COUNTY OF GREENVILLE
CONSTRUCTION OF INFIRMARY
IFB# 01-07/14/16

Greenville County

DEPARTMENT OF GENERAL SERVICES
PROCUREMENT SERVICES DIVISION
GREENVILLE COUNTY SQUARE
301 UNIVERSITY RIDGE, SUITE 100
GREENVILLE, SOUTH CAROLINA 29601
www.greenvillecounty.org
Phone: 864-467-7200

GREENVILLE COUNTY COUNCIL
PROCUREMENT SERVICES DIVISION
GREENVILLE COUNTY SQUARE
301 UNIVERSITY RIDGE, SUITE 100
GREENVILLE, SOUTH CAROLINA 29601-3660

Greenville County

NOTICE Date June 17, 2016

Sealed bids for furnishing THE CONSTRUCTION OF THE DR. CARY E. STROUD CAMPER CARE CENTER subject to the conditions and all provisions set forth herein and attached, will be received at this office until 3:00 P.M., E.D.T., JULY 14, 2016, then publicly opened. The commodities and/or services must be furnished as described and specified to Greenville County

SHOW THIS NUMBER ON ENVELOPE

IFB No. #01-07/14/16

PROCUREMENT SERVICES DIVISION

By _____
Director

	COMMODITIES OR SERVICES	
	GREENVILLE COUNTY IS REQUESTING SUBMISSION OF SEALED BIDS FROM VENDORS TO PROVIDE THE CONSTRUCTION OF THE DR. CARY E. STROUD CAMPER CARE CENTER (INFIRMARY) LOCATED AT THE PLEASANT RIDGE CAMP AND RETREAT CENTER, 4232 HIGHWAY 11, MARIETTA, SC 29661. BIDS MUST BE SUBMITTED ON THE BID FORM (PAGE 27). PLEASE SUBMIT ONE (1) ORIGINAL AND FIVE (5) COPIES OF YOUR BID. A MANDATORY PRE-BID MEETING AND SITE VISIT WILL BE HELD AT 2:00 P.M., E.D.T., FRIDAY, JUNE 24, 2016, LOCATED AT THE PLEASANT RIDGE CAMP AND RETREAT CENTER, 4232 HIGHWAY 11, MARIETTA, SC 29661. QUESTIONS CONCERNING THE IFB ARE TO BE SUBMITTED IN WRITING TO BOB BREWER, CPPO, CPPB, GREENVILLE COUNTY PROCUREMENT SERVICES DIVISION, SUITE 100, 301 UNIVERSITY RIDGE, GREENVILLE, SC 29601, BY FAX (864) 467-7304 OR EMAIL rbrewer@greenvillecounty.org NO LATER THAN 5:00 P.M., E.D.T. JUNE 30, 2016. PLEASE SIGN THE FOLLOWING PAGE AND BID FORM (PAGE 28). FAILURE TO SIGN MAY VOID YOUR BID. PLEASE MARK YOUR ENVELOPE TO READ: IFB #01-07/14/16.	

INSTRUCTIONS TO RESPONDENTS

IFB# 01-07/14/16 CONSTRUCTION OF INFIRMARY

1. Unless otherwise required, submit only one (1) original and five (5) copies of each RFI/RFQ/IFB/Proposals.
2. RFI/RFQ/IFB/Proposals, amendments thereto or withdrawal requests received after the time advertised for opening will be void regardless of when they were mailed.
3. Quote prices on units specified with packing included.
4. Attach complete specifications for and permitted substitutions offered, or when amplification is desirable or necessary.
5. If specifications or descriptive papers are submitted with RFI/RFQ/IFB/Proposals, enter respondents name thereon.
6. If the article bid upon has a trade name or brand, show same in the RFI/RFQ/IFB/proposal.
7. When required, furnish samples, free of expense, prior to opening of RFI/RFQ/IFB/Proposals. Label each sample with respondents name and the item number. Should you wish samples returned, at your expense, when not destroyed in tests, make request for return within 10 days following bid/proposal opening.
8. Show delivery time required after order is received (see below).
9. Address and mark bids/proposals as indicated in the notice.

CONDITIONS

1. The County Agency or Institution submitting this notice reserves the right to reject any and all RFI/RFQ/IFB/Proposals, and to waive all technicalities.
2. Unit prices will govern over extended prices, unless otherwise stated in notice.
3. Time in connection with discount offered will be computed from date of delivery of commodities to carrier, when inspecting and acceptance is at point of origin; or date of delivery at destination; or if laboratory inspection is made part of bid, from date of laboratory report.
4. In case of default of contractor, Greenville County reserves the right to purchase any or all items in default on open market, charging contractor with any excessive costs.
5. All materials and products offered must be guaranteed to meet the requirements of the specifications indicated, given or referred to.
6. Prices bid must be based upon payment in thirty (30) days. Discounts for payment in less than thirty (30) days will not be considered in making award.
7. The right is reserved, in case of tie bids, to make award considered to be most advantageous to Greenville County.
8. The right is reserved to reject any RFI/RFQ/IFB/Proposal in which the delivery time indicated is considered sufficient to delay the operation for which the commodity is intended.
9. Unless otherwise indicated by County Agency or Institution submitting this notice, prices must be firm.

