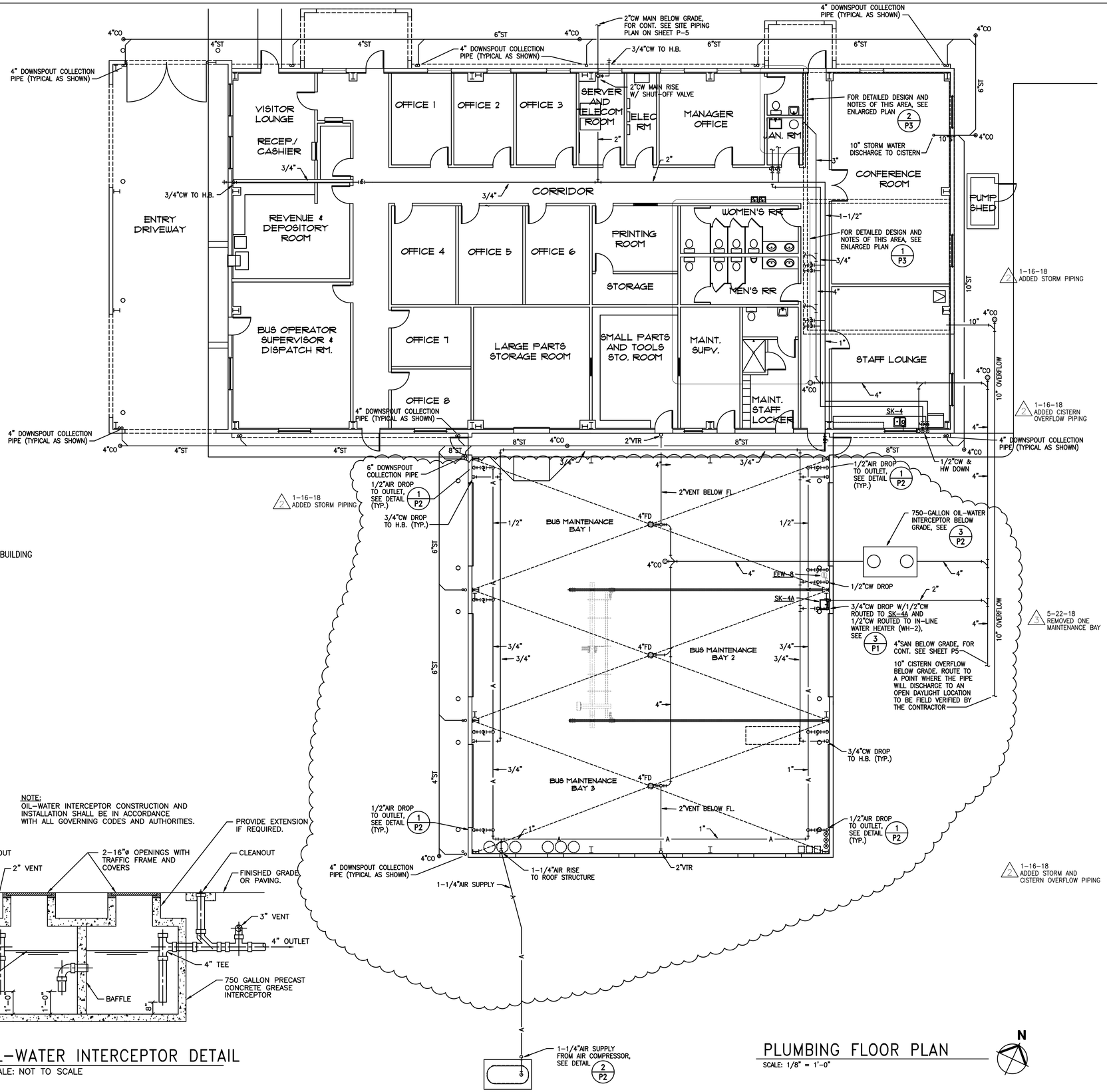
2 AIR COMPRESSER DETAIL

SCALE: N.T.S.



3 OIL-WATER INTERCEPTOR DETAIL

SCALE: NOT TO SCALE



PLUMBING FLOOR PLAN

SCALE: 1/8" = 1'-0"

N

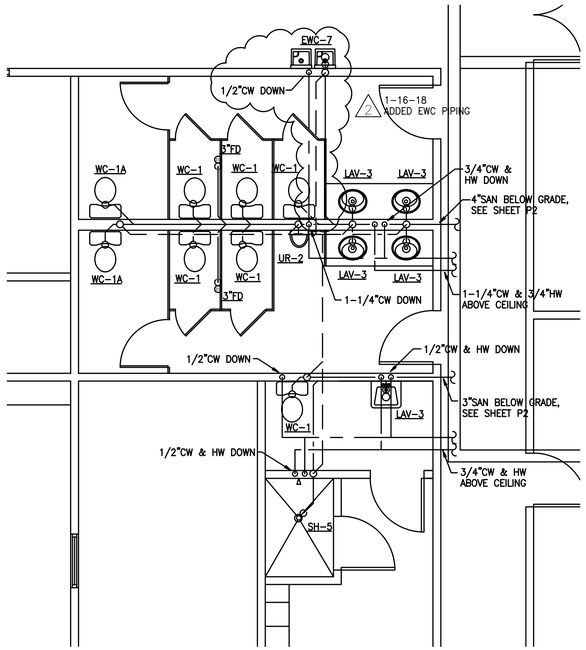
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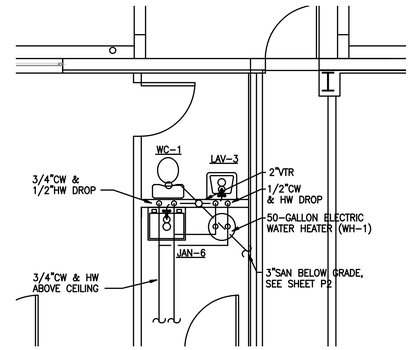
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OPERATIONS FACILITY BUILDING
PLUMBING FLOOR PLAN

DATE: 05-22-18
DRAWN BY: RMB

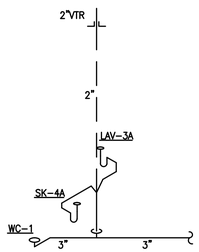
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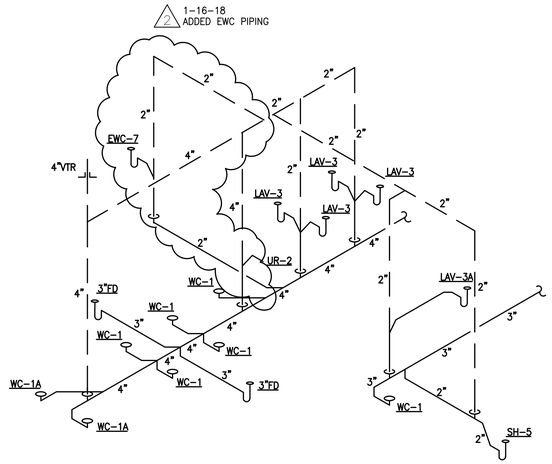
1 ENLARGED PLUMBING FLOOR PLAN
SCALE: 1/4" = 1'-0"



2 ENLARGED PLUMBING FLOOR PLAN
SCALE: 1/4" = 1'-0"



SR1
P3



SR2
P3

SANITARY RISER DIAGRAMS
SCALE: N.T.S.

2 1-16-18 ADDED STORM PIPING

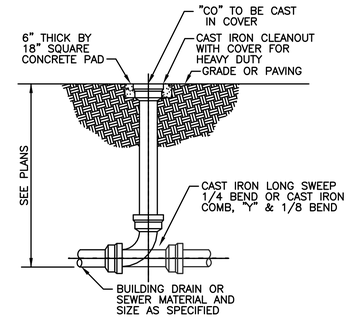
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ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
ENLARGED PLUMBING PLANS AND RISER DIAGRAMS

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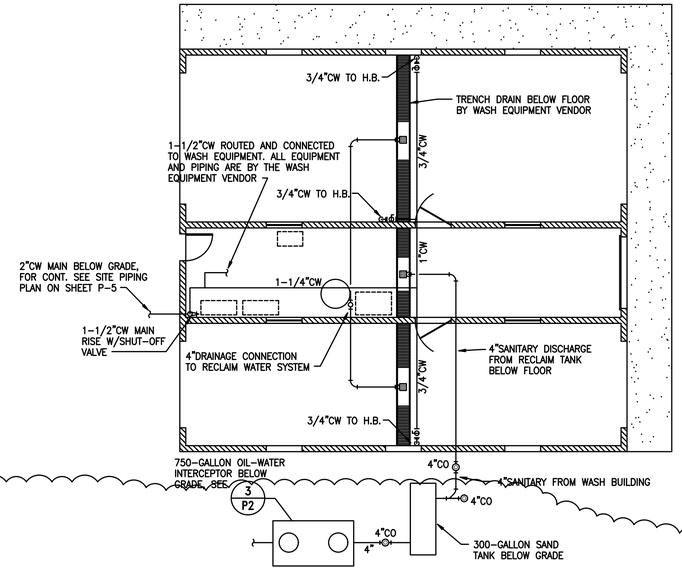
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P3



2 CLEANOUT DETAIL

SCALE: N.T.S.

△1 5-22-18
REMOVED SEPTIC TANK & DRAIN FIELD



BUS WASH FACILITY & SEPTIC DRAINFIELD PLAN

SCALE: 1/8" = 1'-0"

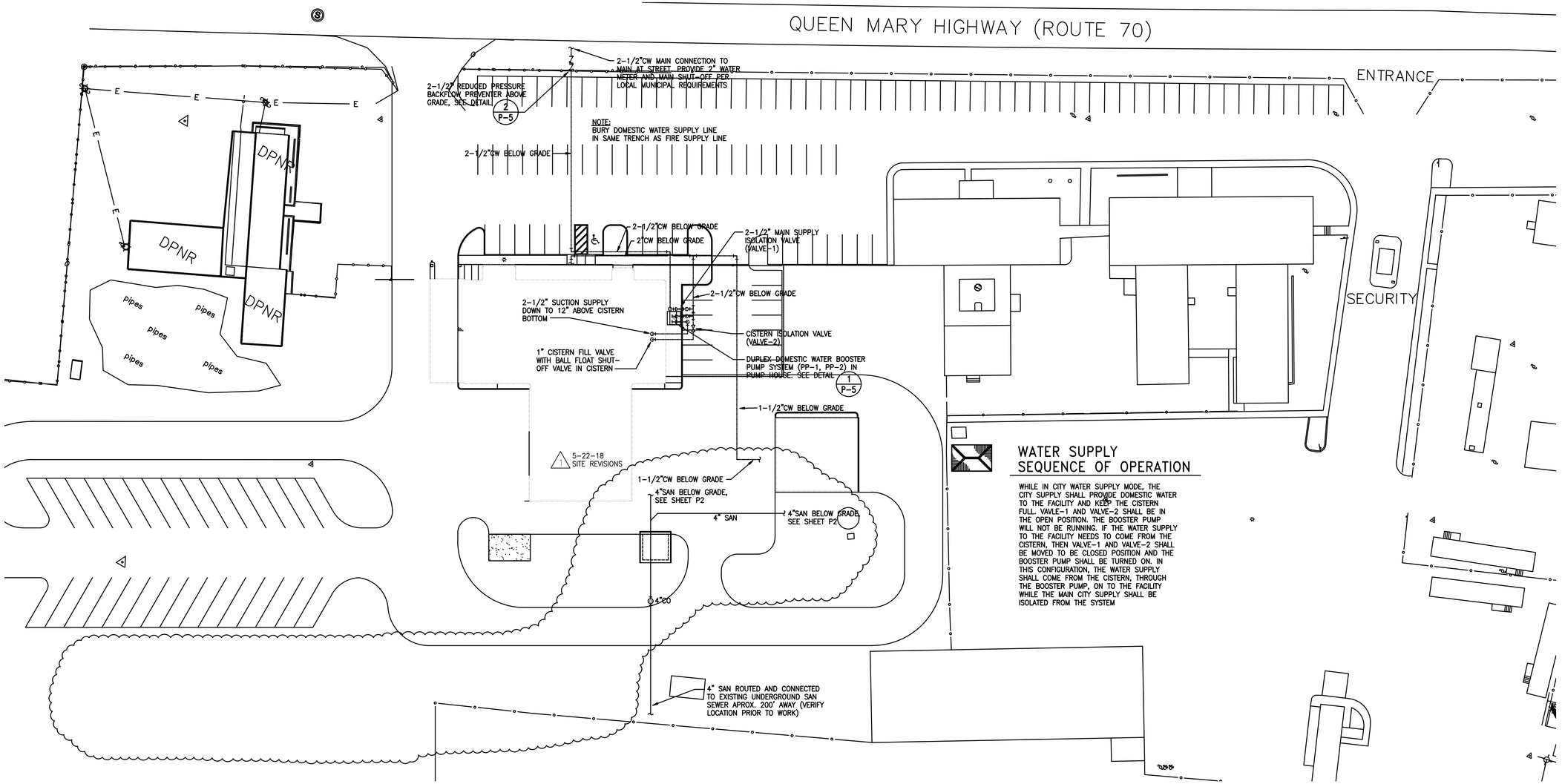
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DRAWING INFORMATION:
BUS WASH FACILITY, SEPTIC TANK, DRAINFIELD PLANS, NOTES AND DETAILS

DATE: 05-22-18
DRAWN BY: RMB

SHEET NUMBER:
P4

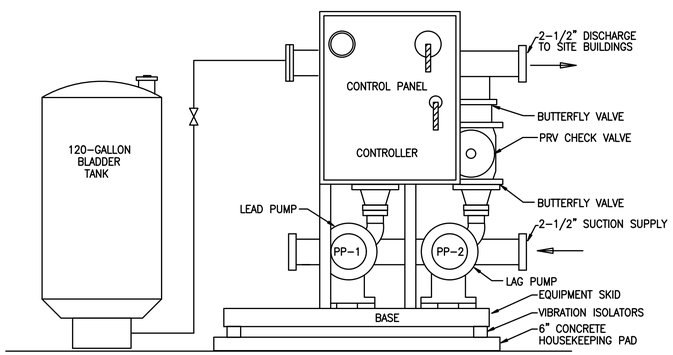


WATER SUPPLY SEQUENCE OF OPERATION

WHILE IN CITY WATER SUPPLY MODE, THE CITY SUPPLY SHALL PROVIDE DOMESTIC WATER TO THE FACILITY AND KEEP THE CISTERN FULL. VAVLE-1 AND VALVE-2 SHALL BE IN THE OPEN POSITION. THE BOOSTER PUMP WILL NOT BE RUNNING. IF THE WATER SUPPLY TO THE FACILITY NEEDS TO COME FROM THE CISTERN, THEN VALVE-1 AND VALVE-2 SHALL BE MOVED TO BE CLOSED POSITION AND THE BOOSTER PUMP SHALL BE TURNED ON. IN THIS CONFIGURATION, THE WATER SUPPLY SHALL COME FROM THE CISTERN, THROUGH THE BOOSTER PUMP, ON TO THE FACILITY WHILE THE MAIN CITY SUPPLY SHALL BE ISOLATED FROM THE SYSTEM

PLUMBING SITE PIPING PLAN

SCALE: 1/32" = 1'-0"

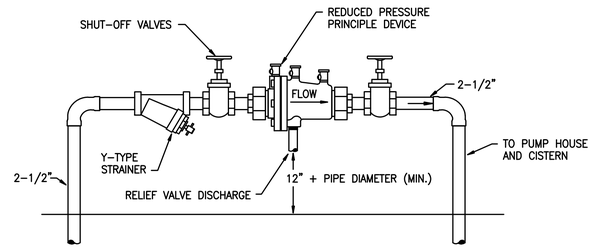


1 DOMESTIC BOOSTER PUMP DETAIL

SCALE: N.T.S.

PUMP SCHEDULE

PLAN SYMBOL	LOCATION	TYPE	MOUNTED	MOTOR			TDH (FT)	FLOW (GPM)	SPEED (RPM)	MANUF.	MODEL
				HP	VOLT/PH	PH					
PP-1	PUMP HOUSE	BOOSTER-LEAD	CENTRIF. BASE	3	208	3ø	120	40	3500	PEERLESS-VC	C810AM-3
PP-2	PUMP HOUSE	BOOSTER-LAG1	CENTRIF. BASE	5	208	3ø	120	80	3500	PEERLESS-VC	C810AM-5



2 REDUCED PRESSURE BACKFLOW PREVENTER DETAIL

SCALE: N.T.S.

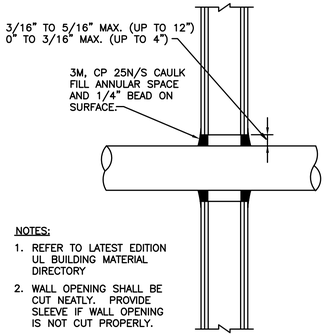
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DRAWING INFORMATION:
DOMESTIC WATER SITE PIPING PLAN AND DETAILS

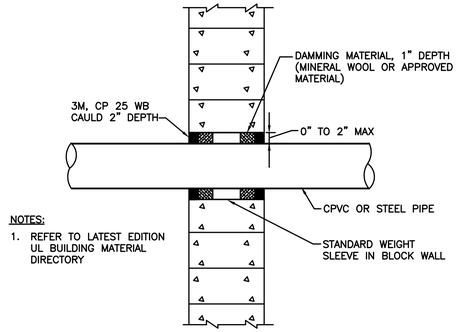
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P5



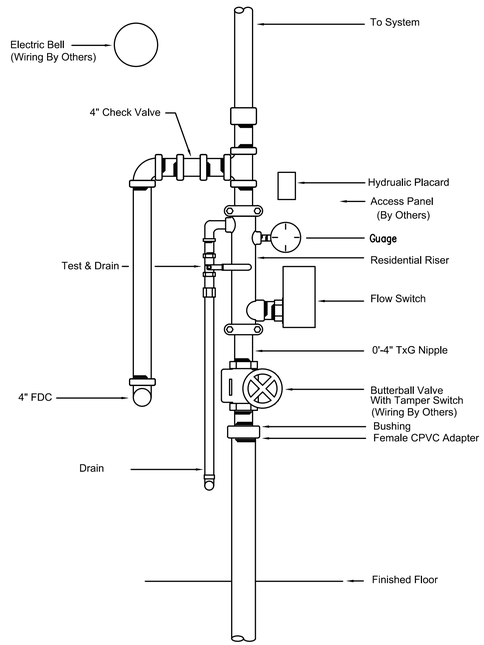
NON-INSULATED PIPE OR CONDUIT THROUGH PENETRATION FIRESTOP SYSTEM (UL#WL3011) ONE AND TWO HOUR GYPSUM WALL

NOT TO SCALE



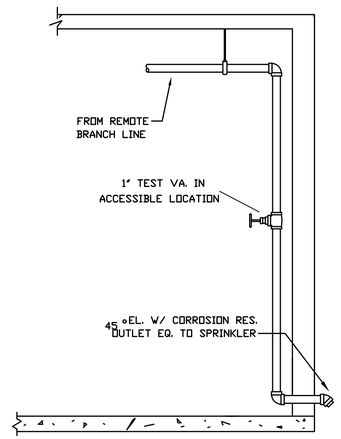
NON-INSULATED PIPE OR CONDUIT THROUGH PENETRATION FIRESTOP SYSTEM (UL#CAJ1044) ONE, TWO, AND THREE HOUR CONCRETE AND BLOCK WALL

NOT TO SCALE



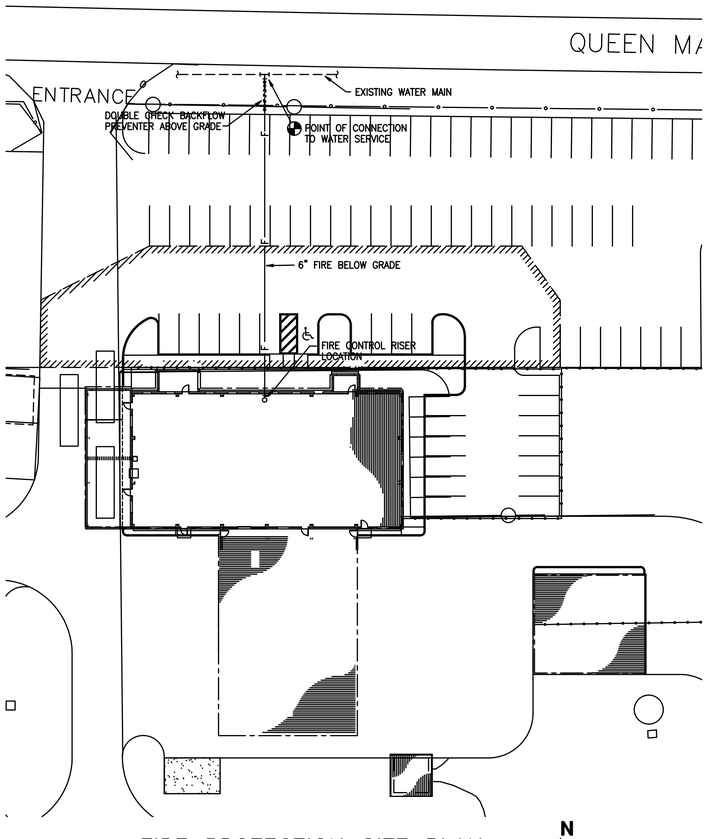
1 WET PIPE SPRINKLER RISER DETAIL

NOT TO SCALE



2 WET PIPE SYSTEM TEST CONNECTION

NOT TO SCALE



FIRE PROTECTION SITE PLAN

SCALE: 1/32" = 1'-0"

FIRE PROTECTION GENERAL NOTES

1. FIRE PROTECTION SYSTEM TO COMPLY WITH NFPA 13 (2003). NFPA 24 (2003) NFPA 20 (2003) AND ALL APPLICABLE FEDERAL STATE AND LOCAL CODES.
2. ADHERE TO AND OBTAIN ALL PERMITS, LICENSES AND ALL GOVERNMENT REQUIREMENTS.
3. FINAL INSPECTION AND APPROVAL BY FIRE PROTECTION AUTHORITIES H.J. AND ARCHITECT/ENGINEER.
4. PROVIDE SYSTEM(S) WITH FLUSHING CONNECTION(S), DRAINAGE AND INSPECTOR'S TEST IN ACCORDANCE WITH NFPA 13
5. CUTTING OF STRUCTURAL AND/OR ARCHITECTURAL MEMBERS TO BE DONE ONLY WITH THE WRITTEN APPROVAL OF THE ARCHITECT.
6. PROVIDE HEAD GUARDS ON SPRINKLER HEADS IN ELECTRIC, TELEPHONE AND MECHANICAL EQUIPMENT ROOMS IF THEY ARE LES THAN 7'-0" ABOVE FLOOR LEVEL.
7. PIPE ROUTING SHALL BE DRAWN AND ANY ADDITIONAL OFFSETS OR FITTINGS REQUIRED FOR PROPER INSTALLATION, COORDINATION WITH OTHER TRADES, AND/OR TO MAINTAIN PROPER CLEARANCES SHALL BE PROVIDED. VERIFY EXISTING STRUCTURAL, MECHANICAL, ELECTRICAL INSTALLATIONS AND AVOID ANY/ALL OBSTRUCTIONS OR INTERFERENCES WITH FIRE PROTECTION PIPE ROUTING.
8. FIRE STOP ALL PENETRATIONS OF SMOKE/FIRE WALLS, CEILINGS, FLOORS, ROOFS, ETC. FLASH AND COUNTERFLASH ROOF PENETRATIONS.
9. PROVIDE ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS.
10. SPRINKLER HEADS ARE TO BE COORDINATED WITH ALL NEW DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND CEILING SYSTEMS.
11. ALL EXPOSED PIPES SHALL BE GALVANIZED, AND REAMED AND CLEANED BEFORE ASSEMBLY
12. ALL EXPOSED FITTINGS SHALL BE CORROSION RESISTANT.
13. METHODS OF HANGING PIPES, HEADERS AND BRANCHES SHALL BE IN ACCORDANCE WITH NFPA 13 (2003). EXPOSED HANGERS SHALL BE CORROSION RESISTANT.
14. AUTOMATIC SPRINKLER TEMPERATURE RATINGS OF BULB ELEMENTS TO BE IN ACCORDANCE WITH NFPA 13 (2003), AND AS INDICATED ON DRAWING.
15. VALVES FOR FIRE SERVICE SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR THE FACTORY MUTUAL LABORATORIES. VALVES SHALL BE FACTORY MARKED "UL" OR "FM", 175 WORKING PRESSURE.
16. VALVES ON THE FIRE PROTECTION SYSTEM TO BE ELECTRICALLY SUPERVISED. TYPE AND EXACT LOCATION OF FLOW, PRESSURE AND SUPERVISORY SWITCHES SHALL BE ACCOMPLISHED BETWEEN THE DIFFERENT RESPONSIBLE TRADES.
17. ALL POWER WIRING SHALL BE ACCOMPLISHED UNDER THE ELECTRICAL DIVISION. ALL CONTROL AND INTERLOCK WIRING SHALL BE ACCOMPLISHED UNDER THIS SECTION OF THE SPECIFICATIONS IN ACCORDANCE WITH THE REQUIREMENTS IN THE ELECTRICAL DIVISION. COORDINATE ALL ELECTRICAL ITEMS WITH ELECTRICAL CONTRACTOR AND INSURE PROPER COORDINATION.
18. A SPRINKLER HEAD SHALL BE INSTALLED NO FURTHER THAN 7'-6" FROM EITHER SIDE OF A MAGNETICALLY HELD OPEN SMOKE DOOR.
19. PROVIDE THE ROOM FUNCTIONS FOR EACH AREA.
20. SPRINKLERS SHALL COVER THE ENTIRE AREA OF THE ROOM INCLUDING ALCOVES. SPRAY SHALL NOT BE BLOCKED BY WALLS OR PARTITIONS.
21. ALL SPRINKLER HEADS MOUNTED IN CEILING SHALL BE LOCATED A MINIMUM OF 4" AWAY FROM ANY WALLS, CEILING HEIGHT CHANGES OR ANY OTHER VERTICAL INTERSECTING SURFACE.
22. PROVIDE SPRINKLERS ABOVE AND BELOW EXPOSED DUCTWORK 4 FEET OR WIDER.

FAC 61G15-32.004 DESIGN NOTES:

(a) THE POINT OF SERVICE FOR THE FIRE PROTECTION WATER SUPPLY IS SHOWN ON THE FIRE PROTECTION SITE PLAN THIS SHEET.

(b) APPLICABLE NFPA CODE TO BE APPLIED : NFPA 13 (2003 EDITION),

(c) CLASSIFICATION OF HAZARD OCCUPANCY (SEE NFPA 13 DESIGN APPROACH).

(d) DESIGN APPROACH:

DESIGN TO BE PER NFPA 13 CODE (2003 EDITION). WET PIPE SYSTEM.
USE COMMERCIAL SPRINKLER HEADS WITH ORDINARY TEMPERATURE RATING.
USE HEADS WITH STANDARD COVERAGE (MAX.144 SQ.FT.) PER MANUFACTURERS LISTING.
DESIGN DISCHARGE SHALL BE WITH SPRINKLER LISTING CRITERIA.
PIPES SIZE SHALL BE DETERMINATED AFTER USING HYDRAULIC CALCULATION PROCEDURES.

(e) SITE WATER MAIN TO CONNECT TO AN EXISTING WATER MAIN LOCATED ON QUEEN MARY HIGHWAY. WATER SUPPLY SHALL BE MINIMUM 550 GPM PLUS OVERAGE FOR A MINIMUM DURATION OF 60 MINUTES.

(f) THE WATER SUPPLY INFORMATION MUST BE OBTAINED PRIOR TO PERFORMING ANY HYDRAULIC CALCULATIONS, OTHERWISE USE THE NFPA 13 PIPE SCHEDULE METHOD. AS A BASIS FOR DESIGN ONLY, USE THE FOLLOWING INFORMATION:

STATIC PRESSURE: 50.0 PSI
RESIDUAL PRESSURE: 45.0 PSI
FLOW: 900 GPM

(g) ALL VALVES CONTROLLING WATERFLOW THROUGH THE SPRINKLER SYSTEM SHALL BE EQUIPPED WITH AN INDICATOR AND ALSO WITH TAMPER SWITCHES CONNECTED TO THE BUILDING FIRE ALARM SYSTEM. SPRINKLER RISER TO BE EQUIPPED WITH WATERFLOW SWITCH TO MONITOR ACTIVATION OF A SPRINKLER SYSTEM. CONNECTION OF SWITCHES TO BUILDING ALARM SYSTEM TO BE SHOWN ON FIRE ALARM DRAWINGS.

(h) MICROBIAL INDUCED CORROSION (M.I.C.). INFORMATION PROVIDED BY THE LOCAL WATER PURVEYOR WITH CONFIRMATION THAT NO SIGN OF M.I.C. IS FOUND IN THE WATER SUPPLY AND NO SIGN IS FOUND THAT MAY RESULT IN M.I.C. CONTAMINATION OF THE FIRE PROTECTION PIPE.

(i) REDUCED PRESSURE DETECTOR BACKFLOW PREVENTOR SHALL BE INSTALLED ON SYSTEM TO PREVENT BACKFLOW OF SPRINKLER SYSTEM WATER INTO THE PUBLIC WATER SUPPLY AT THE CONNECTION TO THE SITE UNDERGROUND WATER MAIN. SEE CIVIL DRAWINGS FOR EXACT LOCATION.

(j) ALL FIRE SPRINKLER SYSTEM COMPONENTS TO BE EITHER U.L. LISTED OR F.M. APPROVED, IN THE EVENT NEITHER IS POSSIBLE, APPLICABLE NFPA CODE SHALL BE MET. PRIOR TO INSTALLATION SPRINKLER CONTRACTOR SHALL TO PROVIDE CUT SHEETS WITH MANUFACTURER SPECIFICATION OF ALL REQURED COMPONENTS TO BE INSTALLED IN SPRINKLER SYSTEM(S) FOR ARCHITECTS AND ENGINEERS APPROVAL.

NOTES
1) COORDINATE SPRINKLER LOCATIONS WITH LIGHTING, AIR DEVICES, AND ARCHITECTURAL PLANS. SEE ARCHITECTURAL FLOOR PLANS FOR LOCATIONS
2) COORDINATE PLACEMENT OF FIRE EXTINGUISHERS WITH FINAL FIXTURE LOCATIONS TO AVOID CONFLICTS. FE – FIRE EXTINGUISHER – WALL HUNG; SHALL BE POTTER-ROEMER FIGURE 3005 5-POUND MULTI-PURPOSE RATED 2A: 10B:C EXTINGUISHER AND WALL BRACKET FIRE EXTINGUISHERS SUPPLIED BY GRINNEL FIRE PROTECTION SYSTEMS.

GENERAL NOTES

1. FIRE SPRINKLER DESIGN IS BASED ON NFPA #13
2. THE FIRE SPRINKLER CONTRACTOR SHALL PROVIDE THE FIRE PENETRATION SEALS REQUIRED FOR ALL PIPES & CONDUITS RELATED TO THE SPRINKLER SYSTEM

BUILDING DESIGN CRITERIA NOTES

PROVIDE WET PIPE SYSTEM AS FOLLOWS:

1. OFFICE AREAS.
   LIGHT HAZARD AREAS (LH):
   0.10 G.P.M. PER SQUARE FOOT OVER THE HYDRAULICALLY MOST REMOTE 1500 SQUARE FEET FOR WET PIPE SYSTEM WITH A MAXIMUM SPRINKLER SPACING OF 130 SQUARE FEET PER SPRINKLER.
2. SHOP AREA AND COVERED CANOPY.
   ORDINARY HAZARD GROUP 2 AREAS (OH2):
   0.20 G.P.M. PER SQUARE FOOT OVER THE HYDRAULICALLY MOST REMOTE 3000 SQUARE FEET FOR WET PIPE SYSTEM WITH A MAXIMUM SPRINKLER SPACING OF 130 SQUARE FEET PER SPRINKLER.
3. REFER TO ARCHITECTURAL (RCP) REFLECTED CEILING PLANS, MECHANICAL PLANS AND ELECTRICAL PLANS FOR LOCATION OF CEILING, DIFFUSERS, LIGHTS AND OTHER CEILING ORNAMENTATION.
4. ALL SYSTEM PIPING SHALL BE INSTALLED TO ALLOW DRAINAGE BACK TO THE SYSTEM RISER WHEN POSSIBLE. WHERE THIS IS NOT POSSIBLE, AUXILIARY DRAINS SHALL BE INSTALLED AND DRAINED TO AN ACCEPTABLE LOCATION AS AGREED TO BY THE ARCHITECT, ENGINEER AND OWNER.
5. THIS CONCEPT DRAWING IS FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION CONTAINED ON THIS DRAWING AND IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS AND NFPA 13.
6. SEE CIVIL DRAWINGS AND SPECIFICATIONS WORK FOR LIMIT OF CONTRACT.
7. PENDANT SPRINKLERS SHALL BE 155', QUICK RESPONSE, 1/2" CHROME RECESSED WITH SOLID WHITE COVER PLATE, AREA WITH CEILING.
8. UPRIGHT SPRINKLERS SHALL BE 155' QUICK RESPONSE, AREAS WITHOUT CEILINGS.

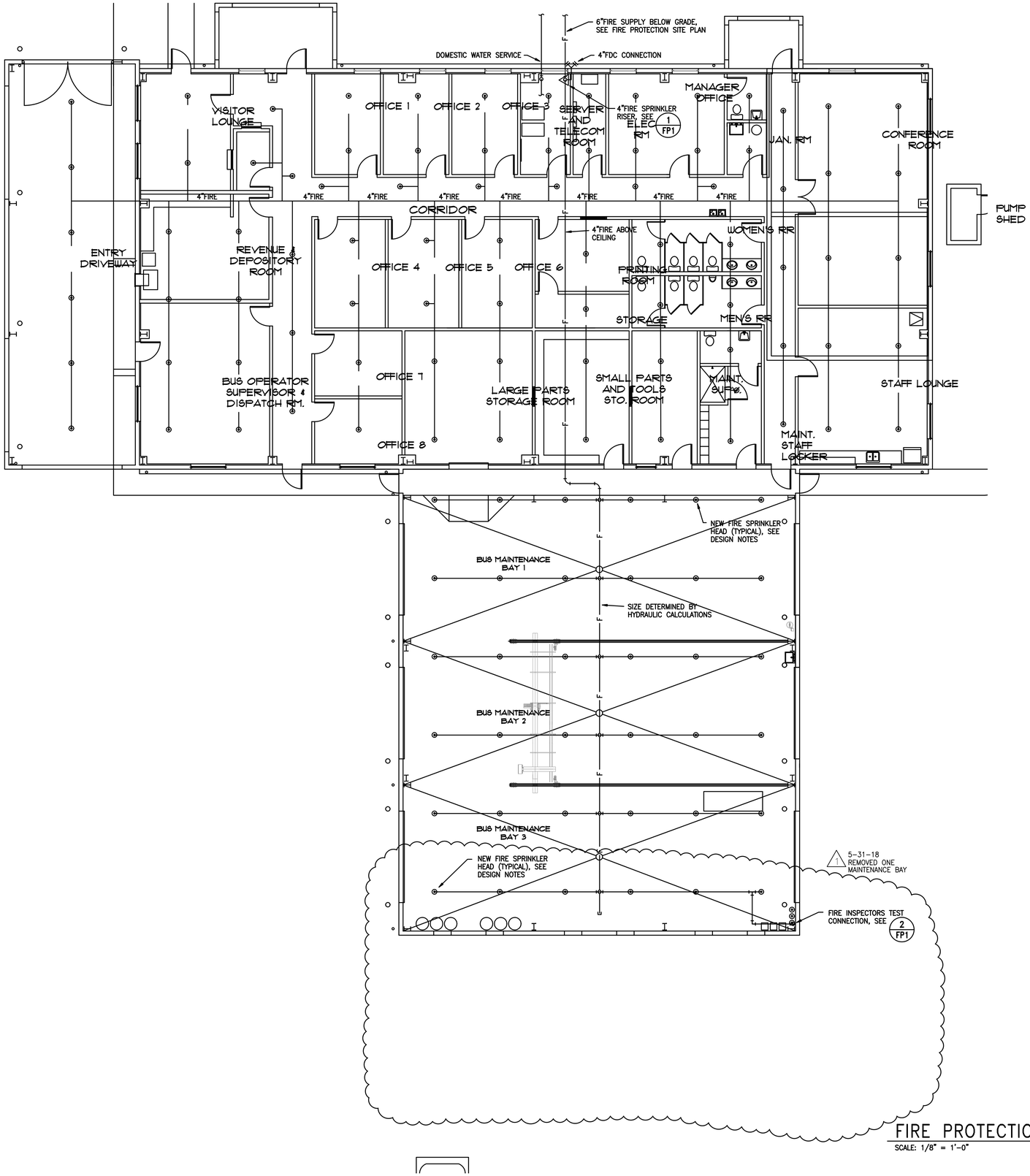
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PROJECT:
VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
FIRE PROTECTION SITE PLAN, DSIGN NOTES AND DETAILS

DATE: 10-3-17
DRAWN BY: RMB

SHEET NUMBER:
FP1



FIRE PROTECTION FLOOR PLAN

SCALE: 1/8" = 1'-0"

N

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VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE, ST. CROIX, U.S.V.I.

DRAWING INFORMATION:
FIRE PROTECTION PLAN

DATE: 5-31-18
DRAWN BY: RMB

SHEET NUMBER:
FP2

VITRAN MAINTENANCE AND OPERATIONS FACILITY

V.I. Department of Public Works
Estate Anna's Hope St. Croix, U.S.V.I.

PROJECT MANUAL

May 22, 2018

STEVEN E. HUTCHINS ARCHITECTS, INC

109-113 Castle Coakley
St. Croix, VI 00820

ARCHITECT

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

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VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
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SECTION 01010 - SUMMARY OF WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of Operations and Maintenance Facilities for Vitran to be constructed at the Anna's Hope complex on St. Croix, VI. New structures include the Operations Facility Building, Bus Wash Building, and Generator Building. Sitework includes paving, sidewalks, utilities, and miscellaneous site structures.

1. Project Location: Department of Public Works Complex, Anna's Hope, St. Croix, VI.
2. Owner: VI. Department of Public Works
   No8 Subbase
   Charlotte Amalie, VI 00802

B. Contract Documents, dated June 30, 2017, were prepared for the Project by Steven E. Hutchins Architects, Inc., 109 -113 Estate Castle Coakley, Christiansted, St. Croix, VI 00820.

C. The Work consists of the following: *Building 1* – Operations Facility Building. Construction of new foundation and pre-engineered metal building, including partitions, finishes, mechanical and electrical systems. *Building 2* – Bus Wash Building. Construction of new foundation and concrete/masonry structure, including metal framed roof, washing equipment, finishes, mechanical and electrical systems. *Building 3* – Tire Storage Building. Construction of a new concrete/masonry structure, including foundation, finishes, wood framed roof and electrical system. *Sitework*. Construction of new underground utilities, paved areas, driveways, sidewalks, emergency generator and building, pump house, and used oil containment structure.

D. The Work will be constructed under a single prime contract.

1.3 CONTRACTOR USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations. The Contractor's use of the premises is limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.

B. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.
2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.4 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner's operations.

END OF SECTION 01010

VITRAN MAINTENANCE AND OPERATIONS FACILITY
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SECTION 01035 - 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
2. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.
3. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

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

1.4 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
2. Within 14 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.
    a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Proposals: When latent or unforseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the 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 Contract Time.
2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.

C. Proposal Request Form: Use forms provided by the Owner for Change Order Proposals.

1.5 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or 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 the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.6 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Proposal Request, the Contracor will prepare a Change Order for signatures of the Architect, Owner and the Contractor on Owners Standard Form.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01035

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
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ST. CROIX, USVI

SECTION 01040 - COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
   1. General project coordination procedures.
   2. Administrative and supervisory personnel.
   3. Cleaning and protection.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 1 Section "Project Meetings" for progress meetings, coordination meetings, and preinstallation conferences.
   2. Division 1 Section "Submittals" for preparing and submitting the Contractor's Construction Schedule.
   3. Division 1 Section "Materials and Equipment" for coordinating general installation.
   4. Division 1 Section "Contract Closeout" for coordinating contract closeout.