RFI/RFQ/IFB/PROPOSAL

(DATE) _____

In compliance with invitation, and subject to all conditions, thereof, the undersigned offers and agrees, if this RFI/RFQ/IFB/Proposal is accepted within _____days from date of opening, furnish any or all items quoted on at prices as set forth after the item and unless otherwise specified, within _____ days after receipt of order, delivered, all transportation costs included,

Discount will be allowed as follows: 30 calendar days _____ %.

FIRM NAME _____ ADDRESS _____

BY_____ _____

(RFI/RFQ/IFB/PROPOSAL MUST BE SIGNED IN WRITING)

PRINT NAME_____ _____

TITLE_____ EMAIL: _____

PHONE_____ FAX_____

COUNTY OF GREENVILLE
CONSTRUCTION OF INFIRMARY
IFB# 01-07/14/16

SCHEDULE

June 24, 2016	A **mandatory pre-bid meeting and site visit** will be held at **2:00 P.M., E.D.T.,** Pleasant Ridge Camp and Retreat, 4232 Highway 11, Marietta, SC 29661.
June 30, 2016	**All questions** must be submitted in writing to Bob Brewer, CPPO, CPPB, Procurement Services Division, 301 University Ridge, Suite 100, Greenville, SC 29601, by Fax (864)467-7304, or by email rbrewer@greenvillecounty.org, by **5:00 P.M., E.D.T.**
July 14, 2016	**Bids** must be delivered to the Procurement Services Division, 301 University Ridge, Suite 100, Greenville, SC 29601 no later than **3:00 P.M. E.D.T**.
July 14 - 28, 2016	**Review** of Bids
July 28, 2016	Tentative Date of **Award**
July 28 – August 11, 2016	**Contract** Negotiations
August 11, 2016	Issue **Notice to Proceed**

INVITATION FOR BIDS
CONSTRUCTION OF INFIRMARY
IFB# 01-07/14/16

Greenville County

I. Introduction

Greenville County is requesting sealed bids from vendors for the construction of the Dr. Cary E. Stroud Camper Care Center located at Pleasant Ridge Camp and Retreat, 4232 Highway 11, Marietta, SC 29661.

II. Scope of Work

Greenville County is seeking bids from vendors to provide all labor, materials and equipment to perform the construction of the Dr. Cary E. Stroud Camper Care Center (Infirmary) located at Pleasant Ridge Camp and Retreat, 4232 Highway 11, Marietta, SC 29661. Contractor shall provide all work and materials in accordance with the drawings and specifications (prepared by McMillan Pazdan Smith Architecture) listed in Attachment A of this IFB, federal, state and local codes.

A subsurface report prepared by Geotrack Technologies, Inc. is included in Attachment B. A Fire Protection Sprinkler System Specification Sheet is included in Attachment C.

III. Bonding

Information on Bid Bonds, Performance and Payment Bonds is listed in the Instructions/Terms and Conditions (page 10).

IV. Mandatory Pre-Bid Meeting and Site Visit

A **mandatory pre-bid meeting and site visit** will be held at **2:00 P.M., E.D.T., Friday, June 24, 2016** at **4232 Highway 11, Marietta, SC 29661.**

V. Bid and Sub-Contractors

Bids must be listed on the Bid Form (page 27). A listing of the sub-contractors and their services (mechanical, electrical, etc.) must be listed on the Bid Form (page 27).

VI. Submission Procedures, Requirements

A. Submittals

All submissions must be received by **3:00 P.M., E.D.T., THURSDAY, JULY 14, 2016** and delivered to Greenville County Procurement Services Division, 301 University Ridge, Suite 100, Greenville, South Carolina 29601. If the submission is late the bid will be

rejected. There will be no exceptions. Responders submitting bids shall be responsible for all cost of preparing such bids.

Responders to this Invitation for Bids shall closely examine the specific requirements noted herein and the attached Terms and Conditions and submit one (1) original and five (5) bound copies of their bid to the address listed below. To ensure acceptance of the bid, the Invitation for Bids number (IFB#01-07/14/16) should be clearly shown on the lower left corner of the return envelope. Facsimile transmittals or offers communicated by telephone will not be accepted or considered.