1.3 COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in the 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 assure maximum accessibility for required maintenance, service, and repair.
   3. Make provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
   1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of schedules.
   2. Installation and removal of temporary facilities.
   3. Delivery and processing of submittals.
   4. Progress meetings.
   5. Project closeout activities.

D. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.
   1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.4 SUBMITTALS

A. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
   1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

C. 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. Where applicable, such exposures include, but are not limited to, the following:
   1. Excessive static or dynamic loading.
   2. Excessive internal or external pressures.
   3. Excessively high or low temperatures.
   4. Thermal shock.
   5. Excessively high or low humidity.
   6. Air contamination or pollution.
   7. Water or ice.
   8. Solvents.
   9. Chemicals.
   10. Light.
   11. Radiation.
   12. Puncture.
   13. Abrasion.
   14. Heavy traffic.
   15. Soiling, staining, and corrosion.
   16. Bacteria.
   17. Rodent and insect infestation.
   18. Combustion.
   19. Electrical current.

20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

END OF SECTION 01040

VITRAN MAINTENANCE AND OPERATIONS FACILITY
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ST. CROIX, USVI

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for cutting and patching.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Coordination" for procedures for coordinating cutting and patching with other construction activities.
2. Division 2 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
3. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
    a. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 15 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
    a. Foundation construction.
    b. Bearing and retaining walls.
    c. Structural concrete.
    d. Structural steel.
    e. Lintels.
    f. Structural decking.
    g Miscellaneous structural metals.

h. Piping.

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

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
   1. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

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 the Project that might be exposed during cutting and patching operations.
C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
D. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General: Employ skilled workmen 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 activities and the subsequent fitting and patching required to restore surfaces to their original condition.
B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
   1. In general, where cutting, use hand or small power tools designed for sawing or 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. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.

4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color 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 smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.

D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.
1. Cut, patch, point-up, and repair plaster to accommodate other construction.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01095 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

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

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

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

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

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

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

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

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

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

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
2. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

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

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

L. "Remove" The term " Remove" where indicated in the Drawings means to disconnect indicate item from the building inclusive of related hardware and accessories and dispose of it legally and appropriately at any off site location. The disconnection of this item shall be done as to not have any damaging effecs on the remaining materials. Any damage caused by this action shall be corrected according to the " Cutting and Patching" Section of these specifications and other related sectrions.

M. "Replace": the term " replace" shall mean to Remove, or defined above, the indicated item and to provide and install a new item that matches the size, type, shape and configuration, style, function, material, finish and appearance, as applicable, of the item being replaced and such new item shall conform to the requirements of the Section(s) of these specifications that pertaiin to the subject item.

N. "Repair": the term "Repair" shall mean to provide all work and required materials to restore the indicated item to a satisfactory working condition and appearance according to the requirements of these specifications for new items of corresponsinf type and as approved by the Architect.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

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

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

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

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

C. Conflicting Requirements: Where compliance with 2 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 uncertainties and requirements that are different but apparently equal to the Architect for a decision before proceeding.

1. 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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project must 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, the Contractor shall obtain copies directly from the publication source and make them available on request.

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

1.5 GOVERNING REGULATIONS AND AUTHORITIES

A. Copies of Regulations: Obtain copies of the following regulations and retain at the Project site to be available for reference by parties who have a reasonable need.

1.6 SUBMITTALS

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

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01095

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
   1. Preconstruction conferences.
   2. Progress meetings.
   3. Coordination meetings.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 1 Section "Coordination" for procedures for coordinating project meetings with other construction activities.
   2. Division 1 Section "Submittals" for submitting the Contractor's Construction Schedule.

1.3 PRECONSTRUCTION CONFERENCE

A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and the Architect, but no later than 15 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:
   1. Tentative construction schedule.
   2. Critical work sequencing.
   3. Designation of responsible personnel.
   4. Procedures for processing field decisions and Change Orders.
   5. Procedures for processing Applications for Payment.
   6. Distribution of Contract Documents.
   7. Submittal of Shop Drawings, Product Data, and Samples.
   8. Preparation of record documents.
   9. Use of the premises.
   10. Parking availability.
   11. Office, work, and storage areas.
   12. Equipment deliveries and priorities.
   13. Safety procedures.
   14. First aid.
   15. Security.
   16. Housekeeping.
   17. Working hours.

1.4 PROGRESS MEETINGS

A. Conduct progress meetings at the Project Site at regular intervals. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or 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 conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
   1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
   2. Review the present and future needs of each entity present, including the following:
      a. Interface requirements.
      b. Time.
      c. Sequences.
      d. Status of submittals.
      e. Deliveries.
      f. Off-site fabrication problems.
      g. Access.
      h. Site utilization.
      i. Temporary facilities and services.
      j. Hours of work.
      k. Hazards and risks.
      l. Housekeeping.
      m. Quality and work standards.
      n. Change Orders.
      o. Documentation of information for payment requests.

D. Reporting: No later than 3 days after each meeting, distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
   1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

1.5 COORDINATION MEETINGS

A. Conduct project coordination meetings at regular intervals convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special preinstallation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
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SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:
   1. Contractor's construction schedule.
   2. Shop Drawings.
   3. Product Data.
   4. Samples.
   5. Quality assurance submittals.

B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
   1. Permits.
   2. Applications for Payment.
   3. Performance and payment bonds.
   4. Insurance certificates.
   5. List of subcontractors.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
      a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
   3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
      a. Allow 2 weeks for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
      b. If an intermediate submittal is necessary, process the same as the initial submittal.
      c. Allow 2 weeks for reprocessing each submittal.
      d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.
   a. Project name.
   b. Date.
   c. Name and address of the Architect.
   d. Name and address of the Contractor.
   e. Name and address of the subcontractor.
   f. Name and address of the supplier.
   g. Name of the manufacturer.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.
   1. Transmittal Form: Use the Owner furnished transmittal form.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 30 days after the date established for "Commencement of the Work."
   1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."
   2. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.

B. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

C. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
   1. When revisions are made, distribute 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 construction activities.

D. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
   1. Dimensions.
   2. Identification of products and materials included by sheet and detail number.
   3. Compliance with specified standards.
   4. Notation of coordination requirements.
   5. Notation of dimensions established by field measurement.

6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 36 by 48 inches .
8. Initial Submittal: Submit 2 blue- or black-line prints for the Architect's review. The Architect will return one print.
9. Final Submittal: Submit 3 blue- or black-line prints; submit 5 prints where required for maintenance manuals. The Architect will retain 2 prints and return the remainder.
10. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.6 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
   a. Manufacturer's printed recommendations.
   b. Compliance with trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurement.
   f. Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
4. Submittals: Submit 2 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Architect will retain one and will return the other marked with action taken and corrections or modifications required.
   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

   a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
   b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.7 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:
   a. Specification Section number and reference.
   b. Generic description of the Sample.
   c. Sample source.
   d. Product name or name of the manufacturer.
   e. Compliance with recognized standards.

f. Availability and delivery time.

2. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.
   a. The Architect will review and return preliminary submittals with the Architect's notation, indicating selection and other action.
3. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 3 sets. The Architect will return one set marked with the action taken.
4. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
   b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
   a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.8 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."

1.9 ARCHITECT'S ACTION

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

B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
1. Final Unrestricted Release: When the Architect marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
2. Final-But-Restricted Release: When the Architect marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
3. Returned for Resubmittal: When the Architect marks a submittal "Not Approved, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

a. Do not use, or allow others to use, submittals marked "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."

C. Unsolicited Submittals: The Architect will return unsolicited submittals to the sender without action.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)
END OF SECTION 01300

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services.

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

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

1.3 RESPONSIBILITIES

A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.

1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.

B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
4. Provide facilities for storage and curing of test samples.
5. Deliver samples to testing laboratories.
6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
   1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.4 SUBMITTALS

A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
   1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
   2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
      a. Date of issue.
      b. Project title and number.
      c. Name, address, and telephone number of testing agency.
      d. Dates and locations of samples and tests or inspections.
      e. Names of individuals making the inspection or test.
      f. Designation of the Work and test method.
      g. Identification of product and Specification Section.
      h. Complete inspection or test data.
      i. Test results and an interpretation of test results.
      j. Ambient conditions at the time of sample taking and testing.
      k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
      l. Name and signature of laboratory inspector.
      m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.
   1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."

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

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01400

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:
   1. Water service and distribution.
   2. Temporary electric power and light.
   3. Ventilation.
   4. Telephone service.
   5. Sanitary facilities, including drinking water.

C. Support facilities include, but are not limited to, the following:
   1. Field offices and storage sheds.
   2. Temporary enclosures.
   3. Temporary project identification signs and bulletin boards.
   4. Waste disposal services.
   5. Rodent and pest control.
   6. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:
   1. Temporary fire protection.
   2. Barricades, warning signs, and lights.
   3. Environmental protection.

1.3 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
   1. Building code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, fire department, and rescue squad rules.
   5. Environmental protection regulations.

B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
   1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

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

1.5 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

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

B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
   1. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thicknesses indicated.
   2. For fences and vision barriers, provide minimum 3/8-inch-thick exterior plywood.
   3. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch- thick exterior plywood.

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

E. Open-Mesh Fencing: Provide 0.120-inch thick, galvanized 2-inch chainlink fabric fencing 6 feet high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches I.D. for line posts and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

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

B. Water Hoses: Provide 3/4-inch heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

G. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

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

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
   1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
   2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
   3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
   4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect. Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders.

B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
   1. Sterilization: Sterilize temporary water piping prior to use.

C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.
   1. Install electric power service underground, except where overhead service must be used.
   2. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

D. Temporary Lighting: When overhead floor or roof deck has been installed, provide temporary lighting with local switching.
   1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.

E. Temporary Telephones: Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first-aid station.

D. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

3.3 SUPPORT FACILITIES INSTALLATION

A. Locate storage sheds and other temporary construction and support facilities for easy access.
   1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.

C. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
   1. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.
   2. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
   3. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.

D. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
   1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
   2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

E. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.

F. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

G. Rodent and Pest Control: Retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
   1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
   2. Store combustible materials in containers in fire-safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
   4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and

warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Enclosure Fence: Install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.
   1. Provide open-mesh, chainlink fencing with posts set in a compacted mixture of gravel and earth.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
   1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
   2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
   2. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
   3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
      a. Replace significantly worn parts and parts subject to unusual operating conditions.
      b. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01500

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V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01600 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
2. Division 1 Section "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.
3. Division 1 Section "Substitutions" specifies administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
    a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 QUALITY ASSURANCE

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

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
   1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
   2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
   1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. Substitutions will be permitted provided that the requirements of the Substitutions Section of this Specification are satisfied.
   2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. Substitutions will be permitted provided that the requirements of the Substitutions Section of this Specification are satisfied.
      a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade

name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
   a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
   a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

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

END OF SECTION 01600

SECTION 01700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
   1. Inspection procedures.
   2. Project record document submittal.
   3. Operation and maintenance manual submittal.
   4. Submittal of warranties.
   5. Final cleaning.

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

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
   1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
      a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
      b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
   2. Advise the Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
   4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra stock, and similar items.
   7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
   9. Complete final cleanup requirements, including touchup painting.
   10. Touch up and otherwise repair and restore marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
   1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
   1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
   2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
   3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
   4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
   5. Submit consent of surety to final payment.
   6. Submit a final liquidated damages settlement statement.
   7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.
   1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
   2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
   1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
   2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
   3. Note related change-order numbers where applicable.
   4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
   1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to Substantial Completion, the Contractor shall meet with the Architect and the Owner's personnel at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.

G. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn-around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.

6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:
1. Startup.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
a. Remove labels that are not permanent labels.
b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
e. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

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

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 01700

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 01740 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
   1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
   2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
   3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
   4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

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

1.3 DEFINITIONS

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

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

1.4 WARRANTY REQUIREMENTS

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

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

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

D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
   1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the

Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
   1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

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

C. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
   1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

D. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

E. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
   2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
   3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 LIST OF WARRANTIES

A. Schedule: Provide warranties on products and installations as specified in the following Sections:
   1. Termite Control Treatment: Section 02282 - Termite Control.
   2. Manufactured Roof Panels: Section 07411
   3. Steel Doors and Frames: Section 08110
   4. Emergency Generator: Section 16231 - Overhead Coiling Doors
   5. Aluminum Windows: Section 08520 - Aluminum Windows.
   6. Water Heaters: Section 15400 - Plumbing.
   7. Air Conditioning Equipment

END OF SECTION 01740

VITRAN MAINTENANCE AND OPERATIONS FACILITY
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SECTION 02070 - SELECTIVE DEMOLITION

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 the following:
   1. Demolition and removal of selected portions of a building.
   2. Demolition and removal of selected site elements.
   3. Patching and repairs.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 1 Section "Summary of Work" for use of the building and phasing requirements.
   2. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
   3. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures for selective demolition operations.
   4. Division 1 Section "Contract Closeout" for record document requirements.
   5. Division 2 Section "Asbestos Abatement".
   6. Division 6 Section "Rough Carpentry" for material and construction requirements for temporary enclosures.
   7. Division 15 Sections for cutting, patching, or relocating mechanical items.
   8. Division 16 Sections for cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.

B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.

C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.

D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.5 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections, for information only, unless otherwise indicated.

B. Schedule of selective demolition activities indicating the following:
   1. Interruption of utility services.
   2. Coordination for shutoff, capping, and continuation of utility services.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Asbestos: Contractor shall engage an independent testing agency for testing asbestos in the existing resilent flooring materials. If any materials contain asbestos do not disturb the materials. Immediately notify the Architect and the Owner.
   1. Asbestos removal shall be bid as Alternate No.
   2. Asbestos abatement is specified elsewhere in the Contract Documents.
   3. Do not disturb asbestos or any material suspected of containing asbestos except under the procedures specified elsewhere in the Contract Documents.

D. Storage or sale of removed items or materials on-site will not be permitted.

1.8 SCHEDULING

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

PART 2 - PRODUCTS (Not Applicable)

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.
   1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.

3.2 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.

a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.

B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.
1. Arrange to shut off indicated utilities with utility companies.
2. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

C. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
1. Protect existing site improvements, appurtenances, and landscaping to remain.
2. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces and new construction to ensure that no water leakage or damage occurs to structure or interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.

C. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
1. 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. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. 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.
4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.

8. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

C. Break up and remove concrete slabs on grade, unless otherwise shown to remain.

D. Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings" and Addendum.
   1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

E. Remove no more existing roofing than can be covered in one day by new roofing. See applicable Division 7 Section for new roofing requirements.

F. Remove air-conditioning equipment without releasing refrigerants.

3.5 PATCHING AND REPAIRS

A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

B. Patching is specified in Division 1 Section "Cutting and Patching."

C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
   1. Completely fill holes and depressions in existing masonry walls to remain with an approved masonry patching material, applied according to manufacturer's printed recommendations.

D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

E. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.
   1. Closely match texture and finish of existing adjacent surface.
   2. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
   4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Sweep the building broom clean on completion of selective demolition operation.

END OF SECTION 02070

VITRAN MAINTENANCE AND OPERATIONS FACILITY
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SECTION 02230 - SITE CLEARING

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 the following:

1. Protecting existing trees and vegetation to remain.
2. Removing trees and other vegetation.
3. Clearing and grubbing.
4. Topsoil stripping.
5. Removing above-grade site improvements.

B. Related Sections include the following:

1. Division 1 Section "Field Engineering" for verifying utility locations and for recording field measurements.
2. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures during site operations.
3. Division 2 Section "Tree Protection and Trimming" for protecting trees remaining on-site that are affected by site operations.
4. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.
5. Division 2 Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and planting.

1.3 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and other deleterious materials.

1.4 MATERIALS OWNERSHIP

A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.5 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

B. Record drawings according to Division 1 Section "Contract Closeout."

1. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.

2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

1.8 SOIL MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 2 - EXECUTION

2.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways in accordance with the approved SWPPP.

C. Locate and clearly flag trees and vegetation to remain or to be relocated.

D. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

2.2 TREE PROTECTION

A. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.

1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.

B. Do not excavate within drip line of trees, unless otherwise indicated.

C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

1. Cover exposed roots with burlap and water regularly.
2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
3. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.

D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

2.3 UTILITIES

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Do not proceed with utility interruptions without Architect's written permission.

2.4 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
3. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
4. Use only hand methods for grubbing within drip line of remaining trees.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding 8-inch loose depth, and compact each layer to a density equal to adjacent original ground.

2.5 TOPSOIL STRIPPING

A. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.

B. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Do not stockpile topsoil within drip line of remaining trees.
2. Stockpile surplus topsoil and allow for respreading deeper topsoil.

2.6 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 02230

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SECTION 02282 - TERMITE CONTROL

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 building perimeter and soil treatment for termite control.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
B. Product data and application instructions.
C. Certification that products used comply with U.S. Environmental Protection Agency (EPA) regulations for termiticides.

1.4 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for preparing substrate and application.
B. Engage a professional pest control operator who is licensed according to regulations of governing authorities to apply soil treatment solution.
C. Use only termiticides that bear a federal registration number of the EPA and are approved by local authorities having jurisdiction.

1.5 JOB CONDITIONS

A. Restrictions: Do not apply soil treatment solution until excavating, filling, and grading operations are completed, except as otherwise required in construction operations.
B. To ensure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

1.6 WARRANTY

A. Warranty: Furnish written warranty, executed by Applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.
B. Warranty Period: 5 years from date of Substantial Completion.
C. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT SOLUTION

A. General: Use an emulsible, concentrated termiticide that dilutes with water, specially formulated to prevent termites infestation. Fuel oil will not be permitted as a diluent. Provide a solution consisting of one of following chemical elements.

B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
Products: Subject to compliance with requirements, provide one of the following:
1. Chloropyrifos:
Dursban TC, Dow Chemical Co.
2. Permathrin:
Dragnet FT, FMC Corp.
Torpedo, ICI Americas, Inc.
3. Imidacloprid:
a. Premis 75, Bayer Corp.
4. Cypermethrine:
a. Prevail FT, FMC Corp.
b. Demon, ICI Americas, Inc.
5. Fenvalerate:
a. Gold Coast Tribute, Du Pont.
6. Isofenphose:
a. Pryfon, Mobay Corp.

D. Dilute with water to concentration level recommended by manufacturer.

E. Other solutions may be used as recommended by Applicator if approved for intended application by local authorities having jurisdiction. Use only soil treatment solutions that are not harmful to plants.

PART 3 - EXECUTION

3.1 APPLICATION

A. Surface Preparation: Remove foreign matter that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placing compacted fill under slabs if recommended by toxicant manufacturer.

B. Application Rates: Apply soil treatment solution as follows:

3.2 POST-CONSTRUCTION TREATMENT

A. Concrete Slab-On-Ground: Apply a treatment under the slab, including attached porches, carports, entrance platforms, garages and similar slab structures, by drilling through the slab or exterior foundation. Drill holes should be spaced in a manner that will allow for application of a continuous chemical barrier. Treat all existing cracks and cold, construction or expansion joints. Also, treat around bath traps, plumbing and utility services which penetrate the slab. Apply 4 gallons of solution per 10 linear feet to provide a uniform barrier. DO NOT MAKE TREATMENT UNTIL LOCATION OF HEAT OR AIR CONDITIONING DUCTS AND VENTS ARE KNOWN AND IDENTIFIED. USE EXTREME CAUTION TO AVOID CONTAMINATION OF DUCTS AND VENTS. Plug and fill all drilled holes in commonly occupied areas with a suitable sealant.

B. An application should be made by trenching and/or rodding around the outside of the foundation wall. Apply 4 gallons of solution per 10 linear feet per foot of depth to provide a uniform barrier. When trenching, the trench along the outside foundation should be about 6 inches wide and 6 inches deep. Use a low pressure spray to treat soil as it is being placed in the trench. Rodding can be done from grade or from the bottom of a shallow trench. When rodding, rod holes should be spaced in a manner that will allow for a continuous chemical barrier to be deposited along the treated area. Rod holes should not extend below the footing.

C. Excavation Technique: If treatment must be made in difficult situations, such as near wells, cisterns, alson fieldstone or rubble walls, along faulty foundation walls, and around pipes and utility lines which lead downward form the structure to a well or a pond, applications may be made in the following manner:

D. Trench and remove soil to be treated onto heavy plastic sheeting or similiar material.

E. Treat the soil at the rate of 4 gallons of emulsion per 10 linear feef per foot of depth of the trench. Mix the emulsion thoroughly into the soil taking care to prevent liquid from running off the liner.

F. After the treated soil has absorbed the liquid emulsion, replace the soil in the trench.

G. Prior to using this technique near wells or cisterns, consult state, local or federal agencies for information regarding approved treatment practices in your area.

H. Foam Applications: Construction practices, soil subsidence and other factors may create situations in which a continuous chemical barrier cannot be achieved using conventional treatment alone. In situations where necessary, conventional application methods can be supplemented through use of foam generating equipment, or similar devices can be used to provide a continuous barrier. Treatment of filled porches, chimney bases, soil under slabs and treatment of masonry or other voids are examples of where application of a foam may be useful.

I. Foam application may be made alone or in combination with conventional application methods, provided that the labeled amount of active ingredient per unit area is used.

J. Foam Application Use Directions**:** Mix and-use dilution of chemical solution with manufacturer's recommended volume of foaming agent. Apply a sufficient volume of chemical solution foam to provide a continuous barrier at the recommended rate for specific application sites. If sufficient foam volume cannot be applied to achieve recommended rates of chemical solution, apply additional chemical solution as liquid to assure proper concentration in the treated area. Use appropriate dispersion tips and application method for site. For soil under slabs, apply the equivalent of 0.36 to 0.72 ounces of chemical solution per 10 linear feet. For dirt filled porches and chimney bases, apply the equivalent of 0.36 to 0.72 ounces of chemical solution per 10 linear feet per foot of depth along containment walls. In addition, an overall surface application of the equivalent of 0.09 to 0.18 ounces per 10 square feet of chemical solution may be needed for large dirt filled porches and chimney bases. For voids, apply the equivalent of 0.18 to 0.36 ounces of chemical solution per 10 linear feet at or near footing.

K.. Corrective Treatment: Corrective treatment for subterranean termites may be made when there is evidence of reinfestation subsequent to the initial treatment, or where there has been a disruption of the chemical barrier in the soil due to construction, excavations, landscaping, etc.

L. Corrective treatment may be made as either a spot or complete treatment. The timing of these treatments will vary, depending on factors such as termite pressure, soil conditions, etc., which may reduce the effectiveness of the barrier.

M. Corrective treatment may be made to vulnerable areas in accordance with the application techniques described in this label. Routine or annual treatment of the entire structure should be unnecessary and thus avoided.

N General Precautions for Applications: Do not treat soil beneath structures that contain cisterns. After treatment, plug and fill all holes drilled in concrete slab areas of the building with a suitable sealant.

O. Do not apply solution until location of heat pipes, ducts, water and sewer lines and electrical conduits are kown and identified. Caution must be taken to avoid puncturing and injection into these structural elements.

P. Do not plant for the purpose of consumption, edible plants into the treated areas of soil.

Q. Avoid contamination of public and private water supplies.

R. Use anti-backflow equipment on filling hoses.

S. Consult State, Federal, or local authorities for information regarding the approved treatment practices for areas in close proximity to potable water supplies.

T. Post signs in areas of application to warn workers that soil termiticide treatment has been applied. Remove signs after areas are covered by other construction.

U. Reapply soil treatment solution to areas disturbed by subsequent excavation, landscape grading, or other construction activities following application.

END OF SECTION 02282

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 02300 - EARTHWORK

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 the following:
   1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
   2. Excavating and backfilling for buildings and structures.
   3. Subbase course for concrete walks and pavements.
   4. Subsurface drainage backfill for walls and trenches.
   5. Excavating and backfilling trenches within building lines.
   6. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.

B. Related Sections include the following:
   1. Division 2 Section "Excavation Support and Protection."
   2. Division 2 Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and plantings.
   3. Division 3 Section "Cast-in-Place Concrete" for granular course over vapor retarder.
   4. Division 15 and 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 DEFINITIONS

A. Backfill: Soil materials used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.

C. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.

D. Excavation: Removal of material encountered above subgrade elevations.
   1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
   2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
   3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

E. Fill: Soil materials used to raise existing grades or re-fill excavations.

F. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material exceeding 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
   1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- wide, short-tip-radius rock bucket; rated at not less than 120-hp flywheel power with bucket-curling force of not less than 25,000 lbf and stick-crowd force of not less than 18,700 lbf; measured according to SAE J-1179.

2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 45,000-lbf breakout force; measured according to SAE J-732.

G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

H. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.

I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

J. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Each type of plastic warning tape.

B. Samples: For the following:

1. 30-lb samples sealed in airtight containers, of each proposed soil material from on-site or borrow sources.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.

E. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

G. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

I. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:

B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

2. All rock encountered will be considered earthy and will be included under the Lump Sum Contract Amount.
3. If a high concentration of dense rock is encountered in the excavation for building foundations that are of both greater hardness and greater extent than that found in typical excavations for other building foundations on the project, a relocation of the building will be considered on a case by case basis for the purpose of facilitating the excavation work on the building. For building relocation to be considered, the contractor must provide 10 day advance notice in writing to the Architect of the condition. The Architect shall review the condition and advise if relocation will be permitted and if permitted, will establish the revised location in drawing form as part of a Construction Change Directive within 3 days of the site review. The Contractor agrees that all changes to all building systems affected by the revised position and height of the building will be implemented by the Contractor at no additional cost to the Owner. Decisions to relocate buildings will not be unreasonably withheld. Contractor shall incorporate any approved relocation in the As Built Drawings required in the Contract Documents

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.6 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: As indicated.

C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.7 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.

D. Reconstruct subgrades damaged by rain, accumulated water, or construction activities, as directed by Architect.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for record documents.
3. Inspecting and testing underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.11 UTILITY TRENCH BACKFILL

A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.

C. Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.

D. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

E. Coordinate backfilling with utilities testing.

F. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

G. Place and compact final backfill of satisfactory soil material to final subgrade.

H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

3.13 MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.15 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.16 SUBSURFACE DRAINAGE

A. Drainage Piping: Drainage pipe is specified in Division 2 Section "Foundation Drainage Systems."

B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.

1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698.

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.

1. Compact each course of filter material to 95 percent of maximum dry density according to ASTM D 698.

2. Place and compact impervious fill material over drainage backfill to final subgrade.

3.17 SUBBASE AND BASE COURSES

A. Under pavements and walks, place subbase course on prepared subgrade and as follows:
   1. Place base course material over subbase.
   2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
   3. Shape subbase and base to required crown elevations and cross-slope grades.
   4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
   5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557

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3.18 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
   1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
   2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
   3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.19 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02511 - HOT-MIX ASPHALT PAVING

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 the following:

1. Hot-mix asphalt paving.
2. Hot-mix asphalt patching.
3. Hot-mix asphalt overlays.
4. Pavement-marking paint.
5. Wheel stops.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for aggregate subbase and base courses and aggregate pavement shoulders.

1.3 SYSTEM DESCRIPTION

A. Provide hot-mix asphalt pavement according to the materials, workmanship, and other applicable requirements of the standard specifications of the state or of authorities having jurisdiction.

1. Standard Specification: As indicated.

1.4 SUBMITTALS

A. Product Data: For each product specified. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: For each job mix proposed for the Work.

C. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate dedicated handicapped spaces with international graphics symbol.

D. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Material Test Reports: Indicate and interpret test results for compliance of materials with requirements indicated.

F. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed hot-mix asphalt paving similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Manufacturer Qualifications: Engage a firm experienced in manufacturing hot-mix asphalt similar to that indicated for this Project and with a record of successful in-service performance.

1. Firm shall be a registered and approved paving mix manufacturer with authorities having jurisdiction or with the DOT of the state in which Project is located.

C. Testing Agency Qualifications: Demonstrate to Architect's satisfaction, based on Architect's evaluation of criteria conforming to ASTM D 3666, that the independent testing agency has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

D. Asphalt-Paving Publication: Comply with AI's "The Asphalt Handbook," except where more stringent requirements are indicated.

E. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings" Review methods and procedures related to asphalt paving including, but not limited to, the following:

1. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
2. Review condition of substrate and preparatory work performed by other trades.
3. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
4. Review and finalize construction schedule for paving and related work. Verify availability of materials, paving Installer's personnel, and equipment required to execute the Work without delays.
5. Review inspection and testing requirements, governing regulations, and proposed installation procedures.
6. Review forecasted weather conditions and procedures for coping with unfavorable conditions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location and within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if substrate is wet or excessively damp or if the following conditions are not met:

1. Prime and Tack Coats: Minimum surface temperature of 60 deg F.
2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: Sound; angular crushed stone; crushed gravel; or properly cured, crushed blast-furnace slag; complying with ASTM D 692.

C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone; gravel, properly cured blast-furnace slag, or combinations thereof; complying with ASTM D 1073.

1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with ASTM D 242.

2.2 ASPHALT MATERIALS

A. Asphalt Cement: ASTM D 3381 for viscosity-graded material.

B. Undersealing Asphalt: ASTM D 3141, pumping consistency.

C. Prime Coat: ASTM D 2027; medium-curing cutback asphalt; MC-30, MC-70, or MC-250.

D. Tack Coat: ASTM D 977, emulsified asphalt or ASTM D 2397, cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.

E. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Sand: ASTM D 1073, Grade Nos. 2 or 3.

B. Pavement-Marking Paint: Alkyd-resin type, ready-mixed, complying with FS TT-P-115, Type I, or AASHTO M-248, Type N.

C. Wheel Stops: Precast, air-entrained concrete, 2500-psi minimum compressive strength, approximately 6 inches high, 9 inches wide, and 84 inches long. Provide chamfered corners and drainage slots on underside, and provide holes for anchoring to substrate.

1. Dowels: Galvanized steel, diameter 3/4 inch, minimum length 10 inches.

2.4 MIXES

A. Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI's "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: As indicated.
3. Surface Course: As indicated.

B. Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and designed according to procedures in AI's "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types."

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Provide mixes complying with the composition, grading, and tolerance requirements of ASTM D 3515 for the following nominal, maximum aggregate sizes:
   a. Base Course: 1 inch.
   b. Surface Course: 1/2 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

C. Notify Architect in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily corrected.

3.2 PATCHING AND REPAIRS

A. Patching: Saw cut perimeter of patch and excavate existing pavement section to sound base. Recompact new subgrade. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically.

1. Tack coat faces of excavation and allow to cure before paving.
2. Fill excavation with dense-graded, hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.
3. Partially fill excavation with dense-graded, hot-mix asphalt base mix and compact while still hot. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

B. Leveling Course: Install and compact leveling course consisting of dense-graded, hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.

1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.

C. Crack and Joint Filling: Remove existing filler material from cracks or joints to a depth of 1/4 inch. Refill with asphalt joint-filling material to restore watertight condition. Remove excess filler that has accumulated near cracks or joints.

D. Tack Coat: Apply uniformly to existing surfaces of previously constructed asphalt or portland cement concrete paving and to surfaces abutting or projecting into new, hot-mix asphalt pavement. Apply at a uniform rate of 0.05 to 0.15 gal./sq. yd. of surface.

1. Allow tack coat to cure undisturbed before paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.3 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

1. Mix herbicide with prime coat when formulated by manufacturer for that purpose.

C. Prime Coat: Apply uniformly over surface of compacted-aggregate base at a rate of 0.15 to 0.50 gal./sq. yd.. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure for 72 hours minimum.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use just enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt mix on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness, when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.

5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide, except where infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete asphalt base course for a section before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 JOINTS

A. Construct joints to ensure continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat.
2. Offset longitudinal joints in successive courses a minimum of 6 inches.
3. Offset transverse joints in successive courses a minimum of 24 inches.
4. Construct transverse joints by bulkhead method or sawed vertical face method as described in AI's "The Asphalt Handbook."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.6 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F .

B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Repair surfaces by loosening displaced material, filling with hot-mix asphalt, and rerolling to required elevations.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling, while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 1559, but not less than 94 percent nor greater than 100 percent.
2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials. Remove paving course over area affected and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.7 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.8 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to cure for 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

3.9 WHEEL STOPS

A. Securely attach wheel stops into pavement with not less than 2 galvanized steel dowels embedded in precast concrete at one-third points. Firmly bond each dowel to wheel stop and to pavement.

1. Extend upper portion of dowel 5 inches into wheel stop and lower portion a minimum of 5 inches into pavement.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.

1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D 979.

1. Reference laboratory density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 1559, and compacted according to job-mix specifications.
2. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
3. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
    a. One core sample will be taken for every 1000 sq. yd.or less of installed pavement, but in no case will fewer than 3 cores be taken.
    b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 02511

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 02512 - WATER SERVICE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: This Section includes water system piping for potable-water service and fire-protection service, outside the building.

B. Unless otherwise indicated, the minimum pressure requirements for water system piping is 150 psig (1035 kPa) for all underground piping, except 200 psig (1380 kPa) for piping downstream from fire department connections.

C. Comply with NFPA 24, "Standard for the Installation of Private Fire Service Mains and Their Appurtenances," for materials, installations, tests, and flushing.

D. Comply with NFPA 70.

E. Pipe Marking: NSF 14, "NSF-pw".

PART 2 - PRODUCTS

2.1 DUCTILE-IRON PIPE AND FITTINGS

A. Ductile-Iron Pipe: AWWA C151, Classes 150, 200, and 250; with AWWA C104 cement-mortar, seal-coated lining; AWWA C111 gaskets, glands, bolts and nuts, and rubber gaskets.

B. Ductile- and Cast-Iron Pipe Fittings: AWWA C110 ductile iron or cast iron, 250-psig (1725-kPa) minimum pressure rating, and AWWA C104 cement-mortar lining.

C. Ductile-Iron Pipe, Grooved-End Fittings: ASTM A 47 malleable-iron or ASTM A 536 ductile-iron, AWWA-pipe-size, grooved-end fittings with cement lining or FDA-approved interior coating, designed to accept AWWA C606 couplings.

D. Ductile- and Gray-Iron Flanged Fittings: AWWA C110, 250-psig (1725-kPa) minimum pressure rating, with AWWA C104 cement-mortar lining.

E. Ductile-Iron, Flexible Expansion Joints: Compound fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153.

F. Ductile-Iron Deflection Fittings: Compound coupling fitting with sleeve and flexing sections, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153; rated for 250-psig (1725-kPa) minimum working pressure, and with cement lining or FDA-approved epoxy interior coating, for up to 20-degrees deflection.

G. Ductile-Iron Expansion Joints: 3-piece assembly complying with AWWA C110 or AWWA C153. Units rated for 250-psig (1725-kPa) minimum working pressure, and with cement lining or FDA-approved epoxy interior coating, for expansion indicated.

H. Ductile-Iron Pipe and Ductile- or Cast-Iron Fittings: The following materials apply:

1. Push-On Joints: AWWA C111 rubber gaskets and lubricant.
2. Mechanical Joints: AWWA C111 ductile- or gray-iron glands, high-strength steel bolts and nuts, and rubber gaskets.
3. Flanged Joints: AWWA C115 ductile- or gray-iron pipe flanges, rubber gaskets, and high-strength steel bolts and nuts.

2.2 PVC PIPE AND FITTINGS

A. PVC Pipe: AWWA C900, Classes 150 and 200; with bell end and ASTM F 477 gasket, with plain end for ductile- or cast-iron fittings, or with plain end for PVC gasket fittings.

B. PVC Pipe Couplings and Fittings: AWWA C900, with ASTM F 477 gaskets.

C. Primers for Solvent-Cement Joints: ASTM F 656 with ASTM D 2564 solvent cement.

D. Plastic Pipe Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.3 VALVES

A. Gate Valves: UL 262, FM approved for fire-protection service. AWWA C500, nonrising stem, cast-iron double disc, bronze disc and seat rings, bronze stem, cast- or ductile-iron body and bonnet, stem nut, 200-psig (1380-kPa) working pressure, mechanical-joint ends.

B. Valve Boxes: Cast-iron box with top section and cover with lettering "WATER," bottom section with base of size to fit over valve and barrel approximately 5 inches (125 mm) in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.

C. Indicator Posts: UL 789, FM-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of bury of valve.

D. Curb Stops: Bronze body, ground key plug or ball, and wide tee head, with inlet and outlet to match service piping material.

2.4 SPECIALTIES

A. Fire Hydrants: Cast-iron body, compression-type valve, opening against pressure and closing with pressure, 6-inch NPS (DN150) mechanical-joint inlet, 150-psig (1035-kPa) working pressure. NFPA 1963, with external hose thread used by local fire department. Include cast-iron caps with steel chains.

B. Exposed, Sidewalk Fire Department Connections: UL 405 cast-brass body, with thread inlets according to NFPA 1963 and matching local fire department hose threads, and threaded NPS bottom outlet.

C. ASSE standard backflow preventers, of size indicated for maximum flow rate and maximum pressure loss indicated.

D. Hose Connection Vacuum Breakers: ASSE 1011, nickel plated, with nonremovable and manual drain features, and ASME B1.20.7 3/4-11.5NH threads for garden hose on outlet. Units attached to rough-bronze-finish hose connections may be rough bronze.

E. Water-Flow Indicators: UL 753, FM-approved, vane-type, water-flow detector, rated to 250 psig (1725 kPa); designed for horizontal or vertical installation; with 2 single pole, double-throw (SPDT) circuit switches to provide isolated alarm and auxiliary contacts, 7 A 125 V, ac and 0.25 A 24 V, dc; complete with factory-set, field-adjustable retard element to prevent false signals and with tamperproof cover that sends a signal when cover is removed.

F. Plastic Underground Warning Tapes: Polyethylene plastic tape, 6 inches (150 mm) wide by 4 mils (0.1 mm) thick, solid blue in color with continuously printed caption in black letters "CAUTION - WATER LINE BURIED BELOW."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Connect water system piping and water-supply source and building water-distribution and fire-protection systems at the building wall in locations and pipe sizes indicated.

B. Install restrained joints for buried piping within 60 inches (1500 mm) of building. Use restrained-joint pipe and fittings, thrust blocks, anchors, tie rods and clamps, and other supports at vertical and horizontal offsets.

C. Install fittings for changes in direction and branch connections.

D. Install ductile-iron pipe and ductile- and cast-iron fittings according to AWWA C600.

E. Install AWWA PVC plastic pipe according to AWWA M23.

F. Bury piping at minimum depth of 36 inches (1000 mm) below finished grade and at least 18 inches (500 mm) below average local frost depth.

G. Clean and disinfect water distribution piping according to authorities having jurisdiction.

END OF SECTION 02512

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
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ST. CROIX, USVI

SECTION 02530 - SANITARY SEWERAGE

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 sanitary sewerage outside the building.

B. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for concrete structures.

1.3 DEFINITIONS

A. PVC: Polyvinyl chloride plastic.

1.4 PERFORMANCE REQUIREMENTS

A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

B. Force-Main Pressure Ratings: At least equal to system operating pressure, but not less than 150 psig.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Backwater valves and cleanouts.
   2. Manhole cover inserts.

B. Shop Drawings: Include plans, elevations, details, and attachments for the following:
   1. Precast concrete manholes, including frames and covers.
   2. Cast-in-place concrete manholes and other structures, including frames and covers.

C. Design Mix Reports and Calculations: For each class of cast-in-place concrete.

D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic structures, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

1.7 PROJECT CONDITIONS

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

B. Locate existing structures and piping to be closed and abandoned.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Architect's written permission.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. PVC Backwater Valves and Cleanouts:
    a. Canplas, Inc.
    b. IPS Corp.
    c. NDS, Inc.
    d. Plastic Oddities, Inc.
    e. Sioux Chief Manufacturing Co., Inc.
2. Manhole Cover Inserts:
    a. FRW Industries, Inc.
    b. Knutson Manufacturing Co.
    c. Parson Environmental Products, Inc.

2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe and fitting materials.

2.3 PIPES AND FITTINGS

A. PVC Pressure Pipe: AWWA C900, Class 150, for gasketed joints.
    1. PVC Pressure Fittings: AWWA C907, for gasketed joints.
B. PVC Sewer Pipe and Fittings: According to the following:
    1. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 35, for solvent-cemented or gasketed joints.
        a. Gaskets: ASTM F 477, elastomeric seals.
    2. PVC Sewer Pipe and Fittings, NPS 18 and Larger: ASTM F 679, T-1 wall thickness, bell and spigot for gasketed joints.
        a. Gaskets: ASTM F 477, elastomeric seals.

2.4 MANHOLES

A. Normal-Traffic Precast Concrete Manholes: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.
    1. Diameter: 48 inches minimum, unless otherwise indicated.
    2. Ballast: Increase thickness of precast concrete sections or add concrete to base section, as required to prevent flotation.
    3. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
    4. Riser Sections: 4-inch minimum thickness, and lengths to provide depth indicated.
    5. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
    6. Gaskets: ASTM C 443, rubber.
    7. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and cover.
    8. Steps: Fiberglass, individual steps or ladder. Include width that allows worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast or anchor into base, riser, and top section sidewalls with steps at 12- to 16-inch intervals. Omit steps for manholes less than 60 inches deep.

9. Steps: ASTM C 478, individual steps or ladder. Omit steps for manholes less than 60 inches deep.
10. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

B. Cast-in-Place Concrete Manholes: Construct of reinforced-concrete bottom, walls, and top; designed according to ASTM C 890 for A-16, heavy-traffic, structural loading; of depth, shape, dimensions, and appurtenances indicated.

1. Ballast: Increase thickness of concrete, as required to prevent flotation.
2. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and cover.
3. Steps: Fiberglass, individual steps or ladder. Include width that allows worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12- to 16-inch intervals. Omit steps for manholes less than 60 inches deep.
4. Steps: Manufactured from deformed, 1/2-inch steel reinforcement rod complying with ASTM A 615/A 615M and encased in polypropylene complying with ASTM D 4101. Include pattern designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12- to 16-inch intervals. Omit steps for manholes less than 60 inches deep.

C. Manhole Frames and Covers: ASTM A 536, Grade 60-40-18, ductile-iron castings designed for heavy-duty service. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch- diameter cover. Include indented top design with lettering "SANITARY SEWER" cast into cover.

D. Manhole Cover Inserts: Manufactured, plastic form, of size to fit between manhole frame and cover and designed to prevent stormwater inflow. Include handle for removal and gasket for gastight sealing.

1. Type: Solid.

2.5 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

C. Structure Channels and Benches: Factory or field formed from concrete. Portland cement design mix, 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio. Include channels and benches in manholes.

1. Channels: Concrete invert, formed to same width as connected piping, with height of vertical sides to three-fourths of pipe diameter. Form curved channels with smooth, uniform radius and slope.
   a. Invert Slope: 2 percent through manhole.
2. Benches: Concrete, sloped to drain into channel.
   a. Slope: 8 percent.

D. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water-cementitious materials ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.

2.6 PROTECTIVE COATINGS

A. Description: One- or two-coat, coal-tar epoxy; 15-mil minimum thickness, unless otherwise indicated; factory or field applied to the following surfaces:
   1. Concrete Manholes: On interior surface.
   2. Manhole Frames and Covers: On surfaces that will be exposed to sewer gases.

2.7 BACKWATER VALVES

A. PVC Backwater Valves: Similar to ASME A112.14.1, horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.

2.8 CLEANOUTS

A. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Division 2 Section "Earthwork."

3.2 IDENTIFICATION

A. Materials and their installation are specified in Division 2 Section "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.
   1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.3 PIPING APPLICATIONS

A. General: Include watertight joints.

B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.

C. Gravity-Flow Piping: Use the following:
   1. NPS 4 and NPS 6: PVC sewer pipe and fittings, solvent-cemented joints, or gaskets and gasketed joints.
   2. NPS 8 and NPS 10: PVC sewer pipe and fittings, solvent-cemented joints, or gaskets and gasketed joints.
   3. NPS 12 and NPS 15: PVC sewer pipe and fittings, solvent-cemented joints, or gaskets and gasketed joints.
   4. Pipe Sizes NPS 18 to NPS 24: PVC sewer pipe and fittings, gaskets, and gasketed joints.

D. Force-Main Piping: Use the following:
   1. NPS 4 to NPS 8: PVC pressure pipe, PVC pressure fittings, gaskets, and gasketed joints.
   2. NPS 10 and NPS 12: PVC pressure pipe; compact-pattern, ductile-iron fittings; gaskets; and gasketed joints.

3.4 SPECIAL PIPE COUPLING AND FITTING APPLICATIONS

A. Special Pipe Couplings: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
   1. Use the following pipe couplings for nonpressure applications:
      a. Increaser/reducer-pattern, sleeve type to join piping of different sizes.
   2. Use pressure-type pipe couplings for force-main joints. Include PE film, pipe encasement.

3.5 INSTALLATION, GENERAL

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.

B. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.

C. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

D. Install gravity-flow piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.

1. Install piping pitched down in direction of flow, at minimum slope of 2 percent, unless otherwise indicated.

E. Extend sanitary sewerage piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.

3.6 PIPE JOINT CONSTRUCTION AND INSTALLATION

A. General: Join and install pipe and fittings according to installations indicated.

B. Refer to Division 2 Section "Utility Materials" for basic piping joint construction and installation.

C. PVC Pressure Pipe and Fittings: Join and install according to AWWA M23.

D. PVC Sewer Pipe and Fittings: As follows:

1. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.

E. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

F. Install with top surfaces of components, except piping, flush with finished surface.

3.7 MANHOLE INSTALLATION

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Form continuous concrete channels and benches between inlets and outlet.

C. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere, unless otherwise indicated.

D. Install precast concrete manhole sections with gaskets according to ASTM C 891.

E. Construct cast-in-place manholes as indicated.

3.8 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318 and ACI 350R.

3.9 BACKWATER VALVE INSTALLATION

A. Install horizontal units in piping where indicated.

B. Install combination units in piping and in structures where indicated.

C. Install terminal units on end of piping and in structures where indicated. Secure units to structure walls.

3.10 CLEANOUT INSTALLATION

A. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.

B. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.

3.11 FIELD QUALITY CONTROL

A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.

1. Place plug in end of incomplete piping at end of day and when work stops.

2. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.

B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
   1. Submit separate reports for each system inspection.
   2. Defects requiring correction include the following:
      a. Alignment: Less than full diameter of inside of pipe is visible between structures.
      b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
      c. Crushed, broken, cracked, or otherwise damaged piping.
      d. Infiltration: Water leakage into piping.
      e. Exfiltration: Water leakage from or around piping.
   3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
   4. Reinspect and repeat procedure until results are satisfactory.

C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
   1. Do not enclose, cover, or put into service before inspection and approval.
   2. Test completed piping systems according to authorities having jurisdiction.
   3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
   4. Submit separate reports for each test.
   5. If authorities having jurisdiction do not have published procedures, perform tests as follows:
      a. Sanitary Sewerage: Perform hydrostatic test.
         1) Allowable leakage is maximum of 50 gal. per inch of nominal pipe size per mile of pipe, during 24-hour period.
         2) Close openings in system and fill with water.
         3) Purge air and refill with water.
         4) Disconnect water supply.
         5) Test and inspect joints for leaks.
      b. Sanitary Sewerage: Perform air test according to UNI-B-6.
         1) Option: Test concrete piping according to ASTM C 924.
      c. Force Main: Perform hydrostatic test after thrust blocks, supports, and anchors have hardened. Test at pressure not less than one and one-half times maximum system operating pressure, but not less than 150 psig.
         1) Ductile-Iron Piping: Test according to AWWA C600, Section "Hydraulic Testing."
         2) PVC Piping: Test according to AWWA M23, "Testing and Maintenance" Chapter.
   6. Manholes: Perform hydraulic test according to ASTM C 969.
   7. Leaks and loss in test pressure constitute defects that must be repaired.
   8. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 02530

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SECTION 02630 - STORM DRAINAGE

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 storm drainage outside the building.

B. Related Sections include the following:

1. Division 2 Section "Foundation Drainage Systems" for foundation drains connecting to storm drainage.
2. Division 3 Section "Cast-in-Place Concrete" for concrete structures.

1.3 DEFINITIONS

A. PE: Polyethylene plastic.

B. HDPE: High density polyethylene plastic.

C. PVC: Polyvinyl chloride plastic.

1.4 PERFORMANCE REQUIREMENTS

A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Plastic, channel drainage systems.

B. Drawings: Include plans, elevations, details, and attachments for the following:

1. Precast concrete manholes and other structures, including frames, covers, and grates.
2. Cast-in-place concrete manholes and other structures, including frames, covers, and grates.
3. Concrete Block

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic structures, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

1.7 PROJECT CONDITIONS

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe and fitting materials.

2.2 PIPES AND FITTINGS

A. Corrugated PE Pipe and Fittings: AASHTO M 294, Type S, with smooth waterway for coupling joints.

1. Soiltight Couplings: AASHTO M 294, corrugated, matching pipe and fittings to form soiltight joints.
2. Silttight Couplings: PE sleeve with ASTM D 1056, Type 2, Class A, Grade 2 gasket material that mates with pipe and fittings to form silttight joints.

2.3 SPECIAL PIPE COUPLINGS AND FITTINGS

A. Sleeve-Type Pipe Couplings: ASTM C 1173, rubber or elastomeric sleeve and band assembly fabricated to mate with OD of pipes to be joined, for nonpressure joints.

1. Sleeve Material for Plastic Pipe: ASTM F 477, elastomeric seal.

2.4 PE FILM, PIPE ENCASEMENT

A. ASTM A 674 or AWWA C105; PE film, tube, or sheet; 8-mil thickness.

2.5 CATCH BASINS

A. Normal-Traffic, Precast Concrete Catch Basins: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.

1. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
2. Riser Sections: 4-inch minimum thickness, 48-inch diameter, and lengths to provide depth indicated.
3. Top Section: Eccentric-cone type, unless concentric-cone or flat-slab-top type is indicated. Top of cone of size that matches grade rings.
4. Gaskets: ASTM C 443, rubber.
5. Grade Rings: Include two or three reinforced-concrete rings, of 6- to 9-inch total thickness, that match 24-inch- diameter frame and grate.
6. Steps: ASTM C 478, individual steps or ladder. Omit steps for catch basins less than 60 inches deep.
7. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.

B. Cast-in-Place Concrete, Catch Basins: Construct of reinforced concrete; designed according to ASTM C 890 for structural loading; of depth, shape, dimensions, and appurtenances indicated.

1. Bottom, and Top: Reinforced concrete.
2. Walls,: 8" Concrete Block
3. Channels and Benches: Concrete.
4. Steps: Manufactured from deformed, 1/2-inch steel reinforcement rod complying with ASTM A 615/A 615M and encased in polypropylene complying with ASTM D 4101. Include pattern designed to prevent lateral slippage off step. Cast or anchor into sidewalls with steps at 12- to 16-inch intervals. Omit steps for manholes less than 60 inches deep.

C. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for heavy-duty service. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch-diameter flat grate with small square or short-slotted drainage openings.

1. Grate Free Area: Approximately 50 percent, unless otherwise indicated.

2.6 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water-cementitious ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.

2.7 PIPE OUTLETS

A. Riprap Basins: Broken, irregular size and shape, graded stone.
1. Average Size: As noted on drawings.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Division 2 Section "Earthwork."

3.2 IDENTIFICATION

A. Materials and their installation are specified in Division 2 Section "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.

3.3 PIPING APPLICATIONS

A. General: Include watertight, silttight, or soiltight joints, unless watertight or silttight joints are indicated.

B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.

C. Gravity-Flow Piping: Use the following:
1. NPS 4 and NPS 6: Corrugated PE drainage tubing and fittings, silttight couplings, and coupled joints.
2. NPS 8 to NPS 15: Corrugated PE drainage tubing and fittings, silttight couplings, and coupled joints in NPS 8 and NPS 10. Use corrugated PE pipe and fittings, silttight couplings, and coupled joints in NPS 12 and NPS 15.
3. NPS 18 to NPS 36: Corrugated PE pipe and fittings; PE sleeve, silttight couplings; and coupled joints.

3.4 SPECIAL PIPE COUPLING AND FITTING APPLICATIONS

A. Special Pipe Couplings: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
1. Use the following pipe couplings for nonpressure applications:

a. Sleeve type to join piping, of same size, or with small difference in OD.

3.5 INSTALLATION, GENERAL

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.

B. Install gravity-flow piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
1. Install piping pitched down in direction of flow, at minimum slope of 2 percent, unless otherwise indicated.
2. Install piping with 12-inch minimum cover unless otherwise indicated.

3.6 PIPE JOINT CONSTRUCTION AND INSTALLATION

A. General: Join and install pipe and fittings according to installations indicated.

B. PE Pipe and Fittings: As follows:

1. Install corrugated piping according to the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings."

3.7 CATCH-BASIN INSTALLATION

A. Construct catch basins to sizes and shapes indicated.

B. Set frames and grates to elevations indicated.

3.8 STORM DRAINAGE INLET AND OUTLET INSTALLATION

A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.

B. Construct riprap of broken stone, as indicated.

3.9 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318 and ACI 350R.

3.10 FIELD QUALITY CONTROL

A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.

1. Place plug in end of incomplete piping at end of day and when work stops.
2. Flush piping between structures to remove collected debris, if required by authorities having jurisdiction.

B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

C. Test new piping systemsfor leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate reports for each test.
5. Leaks and loss in test pressure constitute defects that must be repaired.
6. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 02630

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SECTION 02751 - CONCRETE PAVEMENT

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 exterior cement concrete pavement for the following:
   1. Driveways and roadways.
   2. Curbs and gutters.
   3. Walkways.

B. Related Sections include the following:
   1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.
   2. Division 2 Section "Pavement Joint Sealants" for joint sealants within concrete pavement and at isolation joints of concrete pavement with adjacent construction.
   3. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

C. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by the requirements of the Contract Documents.

1.5 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

   1. Use flexible or curved forms for curves of a radius 100 feet or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
B. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.
C. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed.
D. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
E. Plain Steel Wire: ASTM A 82, as drawn.
F. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
G. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
H. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
I. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
    1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 CONCRETE MATERIALS

A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project.
B. Portland Cement: ASTM C 150, Type I or II.
C. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate as follows:
    1. Class: 4S.
    2. Maximum Aggregate Size: 3/4 inch nominal.
    3. Do not use fine or coarse aggregates containing substances that cause spalling.
D. Water: ASTM C 94.

2.4 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
B. Air-Entraining Admixture: ASTM C 260.
C. Water-Reducing Admixture: ASTM C 494, Type A.

2.5 FIBER REINFORCEMENT

A. Synthetic Fiber: Fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    1. Fibrillated Fibers:
        a. Fibrasol F; Axim Concrete Technologies.
        b. Fibermesh; Fibermesh, Div. of Synthetic Technologies.
        c. Forta; Forta Corporation.
        d. Grace Fibers; W. R. Grace & Co., Construction Products Div.

2.6 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

E. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

F. Products: Subject to compliance with requirements, provide one of the following:

1. Evaporation Retarder:
    a. Cimfilm; Axim Concrete Technologies.
    b. Finishing Aid Concentrate; Burke Group, LLC (The).
    c. Spray-Film; ChemMasters.
    d. Aquafilm; Conspec Marketing & Manufacturing Co., Inc.
    e. Sure Film; Dayton Superior Corporation.
    f. Eucobar; Euclid Chemical Co.

2.7 RELATED MATERIALS

A. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.8 CONCRETE MIXES

A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.

1. Do not use Owner's field quality-control testing agency as the independent testing agency.

C. Proportion mixes to provide concrete with the following properties:

1. Compressive Strength (28 Days): 3000 psi.
2. Maximum Water-Cementitious Materials Ratio: 0.45

D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

E. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 2.5 to 4.5 percent.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94 and ASTM C 1116.

1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Comply with requirements and measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixers of 1 cu. yd. or smaller capacity, continue mixing at least one and one-half minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixers of capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 PREPARATION

A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

B. Remove loose material from compacted subbase surface immediately before placing concrete.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.

1. Apply epoxy repair coating to uncoated or damaged surfaces of epoxy-coated reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap to adjacent mats.

3.4 JOINTS

A. General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.

1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
2. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
3. Provide tie bars at sides of pavement strips where indicated.
4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
5. Use epoxy bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet, unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
a. Radius: 1/4 inch.
b. Radius: 3/8 inch.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

F. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
1. Radius: 1/4 inch.
2. Radius: 3/8 inch.

3.5 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.

C. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.

D. Do not add water to concrete during delivery, at Project site, or during placement.

E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

F. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

G. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

1. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.

H. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.

I. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

J. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.

K. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 CONCRETE FINISHING

A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.

1. For all concrete pavement areas with slopes less than 15%- Coarse Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/8" to 1/4" deep with a stiff bristle broom, perpendicular to the line of traffic.

2. For all concrete pavement areas with slopes greater than 15%- Deep Combed Finish: Provide a deep combed finish by striating float-finished concrete surface 1/2" to 3/4" deep with steel rake or tined instrument, perpendicular to the line of traffic.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R 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 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 concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. 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.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:
   1. Elevation: 1/4 inch.
   2. Thickness: Plus 3/8 inch, minus 1/4 inch.
   3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
   4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
   5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
   6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
   7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
   8. Joint Spacing: 3 inches.
   9. Contraction Joint Depth: Plus 1/4 inch, no minus.
   10. Joint Width: Plus 1/8 inch, no minus.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall engage a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing Services: Testing shall be performed according to the following requirements:
   1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C 172, except modified for slump to comply with ASTM C 94.
   2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
   3. Compression Test Specimens: ASTM C 31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
   4. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.
   5. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   6. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive compressive-strength testing if adequate evidence of satisfactory strength is provided.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
8. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi.

C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.

E. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.10 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.

B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 02751

VITRAN MAINTENANCE AND OPERATIONS FACILITY
V.I. DEPARTMENT OF PUBLIC WORKS
ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.3 DEFINITIONS

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

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.
B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mix water to be withheld for later addition at Project site.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

1. Cementitious materials and aggregates.
2. Form materials and form-release agents.
3. Steel reinforcement and reinforcement accessories.
4. Admixtures.
5. Bonding agents.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:

1. ACI 301, "Specification for Structural Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface.
2. Furnish ties that, when removed, will leave holes not larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
B. Steel Bar Mats: ASTM A 184/A 184M, assembled with clips.

1. Steel Reinforcement: ASTM A 615/A 615M, Grade 60, deformed bars.
2. Steel Reinforcement: ASTM A 706/A 706M, deformed bars.

C. Plain-Steel Wire: ASTM A 82, as drawn.
D. Plain-Steel Wire: ASTM A 82, galvanized.
E. Deformed-Steel Wire: ASTM A 496.

F. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
G. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I/II.
B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:

1. Class: Severe weathering region, but not less than 3S.

C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
B. Air-Entraining Admixture: ASTM C 260.
C. Water-Reducing Admixture: ASTM C 494, Type A.
D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
E. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. Catexol 1000CL; Axim Concrete Technologies.
b. MCI 2000 or MCI 2005; Cortec Corporation.
c. DCI or DCI-S; W. R. Grace & Co., Construction Products Div.
d. Rheocrete 222+; Master Builders, Inc.
e. FerroGard-901; Sika Corporation.

2.6 RELATED MATERIALS

A. Vapor Retarder: ASTM E 1745, Class C, of one of the following materials; or polyethylene sheet, ASTM D 4397, not less than 10 mils thick:

1. Nonwoven, polyester-reinforced, polyethylene coated sheet; 10 mils thick.
2. Three-ply, nylon- or polyester-cord-reinforced, laminated, high-density polyethylene sheet; 7.8 mils thick.

3. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
4. Reglets: Where sheet flashing or bituminous are terminated in reglets, provide reglets of not less than 0.0217- inch- thick galvanized steel. Fill reglet or cover face opening to prevent intrusion of concrete debris.
5. Watertops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.

2.7 PROPORTIONING AND DESIGNING MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
   1. Do not use the same testing agency for field quality control testing.
B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect.
C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
   1. For concrete to be pumped: 4000 psi, 28-day compressive strength; water-cement ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
   2. For all other concrete: 3000 psi, 28-day compressive strength; water-cement ratio, 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained).
D. Proportion and design mixes to result in concrete slump at point of placement as follows:
   1. Ramps, slabs, and sloping surfaces: Not more than 3 inches.
   2. Reinforced foundation systems: Not less than 1 inch and not more than 3 inches.
   3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches after adding admixture to site-verified 2 - 3 inch slump concrete. Slump Limits: All concrete slump tests taken shall be accompanied by a report on dosage of admixture and water added. Dosage shall be per manufacturer's recommendation. Contractor shall submit product data on manufacturer's recommended dosage. Slump tests shall be taken prior to addition of plasticizer. Slump after test is not subject to 8" maximum slump requirement
   4. Other concrete: Not more than 4 inches
E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

F. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5 percent, unless otherwise indicated:

   1. Air Content: 5.5 percent for 1-1/2-inch- nominal maximum aggregate size.

G. Do not air entrain concrete to trowel-finished interior floors and suspended slabs. Do not allow entrapped air content to exceed 3 percent.
H. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
I. Admixtures: Use admixtures according to manufacturer's written instructions.

   1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

2.8 FABRICATING REINFORCEMENT

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

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least one and one-half minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

1. Class A, 1/8 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.
E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to

prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Do not chamfer corners or edges of concrete unless noted on drawing.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

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

1. Install anchor bolts, accurately located, to elevations required.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:

1. 28-day design compressive strength.
2. At least 70 percent of 28-day design compressive strength.
3. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
4. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR RETARDERS

A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions.
B. Fine-Graded Granular Material: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.
C. Granular Fill: Cover vapor retarder with granular fill, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.

1. Place and compact a 1/2-inch- thick layer of fine-graded granular material over granular fill.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks but no later than 4 hours after concrete placement.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.

1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Architect in writing.
C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
D. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.

1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
2. Do not apply rubbed finish to smooth-formed finish.

C. Rubbed Finish: Apply the following to smooth-formed finished concrete:

Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

1. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
2. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent

formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes.

1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. 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, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a 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
2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:

a. Specified overall values of flatness, F(F) 35; and levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and levelness, F(L) 17; for slabs-on-grade.
b. Specified overall values of flatness, F(F) 30; and levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and levelness, F(L) 15; for suspended slabs.

3. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot- long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:

a. 1/8 inch.

E. 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 method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

G. Slip-Resistive Aggregate Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

1. Uniformly spread 25-lb/100 sq. ft. of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
2. After broadcasting and tamping, apply float finish.
3. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose slip-resistive aggregate.

H. Mineral Dry-Shake Floor Hardener Finish: After initial floating, apply mineral dry-shake materials to surfaces according to manufacturer's written instructions and as follows:

1. Uniformly apply mineral dry-shake materials at a rate of 100-lb/100 sq. ft., unless greater amount is recommended by manufacturer.
2. Uniformly distribute approximately two-thirds of mineral dry-shake materials over surface by hand or with mechanical spreader, and embed by power floating. Follow power floating with a second mineral dry-shake application, uniformly distributing remainder of material, and embed by power floating.
3. After final floating, apply a trowel finish. Cure concrete with curing compound recommended by dry-shake material manufacturer and apply immediately after final finishing.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.12 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive hot temperatures. Comply with recommendations in ACI 305R for hot-weather protection during curing.
B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

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

3.13 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than seven days old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.15 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through un-reinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Concrete Temperature: ASTM C 1064; one test hourly when 80 deg F and above, and one test for each composite sample.
4. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

    a. Cast and field cure one set of four standard cylinder specimens for each composite sample.

5. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.

    a. Test two field-cured specimens at 7 days and two at 28 days.
    b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.

C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 03300

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SECTION 04200 - UNIT MASONRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and

B Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Repairs to concrete masonry, unit constructed walls and partitions.

1.3 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops the following installed compressive strengths (f'm) at 28 days.

1. For Concrete Unit Masonry: As follows, based on net area:

f'm = 1500 psi.

As indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.

B. Store 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 avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.5 CONCRETE MASONRY UNITS

A. General:

1. Provide shapes indicated and as follows for each form of concrete masonry unit required.
2. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
3. Provide square-edged units for outside corners, except where indicated as bullnose.

B. Concrete Masonry Units: ASTM C 90 and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength indicated below:

1900 psi (13.1 MPa).

2. Size: Manufactured to the actual dimensions listed below (within tolerances specified in the applicable referenced ASTM specification) for the corresponding nominal sizes indicated on
3. Drawings:

4 inch nominal: 3-5/8 inch actual.

6 inch nominal: 5-5/8 inch actual.

8 inch nominal: 7-5/8 inch actual.

1.6 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. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch (6.5 mm), use aggregate graded with 100 percent passing the No. 16 (1.18 mm) sieve.

D. Water: Potable.

1.7 REINFORCING STEEL

A. Steel Reinforcing Bars: Material and grade as follows:
   1. Billet steel complying with ASTM A 615
   2. Epoxy-coated billet steel complying with ASTM A 615 and ASTM A 775.

1.8 JOINT REINFORCEMENT

A. General: Provide joint reinforcement formed from the following:
   1. Galvanized carbon-steel wire, coating class as follows:
   2. ASTM A 153, Class B-2, for both interior and exterior walls.

B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units, and complying with requirements indicated below:
   1. Wire Diameter for Side Rods: 0.1875 inch.
   2. Wire Diameter for Cross Rods: 0.1875 inch.

C For single-wythe masonry, provide type as follows with single pair of side rods:
   1. Ladder design with perpendicular cross rods spaced not more than 16 inches o.c.

1.9 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar indicated below:
   1. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated, use type indicated below:
      a. Type: N.
      b. Type: N or RN.

1.10 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.

1.11 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections of the Specifications.

C. Leave openings for equipment to be installed before completion of masonry. After installing equipment, complete masonry to match construction immediately adjacent to the opening.

D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Mix units for exposed unit masonry from several pallets or cubes as they are placed to produce uniform blend of colors and textures.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick prior to laying if the initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb the water so they are damp but not wet at the time of laying.

1.12 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arrises, do not exceed 1/4 inch in 10 feet, nor 3/8 inch in 20 feet, nor 1/2 inch in 40 feet or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet, nor 1/2 inch in 40 feet or more. For vertical alignment of head joints, do not exceed plus or minus 1/4 inch in 10 feet, nor 1/2 inch maximum.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet nor 1/2 inch in 40 feet or more. For top surface of bearing walls, do not exceed 1/8 inch in 10 feet, nor 1/16 inch within width of a single unit.

C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls, and partitions, do not exceed 1/2 inch in 20 feet, nor 3/4 inch in 40 feet or more.

D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4 inch nor plus 1/2 inch.

E. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than 1/8 inch. Do not vary from head-joint thickness indicated by more than plus or minus 1/8 inch. Do not vary head-joint thickness from adjacent head-joint thickness by more than 1/8 inch. Do not vary from collar-joint thickness indicated by more than minus 1/4 inch or plus 3/8 inch.

1.13 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.

B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: In each course, rack back 1/2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar prior to laying fresh masonry.

1.14 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units as follows:

1. With full mortar coverage on horizontal and vertical face shells.
2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
4. Maintain joint widths indicated, except for minor variations required to maintain bond alignment. If not indicated, lay walls with 3/8-inch joints.

B. Filled Ells: Fill ells with grout, which coincide with loction of existing grouted ells in wall areas to be repaired. Provide reinforcing and spacing of ells to match existing conditions.

1.15 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.

D. 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, polyethylene film, or waterproof masking tape.

E. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

END OF SECTION 04200

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SECTION 05000 – PRE-ENGINEERED METAL BUILDING

1 DRAWINGS AND CERTIFICATION

1.1 Drawings: Contractor shall furnish complete erection drawings for the proper identification and assembly of all building components. These drawings will show anchor bolt settings, transverse cross sections, sidewall, endwall and roof framing, flashing, and sheeting and accessory installation details.

1.2 Certifications: Standard drawings and design analysis shall bear the seal of a registered professional engineer.

1.3 AISC Certification, Category MB: Building systems shall be engineered and fabricated to meet the AISC certification standard for Category MB.

2 STRUCTURAL STEEL DESIGN

2.1 GENERAL

2.1.1 All structural mill sections or welded built-up plate sections shall be designed in accordance with the AISC "Specification for Structural Steel Buildings: Allowable Stress Design and Plastic Design, June 1, 1989 with supplement No. 1.

2.1.2 All Cold-Fanned steel structural members shall be designed in accordance with the 2001 edition of the "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.2 DESIGN LOADS

2.2.1 The design loads for the building shall be, in addition to their own dead load, the live, wind, snow and seismic loads required of the following as specified:

A. International Building Code, by the International Code Council.

2.2.2 The building components shall be designed to meet the most severe conditions of load combinations set by the specified building code, but in no case be less than that produced by the following load combinations:

A. Building dead load plus roof live load.

B. Building dead load plus wind load.

2.2.3 Roof live and snow loads shall be applied on the horizontal roof projection. Wind loads shall be assumed to act horizontally and shall be applied as pressure and suction perpendicular to the building surfaces.

2.2.4 Where local jurisdiction dictates, designs based on other than above listed loads, combinations of loads, or method of load application may be obtained upon request

2.3 DESIGN NOTES

2.3.1 Vertical Deflections:

Purlins Roof Live or *Snow Load
supporting metal roof only L/150
supporting ceiling tiles L/240
supporting plaster/drywall ceiling L/360

Rafters Roof Live or *Snow Load
supporting metal roof only L/150
supporting ceiling tiles L/240
supporting plaster/drywall ceiling L/360

Floor joist/Beams Floor Live load
supporting concrete slabs L/360
supporting plywood deck, etc. L/240

Crane Runway Crane Vertical Static Load Top Running Cranes:
CMAA Classes A, B, C L/600
CMAAClass D L/800
CMAA Classes E, F L/1000
Underhung and Monorail Cranes:
CMAA Classes A,B,C L/450

Job Crane Crane Vertical Load L/225

Lintel Beams Total Load L/600 ≤0.3"

Horizontal Deflections: **10Yr. = 5Oyr.X 75%

Wall Panels **10 Yr. Design Wind Pressure L/120

Girts **10 Yr. Design Wind Pressure supporting metal wall L/120
supporting masonry wall L/240 ≤1 ½"

Frame **10 Yr. Design Wind Pressure supporting metal wall H/60
supporting masonry wall H/100
Crane Lateral Load or**10 Yr. Wind Pressure:
pendant operated crane H/100 @ Runway
cab operated crane H/240≤ 2" @ Runway

Crane Runways Crane Lateral Load L/400

Spandrel Beams **10 Yr. Design Wind Pressure L/240

3 BASIC MATERIAL SPECIFICATIONS

3.1 PRIMARY FRAMING STEEL

3.1.1 Steel for mill-rolled structural sections shall conform to the requirements of ASTM specification A 36 or ASTM A 572 Grade 50 or 55 as applicable.

3.1.2 Steel for all built-up sections shall meet as applicable the physical and chemical properties of:

A. ASTM A 1011, Grade 55.
B. ASTM A 572, Grade 55.
C. ASTM A 529, Grade 55.

3.1.3 Steel for all endwall "C' sections shall meet the physical and chemical properties of ASTM A 1011, Grade 55.

3.2 SECONDARY FRAMING STEEL

3.2.1 Steel used to form purlins, girts, eave struts and "C' sections shall meet the physical and chemical properties of ASTM A 1011, Grade 55.

3.2.2 Steel used to form zinc-coated (galvanized) purlins and girts shall meet the physical and chemical properties of ASTM A 653, Grade 50, 55 ksi minimum yield and G90 Coating designation as described in ASTM A 924.

3.3 ROOF AND WALL PANEL MATERIAL

Exterior panels shall conform to one of the following:

3.3.1 Panel material as specified shall be 24 gage AZ50 or AZ55 aluminum-zinc alloy-coated steel, conforming to the requirements of ASTM A 792, Grade 50, Class 2.
Minimum yield strength shall be 50,000 psi.

4 STRUCTURAL FRAMING

4.1 GENERAL

4.1.1 Framing members shall be shop fabricated for field bolted assembly. The surfaces of the bolted connections shall be smooth and free from burrs or distortions.

4.1.2 All shop connections shall be in accordance with the American Welding Society (AWS) Code for Building Construction or the Canadian Welding Bureau (CWB), as applicable. Certification of welder qualification will be furnished when required and specified at order entry.

4.1.3 All framing members where necessary shall carry an easily visible identifying mark.

4.1.4 Visual inspection methods will be used for verification of weld quality as outlined by the AWS Structural Steel Welding Code, Visual Inspection Acceptance Criteria, Table 6.1.

4.2 PRIMARY FRAMING

4.2.1 Rigid Frame: All rigid frames shall be welded, built-up "" sections or mill-rolled structural sections. The columns and the rafters may be either uniform depth or tapered.

4.2.2 Endwall Frames: All endwall roof beams and endwall columns shall be cold-formed "C" sections, mill-rolled structural sections, or built-up "1" sections as required by design.

4.2.3 Plates, Stiffeners, etc.: All base plates, splice plates, cap plates, and stiffeners shall be factory welded into place on the structural members.

4.2.4 Bolt Holes, etc.: All base plates and flanges shall be shop fabricated to include bolt connections holes. Webs shall be shop fabricated to include cable brace or rod brace holes and flange brace holes.

4.3 SECONDARY FRAMING

4.3.1 Purlins and Girts: Purlins and girts shall be cold-formed "Z or "C" sections with stiffened flanges. They shall be prepunched at the factory to provide for field bolting to the primary framing. They shall be simple or continuous span as required by design.

4.3.2 Eave Struts: Eave struts shall be unequal flange, coldformed "C" sections.

4.3.3 Base Angle: A base member will be supplied by which the base of the wall covering may be attached to the perimeter of the slab. This member shall be secured to the concrete slab with concrete anchors as shown on the drawings.

4.4 BRACING

4.4.1 Diagonal Bracing: Diagonal bracing in the roof and sidewall shall be used to remove longitudinal loads (wind, crane, etc.) from the structure. This bracing will be furnished to length and equipped with bevel washers, cut washers and nuts at each end. It may consist of rods threaded at each end or galvanized cable with suitable threaded end anchors.

4.4.2 Flange Braces: The compression flange of all primary framing shall be braced laterally with angles connecting to the webs of purlins or girts so that the flange compressive stress is within allowable limits for any combination of loadings.

4.4.3 Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal, fixed base columns, or wall diaphragm must be used. Wind bracing in the roof and/or walls need not be furnished where it can be shown that the diaphragm strength of the roof and/or wall covering is adequate to resist the applied wind forces.

5 ROOF AND WALL COVERING

5.1 GENERAL

5.1.1 Wall panels shall be Architectural "Batten" type. Submit profile for Architects approval.

5.1.2 Roof panels shall be either "C" type. Submit profile for Architects approval.

5.1.5 Roof and wall panels shall be 24 gage 80,000 psi. Pre-painted panels shall have American Buildings Company's Premium 70 Plus Kynar 500® Finish or equal.

5.2.11 Panel Length: All waif panels shall be continuous from sill to roof line and all roof panels shall be continuous from eave to ridge except where length becomes prohibitive for handling purposes. Roof panel end laps shall be a minimum 6" for Standing Seam and Loc Seam panels and a minimum 4" for Long Span III panels. Wall panel end laps shall be a minimum 3".

5.2.12 Endwall Edge Cuts: All endwall panels for buildings with less than 1 ½ to 12 roof slopes shall be square cut. All endwall panels (excluding Shadow panels) for buildings with a roof slope over 1 1/2:12 shall be bevel cut.

5.2.13 A certain amount of waviness called "oilcanning" may exist in the flat portion of the panel. Minor waviness of the panel is not sufficient cause for rejection. Oilcanning does not affect the structural integrity of the panel.

6 MISCELLANEOUS MATERIAL SPECIFICATIONS 6.1 FASTENERS

6.1.1 Structural Bolts: All bolts used in primary splices and secondary framing connections shall be ASTM A325 as required by design.

6.1.2 Fasteners for Roof Panels: All roof panels shall be attached to secondary framing members by the following:

A. Premium roof fasteners shall be No. 12 X 1 1/4" or No. 14 X 1" self-drilling carbon steel screws with a molded zinc alloy or capped stainless steel cupped hex washer head. Roof fasteners shall be assembled with an EPDM washer. Premium roof fasteners shall be used on all pre-painted or warranted roofs.

6.1.3 Fasteners for roof panel side laps and flashing connections: Long Span III Roof Panel side laps and flashing connections shall be stitched by the following:

A. Premium roof fasteners shall be No. 14 X 7/8" self-drilling carbon steel screws with a molded zinc alloy or capped slain less steel cupped hex washer head. Roof fasteners shall be assembled with an EPDM washer. Premium roof fasteners shall be used on all pre-painted or warranted roofs.

6.1.4 Fasteners for roof panel to flashing connections: Lac Seam and Standing Seam roof systems shall be the following:

A. Premium roof fasteners shall be No. 14 X 1" self-drilling carbon steel screws with a molded zinc alloy or capped slain less steel cupped hex washer head. Roof fasteners shall be assembled with an EPDM washer. Premium roof fasteners shall be used on all pre-painted or warranted roofs.

6.1.5 Fasteners for the Roof Panel Clips: All Standing Seam and Loc Seam Panel Clips shall be attached to the purlins by the following:

A. Self-drilling screws for attaching expansion clips shall be carbon steel No. 12 X 1 1/4" hex-head, cadmium or zinc plated. The fasteners are applicable for use with fiberglass blanket insulation with thicknesses up to and including 6 inches.

B. Self-drilling screws for attaching expansion clips on bar joists shall be carbon steel No. 12 X 1 1/4" Tek 4 or No. 12 X 1 1/2" Tek 5 hex-head, cadmium or zinc plated. The fasteners are applicable for use with fiberglass blanket insulation with thicknesses up to and including 6 inches.

6.1.6 Fasteners for Wall Panels and Liner Panels: All Long Span III, Architectural III, Architectural V or Multi-Rib Panels shall be attached to the secondary framing members by means of self-drilling carbon steel screws, No. 12 X 1 1/4" hex washer head, cadmium or zinc plated. The fasteners shall be color coordinated with a premium coating system which protects against corrosion and weathering. The fasteners are applicable for use with fiberglass blanket insulation up to 4" (6" for Architectural III and Architectural "V' Panels) in thickness.

6.1.7 Fasteners for Wall Panel side laps and Liner Panel side laps: All Long Span III, Architectural III, Architectural "V" or Multi-Rib Panel side laps shall be stitched by means of self-drilling carbon steel screws, No. 14 X 7/8" cadmium or zinc plated. The fasteners shall be color coordinated with a premium coating system which protects against corrosion and weathering.

6.3 CLOSURES AND SEALANTS

6.3.1 Closure Strips: The corrugations of the roof and wall panels shall be filled with pre-formed closed cell non-shrinking, laminated polyethylene closures along the eave, ridge and rake when required for weathertightness.

6.3.2 Metal Closures: The corrugations and pan area of the Standing Seam II and Standing Seam 360 Roof Panel shall be filled with formed metal closures. The closures shall be formed from 20 gage steel to the shape of the configuration.
The closure exterior finish shall be AZ55 aluminum-zinc alloy-coated.

6.3.3 Sealant: Long Span Panel roof side laps, end laps, roof flashing laps, ridges and eave shall be sealed with 1/2" X 1/8" tape mastic, Sika Sika-Tape TC-95 or equal. The material shall be non-staining, non-corrosive, non-toxic, and non-volatile. Composition shall be 100% solid ethylene propylene copolymer tape. Service temperature shall be from -60°F to +212°F.

6.3.4 Sealant: Side laps shall have factory applied mastic, SikaLastomer -511 or equal. Its composition shall be 85% solids by weight. Service temperature range shall be from -60°F to +220°F.

6.3.5 Sealant: End laps, roof flashing laps, ridges and eave shall be sealed with tape mastic, Sika Sika-Tape TC-95 or equal. The material shall be nonstaining, non-corrosive, non-toxic, and non-volatile.
Composition shall be 100% solid ethylene propylene copolymer tape. Service temperature shall be from -60°F to +212°F

6.3.6 Caulk: Eaves, endlaps, ridge and eave closures are sealed with non-skinning butyl caulk, S ikaLastomer-511 or equal.
Its composition is 85% solids by weight. Service temperature range is -60°F to +220°F. All gutter and downspout joints, roof accessories, doors, windows, and louvers shall be sealed with polyurethane caulk, Sika, SikaFlex 219LM or approved equal. It shall meet or exceed the requirements of Federal Specification TT-80023OC, Type II, Class A.

6.4 GUTTER, FLASHING AND DOWNSPOUT

6.4.1 Gutters and Flashings: All standard exterior gutters are 26 gage G90 zinc-coated (Galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish. Standard rake flashing is 26 gage GOO zinc-coated (galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish.
All other gutter and flashings shall be a minimum 26 gage steel.

6.4.2 Downspouts: All downspouts shall be 29 gage zinc-coated (galvanized) or aluminum-zinc alloy-c oated steel with color coordinated, pre-painted finish, rectangular in shape.

7 PAINTING

ASTM testing is performed on specifically and carefully prepared test coupons. These tests are designed to accurately compare varying products in a controlled environment and may or may not be indicative of actual field results.

7.1 STRUCTURAL PAINTING

Primer systems are not intended as finish coat paint systems and do not offer the uniformity of appearance, durability or corrosion resistance of a top coat applied over a primer. Primers are designed to promote the wetting action and adhesion of a top coat and offer only short-term corrosion protection from ordinary atmospheric exposure.

7.1.1 Shop Applied Primers - All uncoated structural steel members shall be cleaned of all foreign matter and loose mill scale as per requirements of the Structural Steel Painting Council cleaning specification SSPC-SP2 and SSPC-SP1 as required. Structural steel members will then receive a one mil coat of manufacturer's red oxide primer. Primer meets or exceeds the performance requirements of the specification SSPC-15, for Type 1 Red Oxide Paint Primer is not intended as a finish coat and is compatible only for top coating with aliphatic solvent based alkyd enamels.

8 ERECTION AND INSTALLATION

The erection of the metal building and the installation of accessories shall be performed in accordance with the manufacturer's erection manuals and the building erection drawings. The erection shall be performed by a qualified erector using proper tools and equipment. In addition, erection practices shall conform to Section 4, Common Industry Practices found in the Metal Building Systems Manual, 2002 edition. There shall be no field modifications to primary structural members except as authorized and specified by the manufacturer or Architect.

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SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL (NOT APPLICABLE)

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Dressed lumber, S4S, marked with grade stamp of inspection agency.

2.2 TREATED MATERIALS

A. Preservative-Treated Materials: AWPA C2 lumber and AWPA C9 plywood, labeled by an inspection agency approved by ALSC's Board of Review. Treat indicated items and the following:
   1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
   2. Concealed members in contact with masonry or concrete.
   3. All wood framing members.
   4. Wood floor plates installed over concrete slabs directly in contact with earth.
   5. All structural wood members and wood blocking shall be pressure treated lumber.

2.3 LUMBER

A. Dimension Lumber: The following grades per inspection agency indicated.
   1. Framing Other Than Non-Load-Bearing Partitions: Construction or No. 2 grade: Southern pine:

B. Timbers 5-inch Nominal Size and Thicker: Southern pine, No. 1 Dense per SPIB rules

C. Concealed Boards: Mixed southern pine**:** No. 2 per SPIB rules

D. Miscellaneous Lumber: No. 3 or Standard grade of any species for nailers, blocking, and similar members.

2.4 MISCELLANEOUS PRODUCTS

A. Fasteners: Size and type indicated. Provide fasteners with a hot-dip zinc coating G185 HDG per ASTM A 653 or of Type 316 stainless steel.
   1. Power-Driven Fasteners: CABO NER-272.
   2. Bolts: Steel bolts complying with hex nuts and, where indicated, flat washers.

B. Metal Framing Anchors: Hot-dip galvanized steel of structural capacity, type, and size indicated.

C. Adhesives for Field Gluing Panels to Framing: APA AFG-01.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Fit rough carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, blocking, and similar supports to allow attachment of other construction.

B. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.
   2. Published requirements of metal framing anchor manufacturer.
   3. ""Table 2304.9.1 -- Fastening Schedule" of the International Building Code.

C. Use hot-dip galvanized or stainless-steel nails.

END OF SECTION 06100

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SECTION 06105 - MISCELLANEOUS CARPENTRY

PART 1 - GENERAL (Not Applicable)

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Dressed lumber, S4S, marked with grade stamp of inspection agency.

2.2 TREATED MATERIALS

A. Preservative-Treated Materials: AWPA C2 lumber and AWPA C9 plywood, labeled by an inspection agency approved by ALSC's Board of Review. Treat indicated items and the following:
   1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
   2. Concealed members in contact with masonry or concrete.
   3. Wood framing members less than 18 inches (460 mm) above grade.
   4. Wood floor plates installed over concrete slabs directly in contact with earth.
   5. All Structural wood members and wood blocking shall be pressure treated lumber.

2.3 LUMBER

A. Framing: Construction or No. 2 grade: Southern pine: SPIB.

B. Concealed Boards: Mixed southern pine, No. 2

C. Miscellaneous Lumber: No. 3 or Standard grade of any species for nailers, blocking, and similar members.

2.4 INTERIOR WOOD TRIM

A. Softwood Trim: Eastern white, Idaho white, lodgepole, ponderosa, or sugar pine; grade B & Btr Select or Supreme.

B. Wood Molding Patterns: Stock moldings indicated, made to patterns included in WMMPA WM 7 and graded under WMMPA WM 4; N-Grade for transparent finish.

2.5 PANEL PRODUCTS

A. Wood-Based Structural-Use Panels: DOC PS 2. Provide plywood complying with DOC PS 1, where plywood is indicated.
   1. Factory mark panels evidencing compliance with grade requirements.
   2. Miscellaneous Concealed Panels: APA-rated sheathing, Exposure 1, span rating to suit framing in each location.
   3. Miscellaneous Exposed Plywood: A-D Interior, thickness as indicated, but at least 1/2 inch

2.6 FASTENERS

A. Fasteners of size and type indicated. Where carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating G185 HDG per ASTM A 653 of Type 316 stainless steel.
   1. Power-Driven Fasteners: CABO NER-272.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fit carpentry to other construction; scribe and cope for accurate fit. Correlate location of furring, blocking, and similar supports to allow attachment of other construction.

B. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

C. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

D. Installation of Structural-Use Panels: Comply with applicable recommendations contained in APA Form No. E30.

E. Install wood trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.
   1. Install trim after gypsum board joint finishing operations are completed.
   2. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining trim with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.

END OF SECTION 06105

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SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

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 the following:
   1. Laminate-clad cabinets (plastic-covered casework) - Replacement.
   2. Plastic-laminate countertops - Replacement

1.3 SUBMITTALS

A General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

C. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

D. Samples for initial selection of the following in the form of manufacturer's color charts consisting of actual units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.
   1. Plastic laminates.

E. Samples for verification of the following:
   1. Exposed cabinet hardware, one unit for each type and finish.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
   1. Include the veneering of wood doors in the single-firm production where veneer matching extends across wood doors.
   2. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes, and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet-work is completed.

B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1. MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:
   1. Hardboard: AHA A135.4.
   2. 5/8" Termite resistant hardwood plywood for doors and cabinet cases
   3. 1/2" Termite resistant hardwood plywood for drawer cases

B. Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated in the Work include, but are not limited to, the following:
      Formica Corporation.
      Laminart.
      Nevamar Corp.
      Pioneer Plastics Corp.
      Westinghouse Electric Corp.; Specialty Products Div.
      Ralph Wilson Plastics Co.

C. Adhesive for Bonding Plastic Laminate: Contact cement.

2.2 CABINET HARDWARE AND ACCESSORY MATERIALS

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware."

B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.
   1. Satin Chromium Plated BHMA 652 for steel base.

C. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.

2.3 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.
   1. For metal framing supports, provide screws as recommended by metal-framing manufacturer.

C. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.

D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.4 FABRICATION, GENERAL

A. Interior Woodwork Grade: Provide interior woodwork complying with the referenced quality standard and of the following grade:

1. Grade: Custom Grade.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

C. Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

D. Shop-cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges with a water-resistant coating.

2.5 LAMINATE-CLAD CABINETS (PLASTIC-COVERED CASEWORK)

A. Quality Standard: Comply with AWI Section 400 requirements for laminate-clad cabinets.
1. Grade: Custom Grade

B. AW Type of cabinet construction: Flush overlay, frameless

C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
1. Horizontal Surfaces Other than Tops: GP-50, 0.050-inch nominal thickness.
2. Vertical Surfaces: GP-28, 0.028-inch nominal thickness.
3. Edges: PVC tape .018 inch minimum thickness matching laminate in color, pattern and finish.

D. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
1. Surfaces Other than Drawer Bodies: Thermoset decorative overlay.
2. Drawer Sides and Backs: .020 linear liminate
3. Drawer Bottoms: Fabricator's standard cured wet film
4. Dimensions: Kitchen Base - 36" high, 24" deep;
a.. Wall Cabinet: 30" high, 12" deep typical and 18" high at sink and range as applicable.
b Bath Vanity - 32" high, 22" deep. 12" shelf in all base cabinets and wall cabinets.
5. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
a. Match Architect's sample

2.6 COUNTERTOPS

A. Quality Standard: Comply with AWI Section 400 requirements for countertops.
1. Dimensions: 24" deep nominal with 4" high backsplash.
a. Grade: Custom Grade.

B. Type of Top: High-pressure decorative laminate complying with the following:
1. Grade: GP-50, 0.050-inch nominal thickness.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements: Match Architects Sample

D. Edge Treatment: Same as laminate cladding on horizontal surface

E. Core Material: 3\4" Termite resistant plywood.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches for plumb and level (including tops).

C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.

E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Tops: Anchor securely to base units and other support systems as indicated. Calk space between backsplash and wall with specified sealant.
3. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
4. After completion of door adjustment, provide one additional screw in the extra opening on the hing for additional stability.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

3.5 CABINET HARDWARE AND ACCESSORY SCHEDULE

A. Concealed (European Self Closing Type) Hinges: B01602.

B. Pulls: Vinyl pulls, 4 inches long, 5/16 inches in diameter.

C. Shelf rests - vinyl: B04071.

D. Drawer Slides: Side-mounted, full-extension, epoxy coated steel drawer slides with steel ball bearings, complying with BHMA A156.9, Grade 1 and rated for the following loads:

1. Box Drawer Slides: 100 lbf .

END OF SECTION 06402

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data for each type of insulation product specified.

B. Surface-Burning Characteristics: ASTM E 84, flame-spread ratings of 75 or less and smoke-developed ratings of 450 or less

PART 2 - PRODUCTS

2.1 INSULATION PRODUCTS

A. Flexible Glass-Fiber Insulation: ASTM C 655, Type I, Unfaced

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install insulation at walls and above ceilings as indicated in drawings.

END OF SECTION 07210

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SECTION 07411 - METAL ROOF PANELS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and color Samples.

B. Warranty

1. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
2. Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal roof panels within specified warranty period and agreeing to repair finish or replace roof panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to color fade, chalking, cracking, peeling, and loss of film integrity.
3. Finish Warranty Period: 20 years from date of Substantial Completionwith requirement that owner wash roof with sweet water a minimum of 3 times per year.

PART 2 - PRODUCTS

2.1 METAL ROOF PANELS

Manufacturers:

a. AEP-Span.
b. American Buildings Roofing and Architectural Products.
c. Architectural Building Components.
d. Berridge Manufacturing Co.
e. Butler Manufacturing Co.
f. Carlisle Engineered Metals.
g. Englert, Inc.
h. Fabral/Gentec Building Products, Inc.
i. Flexospan, Inc.
j. McElroy Metal, Inc.
k. Metal Building Components, Inc.
l. NCI Building Components
m. Petersen Aluminum Corp.

A. Roof Panels: Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755(ASTM A 755M) and the following rquirements:

1 .Aluminum- Zinc Alloy-Coated Steel Sheet:ASTM A 792, Class AZ-50 coating, Grade 40; structural quality.
2. Thickness: 24 gauge
3. Panel Type: Shall be manufacturer's standard round corrugated "C" panel.
Panels shall be continuous from ridge to eave.

B. Factory finish panel material by coil coating with KYNAR 500 - 2-coat fluoropolymer Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight with a total minimum dry film thickness of 0.9 mil (0.023 mm) and 30 percent reflective gloss when tested according to ASTM D 523.

C. Roof Panel Assembly: lap-seam.

2.2 ACCESSORIES

A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.
Provide exposed fasteners with heads matching color of panel by means of plastic caps or factory-applied coating.
Provide metal-backed neoprene washers under heads of exposed fasteners bearing on weather side of panels.

B. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam flexible closure strips. Cut or premold to match configuration of panels. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

D. Elastomeric Joint Sealant: ASTM C 920, of base polymer, type, grade, class, and use classifications required to seal joints in panel roofing and remain weathertight. Provide sealant recommended by panel manufacturer.

E. Gutters: Provide 24 gauge metal gutters to match the exisitng roof panel, material and finish, complete with all attachments, accessories, hardware and sealants. Gutters shall be seamless sections in longest available lengths. Corners shall be prefabricated.

F. Guttter Supports: Provide spike & ferrule supports at 36" O.C..

G. Flashings: Provide 24 gauge metal falshings to match the roofing system amd material and finish, complete with all accessories, sealants, and hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchor panels securely in place, with provisions for thermal and structural movement. Field cutting exterior panels by torch is not permitted. Install panels with exposed fasteners, unless otherwise indicated.

B. Install all components required for a complete and weatherproof panel assembly including trim, copings, fasciae, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items.

C. Separate dissimilar metals with a bituminous coating or rubberized-asphalt underlayment and separate metal panels, flashing and gutters from treated wood with bituminous coating and rubberized–asphalt underlayment.

D. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."

E. Fastner Location: Refer to roof drawings for fastner spacing. Fastner attachment shall be made in the valleys at contact area with purlins.

F. Lap-Seam Roof Panels: Provide sealant tape at lapped joints of ribbed or fluted panels and between panels and protruding equipment, vents, and accessories.

Apply a continuous ribbon of sealant tape to clean, dry surface of the weather side of fastenings on end laps; on side laps of corrugated nesting-type, ribbed, or fluted panels; and elsewhere as needed to make panels weatherproof to driving rains. Provide double rib lap at side laps and provide typical roofing fastner within lap area and at every purlin location.

G. Installation Tolerances: Shim and align 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.

H. Install gutters with longest available sections to minimize joints. Joints shall be lapped, riveted, and sealed with silicone sealant.

3.2 CLEANING AND PROTECTION

A. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair by finish touchup or simiar minor repair procedures.

B. Cleaning: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

END OF SECTION 07411

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SECTION 07840 - FIRESTOPPING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and product certificates signed by manufacturer certifying compliance with specified requirements.

B. Provide firestopping systems with fire-resistance ratings indicated by reference to UL designations as listed in its "Fire Resistance Directory," or to designations of another testing agency acceptable to authorities having jurisdiction.

C. Provide through-penetration firestopping systems with F-ratings indicated, as determined according to ASTM E 814, but not less than the fire-resistance rating of the constructions penetrated.

D. Provide through-penetration firestopping systems with T-ratings as well as F-ratings, as determined according to ASTM E 814, where indicated.

E. For exposed firestopping, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined according to ASTM E 84.

PART 2 - PRODUCTS

2.1 FIRESTOPPING

A. Manufacturers:
   1. 3M
   2. Nelson Fire Stop Products
   3. Rector Seal
   4. Metacaulk

B. Provide firestopping seals at walls and floors that separate residential units, >

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install firestopping systems to comply with manufacturer's written instructions and with requirements listed in the testing agency's directory for the indicated fire-resistance rating.

END OF SECTION 07840

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit samples for factory finished doors.

B. Quality Standard: NWWDA I.S.1-A.

C. Fire-Rated Wood Doors: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per ASTM E 152.

1. Provide doors that have a temperature rise rating of 450 deg F (250 deg C).

PART 2 - PRODUCTS

2.1 FLUSH WOOD DOORS

A. Interior Solid Core Doors for Opaque Finish: Custom Grade, **5-**ply, **glued-block** core.
1. Faces: **Any closed-grain hardwood**.

B. Fire-Rated Solid Core Doors: Core construction to provide fire-rating indicated, faces and grade to match non-fire-rated doors.

1. Composite blocking where required to eliminate through-bolting hardware.
2. Laminated-edge construction.
3. Formed-steel edges and astragals for pairs of fire-rated doors.

2.2 FABRICATION AND FINISHING

A. Factory fit doors to suit frame-opening sizes indicated and to comply with referenced quality standard.

1. Comply with NFPA 80 for fire-resistance-rated doors.

B. Factory machine doors for hardware that is not surface applied.

C. Cut and trim openings to comply with referenced standards.

1. Trim light openings with moldings indicated.
2. Factory install louvers in prepared openings.

D. Factory finish wood doors with NWWDA **Standard** grade, System **water-reducible acrylic lacquer** finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install doors to comply with referenced quality standard.

1. Install fire-rated doors to comply with NFPA 80.

B. Align and fit doors in frames with uniform clearances and bevels. Machine doors for hardware. Seal cut surfaces after fitting and machining.

C. Align factory-fitted doors in frames for uniform clearances.

D. Repair, refinish, or replace factory-finished doors damaged during installation, as directed by Architect.

END OF SECTION 08211

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SECTION 08331 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.
B. Design and reinforce overhead coiling doors to withstand 145 MPH wind-loading pressure.

PART 2 - PRODUCTS

2.1 OVERHEAD COILING DOORS

A. Manufacturers:
R & S Rolling Door Products
Overhead Door
Windsor Door
Or Equal
B. Door Curtain slats: Galvanized steel door curtain slats with factory finish..

C. Operation: Chain hoist.

D. Tracks, Supports, and Hardware: Manufacturer's standard.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install per manufacturer's recommendations .

END OF SECTION 08331

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SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and color Samples.

B. Submit manufacturers standard warranties.

1. 3 Year finish warranty on frame.
2. 12 Month warranty on glass against stress cracks.
3. 5 Year warranty against delamination.

C. Submit Miami-Dade N.O.A. for Impact Windows.

PART 2 - PRODUCTS

2.1 ALUMINUM WINDOWS

A. Single-hung aluminum windows as indicated.

B. Manufacturers:
PGT, Windguard Series 700.

C. Finish windows with Manufacturer's Standard Class I, color anodic finish; AA-M12C22A42/A44. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying finishes.

D. Windows shall meet or exceed AAMA-101-93 specifications. Design wind velocity at Project site is 145 mph.

E. Factory installed glazing.

F. Accessories. Provide removable PGT Sash Stops cut to length to allow opening limiting to 8" at all egress units.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide all hardware, anchors, and other components necessary for a complete and weathertight installation.

B. Complete window installation as indicated in manufacturers NOA documentation for this window.

END OF SECTION 08520

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SECTION 08620 - UNIT SKYLIGHTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data, Shop Drawings, finish Samples, and five year warranty.
B. Submit Miami-Dade County Building Code Compliance Office Notice of Acceptance (NOA).

PART 2 - PRODUCTS

3.1 SKYLIGHTS

A. Glazing: Sheffield Makrolon SL Sealed Polycarbonate Domes or approved equal.

B. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for application and finish designations, Fluoropolymer, 2-coat coating system, complying with AAMA 605.2.

Manufacturer: Dade Curb Mount Skylights shall be Maxim Industries, Inc. Model DCM or approved eqal

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply NRCA's "Roofing and Waterproofing Manual." Coordinate with installation of vapor barriers, roof insulation, roofing, and flashing as required to ensure combined elements are waterproof and weathertight.

B. Isolate metal surfaces in contact with incompatible metal or corrosive substrate including wood, with bituminous coating on concealed metal surfaces.

END OF SECTION 08620

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SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and Samples.

B. Comply with written instructions of glass product manufacturers; FGMAs "Glazing Manual"; and publications of AAMA, LSGA, and SIGMA as applicable to products indicated, unless more stringent requirements are indicated.

PART 2 - PRODUCTS

2.1 GLASS

A. PGT Winguard Series 700 Fixed Aluminum Window glazing shall be factory installed impact glazing.

B. Interior windows, safety glazing shall be Laminated glass: 2 sheets of 3.0-mm thick heat treated ASTM 1048 with poly-vinlyl butryl sheet interlayer. Comply with ASTM C 1172.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are contained in FGMA's "Glazing Manual."

B. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

END OF SECTION 08800

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SECTION 09260 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.

PART 2 - PRODUCTS

2.1 METAL FRAMING AND SUPPORTS

A. Steel framing for partitions complying with ASTM C 645.
   1. Studs, Channels, and Runners: In depth indicated and 25 gauge unless otherwise indicated.
   2. Galvanized coating complying with ASTM A 653, G60

2.2 GYPSUM BOARD

A. Gypsum board products in maximum lengths available to minimize end-to-end butt joints.
   1. Gypsum Wallboard: ASTM C 36, in thickness indicated, with manufacturer's standard edges. Walls: Wallboard manufactured by National Gypsum Co., Gold Bond Gypsum Wallboard Products, United States Gypsum Co., Sheetrock Brand or equal.
      Ceilings: Type-X where required for fire-resistance rated assemblies. Sag -resistant type for all ceiling surfaces.
   2. Water-Resistant Gypsum ASTM C 630, in thickness indicated. Regular type, unless otherwise indicated.. Use at plumbing partitions other than shower/tub areas.
   3. Glass-Mat, Water-Resistant Gypsum Backing Board: ASTM C 1178, of thickness indicated, regular type, unless otherwise indicated. "Dens-Shield Tile Backer" manufactured by Georgia-Pacific Corp. Use at shower and tub wall areas.

2.3 ACCESSORIES

A. Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C 1047, formed from steel sheet zinc coated by hot-dip process or rolled zinc or plastic.

B. Accessories for Exterior Installations: Cornerbead, edge trim, and control joints formed from steel sheet zinc coated by hot-dip process or rolled zinc complying with ASTM C 1047.

C. Gypsum Board Joint Treatment Materials: Comply with ASTM C 475. Paper reinforcing tape and drying-type, ready-mixed, all-purpose compounds

D. Miscellaneous Materials: Auxiliary materials for gypsum board construction that comply with referenced standards.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
   1. Isolate steel framing from building structure, except at floor, to prevent structural movement from transferring loading to partitions.
   2. Where studs are installed directly against exterior walls, install asphalt felt strips or foam gaskets between studs and wall.

B. Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
   1. Isolate the perimeter of non-load-bearing gypsum board partitions where they abut structural elements, except floors, by providing a 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide space between gypsum board and the structure. Trim edges with U-bead or L-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
   2. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws
   3. Multilayer Fastening Methods: Fasten base layers and face layer separately to supports with screws.

C. Finishing Gypsum Board Assemblies: Level 4 finish, unless otherwise indicated. Level 2 finish where panels form substrates for tile.

END OF SECTION 09260

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SECTION 09310 - CERAMIC TILE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and material Samples.

B. For tile installed on walkway surfaces, provide products with static coefficients of friction of minimum 0.6 for level surfaces as determined by testing identical products per ASTM C 1028.

PART 2 - PRODUCTS

2.1 CERAMIC TILE

A. Ceramic tile that complies with Standard Grade requirements of ANSI A137.1, "Specifications for Ceramic Tile."

B. Provide the following tile or equivalent:
Floors: Vitromex 31.6cm x 31.6cm Cheyenne or equal
Walls: Intercamic matte wall tile #710 IC Bone, Matte or equal
Shower Floors: American Olean A-21 2 x 2 unglazed Driftwood or equal

C. Tile trim units that match characteristics of adjoining flat tile.

D. Protect exposed surfaces of tile against adherence of mortar and grout by factory precoating them with a hot-applied continuous film of petroleum paraffin wax. Do not coat unexposed tile surfaces.

2.2 CERAMIC TILE-SETTING AND -GROUTING MATERIALS

A. Materials complying with ANSI standards.

2.3 ACCESSORIES

A. Cementitious backer units complying with ANSI A118.9, of thickness indicated.

B. Plastic quarter round trim may be used at edges of bathroom wall tile and tops of ceramic tile base.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated.

B. Comply with TCA's "Handbook for Ceramic Tile Installation."

C. At showers, tubs, and where indicated, provide cementitious backer units and treat joints to comply with ANSI A108.11.

D. Lay tile in grid pattern, unless otherwise indicated. Align joints where adjoining tiles on floor, base, walls, and trim are the same size.

E. 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.

F. Ceramic tile shall be installed at shower and tub wall areas, bathroom floors, floors in all residential units and unit balconies.

END OF SECTION 09310

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SECTION 09511 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and material Samples.
B. Acoustical Panel Ceilings: Comply with ASTM E 1264 for Class A materials, as determined by testing identical products per ASTM E 84.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS
A. Cortega by Armstrong World Industries, or equivalent**.**

2.2 CEILING SUSPENSION SYSTEMS
A. Cortega by Armstrong World Industries, or equivalent direct-hung suspension system, with intermediate duty structural classification according to ASTM C 635.
B. Size attachment devices for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated.
C. Zinc-coated carbon-steel wire hangers, braces, and ties complying with ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.

1. Select wire diameter so its stress at 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than the yield stress of wire, but provide not less than 0.135-inch- diameter wire.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Comply with the following:
1. CISCA's "Ceiling Systems Handbook."
2. CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings."
3. ASTM C 636, "Standard for Ceiling Suspension System Installations."
4. U.B.C. Standard 47-18.

B. For systems requiring seismic restraint, comply with the following:
1. CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies."
2. ASTM E 580, "Standard for Ceiling Suspension Systems Requiring Seismic Restraint."

END OF SECTION 09511

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SECTION 09651 - RESILIENT TILE FLOORING

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 the following:
   1. Vinyl composition floor tile.
   2. Resilient wall base and accessories.

1.3 SUBMITTALS

A Samples of Manufacturers color charts

B. Product Data: For each type of product specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.

B. Source Limitations: Obtain each type, color, and pattern of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 deg F.

C. Store tiles on flat surfaces.

1.6 PROJECT CONDITIONS

A. Do not install flooring over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
   1. Furnish not less than one box for each 50 boxes or fraction thereof, of each type, color, pattern, class, wearing surface, and size of resilient tile flooring installed.
   2. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient accessory installed.
   3. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 RESILIENT TILE

A. Vinyl Composition Floor Tile: Products complying with ASTM F 1066 and with requirements specified herein.

2.2 RESILIENT ACCESSORIES

A. Rubber Wall Base: Products complying with FS SS-W-40, Type I and with requirements specified herein.

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by flooring manufacturer.
2. Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving resilient flooring.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Existing tile removal: Remove all loose, damaged or defective tiles and adhesives according to "Selective Demolition" section of this specification and where indicated on the drawings.

B. General: Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

C. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

D. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

E. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. General: Comply with tile manufacturer's written installation instructions.

B. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half of a tile at perimeter.

1. Lay tiles square with room axis, unless otherwise indicated.

C. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles to follow existing patterns in adjacent floor areas.

D. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

E. Extend tiles into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent, nonstaining marking device.

G. Install tiles on covers for telephone and electrical ducts, and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on covers. Tightly adhere edges to perimeter of floor around covers and to covers.

H. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to comply with tile manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.

Provide completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT ACCESSORY INSTALLATION

A. General: Install resilient accessories according to manufacturer's written installation instructions.

B. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
3. Do not stretch base during installation.
4. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
5. Form outside corners on job from straight pieces of maximum lengths possible, without whitening at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
6. Form inside corners on job, from straight pieces of maximum lengths possible, by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

C. Place resilient accessories so they are butted to adjacent materials and bond to substrates with

3.5 CLEANING AND PROTECTING

Perform the following operations immediately after installing resilient products:

1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
2. Sweep or vacuum floor thoroughly.
3. Do not wash floor until after time period recommended by flooring manufacturer.
4. Damp-mop floor to remove marks and soil.

B. Existing flooring to remain: Machine clean and seal all areas after installation of new tile.

C. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.

1. Apply protective floor polish to floor surfaces that are free from soil, visible adhesive, and surface blemishes, if recommended in writing by manufacturer.
2. Do not move heavy and sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

D. Clean floor surfaces not more than 4 days before dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products according to manufacturer's written recommendations.

3.6 RESILIENT TILE FLOORING SCHEDULE

A Vinyl Composition Tile VCT

1. Armstrong World Insudtries, Inc. or equal
2. Color and Pattern: As selected by Architect from manufacturer's full range of colors and patterns produced for tile complying with requirements indicated.
3. Class: Class 2 (through pattern tile).
4. Wearing surface: Smooth
5. Thickness: 1/8 inch
6. Size: 12 by 12 inches
7. Rubber Wall Base

B. Rubber Wall Base
1. Armstong World Industrice, Inc. or equal
2. Color and Pattern: As selected by Architect from manufacturer's full range of colors and patterns produced for rubber wall base complying with requirements indicated.
3. Style: Cove with top-set toe
4. Minimum Thickness: 1/8 inch
5. Height : 4 inches
6. Length: Coils in lengths standard with manufacturer, but not less than 96 feet.
7. Outside Corners: Premolded or formed on job.
8. Inside Corners: Premolded or formed on job
9. Ends: Premolded
10. Surface: Smooth

END OF SECTION 09651

SECTION 09653 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and color Samples.

B. Deliver to Owner at least 10 linear feet (3 linear m) for each 500 linear feet (150 linear m) or fraction thereof, of each type and color of resilient wall base installed.

PART 2 - PRODUCTS

2.1 RESILIENT WALL BASE AND ACCESSORIES

A. Roppe vinyl base or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wall base in maximum lengths possible.

B. Apply resilient wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms or areas where base is required.

C. Form wall base corners from straight pieces of maximum lengths possible.

D. Install reducer strips at edges of flooring that otherwise would be exposed.

END OF SECTION 09653

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SECTION 09910 - PAINTING

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data and color Samples.

B. Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Paint all exposed surfaces unless otherwise indicated.

D. Do not paint prefinished items, finished metal surfaces, operating parts, labels, and materials obviously intended to be left exposed such as brick and tile. Do not paint concealed surfaces, with the following exceptions:
   1. Label mechanical piping in accessible ceiling spaces.

E. Deliver to Owner a 1-gal container, properly labeled and sealed, of each color and type of finish coat paint used on Project.

PART 2 – PRODUCTS

2.1 PAINT

A. Manufacturer's best-quality paint material of the various coating types specified.

B. Sherwin-Williams or equal

2.2 PREPARATION MATERIALS

A. Mortar, Muriatic Acid, trisodium Phosphate, Solvents, Miscellaneous prep and materials.

2.3 COATINGS

A. Industrial Enamel

PART 3 – EXECUTION

3.1 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before preparation and painting.
   1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
   1. Schedule cleaning and painting so dust and other contaminents from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
   1. Provide barrier coast over incompatible primers or remove the subprime.
   2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze.

If hardners or sealers have been used to improve curing, use mechanical methods of surface preparation.

a) Use abrasive blast-cleaning methods if recommended by paint manufacturer.

b) Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where the moisture content exceeds that permitted in manufacturer's written instructions.

c) Clean concrete floors to be painted with a 5 percent solution or muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with amonia, rinse, allow to dry, vacuum before painting.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a) Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended know sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

b) Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.

c) When transparent finish is required, backprime with spar varnish.

d) Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.

e) Seal tops, bottoms, and cutouts of umprimed wood doors with heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

a) Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP-10.

b) Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

c) Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

3.2 INSTALLATION

A. Comply with paint manufacturer's written instructions for surface preparation, environmental and substrate conditions, product mixing, and application.

B. Prior to application of finishes to undersides of slabs, prep work shall be performed according to Specifications Section 03300.

3.3 SPECIAL COATINGS

A. Industrial Enamel:Provide the indicated special coating on Galvanized Steel

1. Surface Preparation: Allow to weather a minimum of six months prior to coating. Solvent clean per SSPC-SP1(recommended solvent is VM&P Naptha). When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch . Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.
2. Coating: Primer: Solvent Based Acrylic
   Sherwin Williams, Galvite HS@ 3.0-4.5mls dft, one coat.
   Finish: Alkyd Enamel
   Sherwin Williams, Industrial Enamel HS @ 2.0-4.0 mils dft/ct, three coats

B. Floor Sealer: Provide the indicated special coating at concrete floors where indicated.
1. Provide surface preparation according to Manufacturers written instructions.
2. Coating: Clear, moisture-cure polyurethane. Abatron, Inc., Abothane 8003-3.

3.4 EXTERIOR PAINT SCHEDULE

A. Concrete, Stucco, Masonry, and Thin Set Mortar: As follows:
1. Low-Lustre Acrylic: 2 coats over primer.

B. Smooth Wood: As follows:
1. Semigloss Acrylic Enamel: 2 coats over Kilz exterior primer.

C. Plywood: As follows:
1. Low-Luster Acrylic: 2 coats over Kilz exterior primer.

D. Ferrous Metal: As follows:
1. Semigloss Acrylic Enamel: 2 coats over rust-inhibitive primer.

E. Aluminum Items Other Than Railings: As follows:
1. Semigloss Acrylic Enamel: 2 coats over primer.

F. Aluminum Railings: As follows:
1. Electrostatic applied polyester coating based on Tiger-Drylac USA, Inc. TIGER—Drylac Series 28 Powder Coating applied by Southern Aluminum Finishing Co., Inc. or approved equal.
   a) Finish coat: one coat of powder coating based on Polyester. Minimum thickness shall be 2.5 – 3.5 mils dry film thickness.
   b) Color: black.

G. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:
1. Semigloss Acrylic Enamel Finish: 2 finish coats over a galvanized metal primer.
   a) Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
   b) First and Second Coats: Semigloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

3.5 INTERIOR PAINT SCHEDULE

A. Concrete:Ceilings: As follows:
1. ICI/Glidden/Dulux Ultra-Hide Buildtex Acrylic Latex texture Coating over primer.

B. Gypsum Board Walls: As follows:
1. Low-Luster Acrylic Enamel: 2 coats over primer.

C. Thin set Mortar and Plaster: As follows:
1. Low-Luster Acrylic Enamel: 2 coats over primer.

D. Woodwork and Hardboard: As follows:
1. Low-Luster Acrylic Enamel: 2 coats over primer.

E. Ferrous Metal: As follows:
1. Low-Luster, Acrylic Enamel: 2 coats over primer.

F. Gypsum Board Ceilings:
   1. ICI/Glidden/Dulux Ultra-Hide Buildtex Acrylic Latex texture Coating over primer.

END OF SECTION 09910

VITRAN MAINTENANCE AND OPERATIONS FACILITY
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ESTATE ANNA'S HOPE
ST. CROIX, USVI

SECTION 10155 - TOILET COMPARTMENTS

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 toilet compartments and screens as follows:
   1. Type: Solid-plastic, polymer resin.
   2. Compartment Style: Floor anchored.

1.3 SUBMITTALS

A. Product Data: For each type and style of toilet compartment and screen specified. Include details of construction relative to materials, fabrication, and installation. Include details of anchors, hardware, and fastenings.

B. Samples for Initial Selection: Manufacturer's color charts consisting of sections of actual units showing the full range of colors, textures, and patterns available for each type of compartment or screen indicated.

1.4 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Accurate Partitions Corporation.
   2. Ampco Products, Inc
   3. Bobrick Washroom Equipment, Inc.
   4. Bradley Corp.
   5. Capitol Partitions, Inc.
   6. Commercial and Architectural Products, Inc.; Marlite.
   7. Compression Polymers Group; Comtec Industries.
   8. General Partitions Mfg. Corp.
   9. Hadrian Inc.
   10. Knickerbocker Partition Corporation.
   11. Lambaton/Universal.
   12. Mills Company (The).
   13. Partition Systems, Inc.; Columbia Partitions.
   14. Santana Products, Inc.
   15. Turan Partition Corporation.
   16. Weis/Robart Partitions, Inc.
   17. Young Sales Corp.; DesignRite.

2.2 MATERIALS

A. General: Provide materials that have been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are unacceptable.

B. Solid-Plastic, Polymer Resin: High-density polyethylene (HDPE) with homogenous color throughout. Provide material not less than 1 inch thick with seamless construction and eased edges in color and pattern as follows:
   1. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range of colors and patterns.
   2. For solid-plastic, polymer-resin pilasters, in lieu of stainless-steel pilaster shoes and sleeves, manufacturer's standard plastic pilaster shoes and sleeves may be provided.

C. Stirrup Brackets: Manufacturer's standard ear or U-brackets for attaching panels and screens to walls and pilasters of the following material:
   1.. Material: Solid plastic.

D. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of the following material:
   1. Material: Stainless steel.

2.3 FABRICATION

A. General: Provide standard doors, panels, screens, and pilasters fabricated for compartment system. Provide units with cutouts and drilled holes to receive compartment-mounted hardware, accessories, and grab bars, as indicated.

B. Doors: Unless otherwise indicated, provide 24-inch- wide in-swinging doors for standard toilet compartments and 36-inch- wide out-swinging doors with a minimum 32-inch- wide clear opening for compartments indicated to be handicapped accessible.
   1. Hinges: Manufacturer's standard self-closing type that can be adjusted to hold door open at any angle up to 90 degrees.
   2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit with combination rubber-faced door strike and keeper designed for emergency access. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be handicapped accessible.
   3. Door Pull: Manufacturer's standard unit that complies with accessibility requirements of authorities having jurisdiction at out-swinging doors. Provide units on both sides of doors at compartments indicated to be handicapped accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch between pilasters and panels and not more than 1 inch between panels and walls. Secure units in position with manufacturer's recommended anchoring devices.
   1. Secure panels to walls and panels with not less than 2 stirrup brackets attached near top and bottom of panel. Locate wall brackets so holes for wall anchors occur in masonry or tile joints. Align brackets at pilasters with brackets at walls.

B. Floor-Anchored Compartments: Set pilaster units with anchors penetrating not less than 2 inches into structural floor, unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.

3.2 ADJUSTING AND CLEANING

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and swing doors in entrance screens to return to fully closed position.

B. Provide final protection and maintain conditions that ensure toilet compartments and screens are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 10155

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SECTION 10801 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submit Product Data.

PART 2 - PRODUCTS

2.1 TOILET AND BATH ACCESSORIES

A. Toilet and bath accessories as indicated in the drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units using fasteners appropriate to substrate. Install units level and plumb, firmly anchored in locations, and at heights indicated. Comply with provisions of ADAAG for installation of units required to be accessible to the disabled.

B. Provide solid blocking in partition walls as required.

END OF SECTION 10801

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SECTION 13100 - LIGHTNING PROTECTION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Lightning protection for entire buildings and associated structures.

B. Provide **UL Master Label** indicating system complies with specified requirements.

C. Comply with UL 96.

PART 2 - PRODUCTS

2.1 MATERIALS

A. System Materials: **Aluminum**, with solid air terminals, unless otherwise indicated.

B. Air-Terminal Decorations: Decorative ball, direction vane, and compass set where indicated.

C. Air Terminals for Main Stack: **Stainless steel**.

D. Ground Rods: Copper-clad steel with a minimum of 27 percent of rod weight in copper cladding, 3/4 inches (19 mm) in diameter; 10 feet (3 m) long.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with **UL 96A and NFPA 780**.

B. Install conductors with direct paths from air terminals to ground connections. Avoid sharp bends and narrow loops. Where indicated, run conductors in nonmetallic raceway.

C. Conceal **system** conductors.

D. Air Terminals on Single-Ply Membrane Roofing: Comply with adhesive manufacturer's written installation instructions.

E. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture, unless moisture is permanently excluded from the junction of such materials.

F. Use conductors with protective coatings where conditions would cause deterioration or corrosion of conductors.

END OF SECTION 13100