County of Greenville
Department of General Services
Procurement Services Division, Attn: Procurement Director
301 University Ridge, Suite 100
Greenville, South Carolina 29601-3665
IFB# 01-07/14/16

B. License and Permits

The contractor shall obtain all applicable licenses, and promptly pay all taxes required by the State of South Carolina, and/or Greenville County.

VII. Statement of Qualifications

Vendors shall provide the following with their response:

1. Overview of company background.
2. Copy of General Contractor's License and Certifications.
3. Staffing or organizational chart showing staff that will be used for this project.
4. Corporate/individual qualifications and experiences, including certifications.
5. Current resume(s) for individuals(s) assigned to this project.
6. A list of at least three (3) references where Vendor provides services similar to the services under consideration in this IFB. Include the name of the facilities, address and telephone number, plus the name of a contact person and title. Greenville County may contact the references at any time during the review of the IFB.

VIII. Inquiries and Addenda

A. Questions

All questions concerning this IFB are to be submitted in writing via fax, electronic mail, or regular mail to Bob Brewer, CPPO, CPPB, Procurement Services Division, to the address listed below, no later than **5:00 P.M., E.D.T., JUNE 30, 2016**. Please refer all questions in writing about this Invitation for Bids and project to:

County of Greenville
Bob Brewer, CPPO, CPPB
Procurement Services Division
301 University Ridge, Suite 100
Greenville, South Carolina 29601-3665
Phone: (864) 467-7206 Fax:(864) 467-7304
E-mail: rbrewer@greenvillecounty.org

All inquiries and responses will be distributed to all vendors known to have received the IFB document. The County will not be responsible for or bound by any oral instructions made by any employee(s) of the County in regard to this IFB.

B. Addenda

This IFB represents the most definite statement Greenville County will make concerning information upon which bids are to be based. Any changes to this IFB will be in the form of a written addendum, which will be furnished to all vendors who are listed with the County as having received an IFB document. No addenda will be issued later than five (5) working days prior to the date for receipt for bids except an addendum which, if necessary, postpones the date for receipt of bids or cancels this IFB. Venders shall acknowledge receipt of all addenda with their Bid.

IX. General Information

A. Proprietary Information

The County of Greenville is a public body and governed by the South Carolina Freedom of Information Act. Documents submitted to the County relating to this Invitation for Bids are subject to requirements of the Freedom of Information Act and may be deemed public records.

B. Errors and Omissions

The Responder will not be allowed to take advantage of any errors or omissions in the Invitation for Bids. Where errors or omissions appear in the IFB, the Responder shall promptly notify the County of Greenville in writing of such error or omission it discovers. Any significant error, omission and/or inconsistency in the specifications are to be reported as soon as possible but no later than five (5) days before such time the response is to be submitted.

C. Withdrawal of Bid

An official representative of a Responder may withdraw a Responder's response at any time prior to the bid submission deadline. Acceptable proof establishing that he/she is the representative of the Responder must be provided.

D. Non-Endorsement

If the County awards contract, the successful Responder shall not issue any news

release or other statement relating to the award or servicing of the agreement which state or imply the County of Greenville's endorsement of the successful Responder's services.

X. Insurance

The Contractor is responsible for and must have all required insurance listed below and shall not commence work under the associated contract until it has obtained all insurance required, and the County has approved such insurance in writing, nor shall the Contractor allow any subcontractor to commence work on its subcontract until all similar insurance required of the subcontractor has been obtained. All insurance policies shall be maintained for the life of the contract.

A. **THE COUNTY SHALL BE NAMED AS "ADDITIONAL INSURED" FOR ITS INTEREST** on all policies of insurance except Worker's Compensation, Automobile Liability, and Professional Errors and Omissions, as regards ongoing operations, products and completed operations, and this shall be noted on the face of the Certificate of Insurance. As a part of the certificate of insurance requirement the contractor shall also include acknowledgement and acceptance of the wavier of subrogation provision granted to the County of Greenville. This acknowledgement and acceptance should be included in the same section of the Certificate of Insurance that evidences the "Additional Insured" provision.

B. Certificates for all such policies of insurance shall be provided by the **Contractor's** insurance agent or broker to the **County** within 10 working days from the date of Notice of Award.

C. All Certificates of Insurance submitted shall provide on the face of the certificate reference to **County's** IFB# 01-07/14/16.

D. **Contractor** will provide **County** a minimum of 30 days advance notice in the event the insurance policies (or an insurance policy) are canceled. Subcontractors approved to perform work on this project are subject to all of the requirements in this Section.

E. **Contractor** agrees to maintain and keep in force during the life of this Agreement, with a company or companies authorized to do business in South Carolina, the following insurance policies:

Comprehensive General Liability:
$1,000,000 per occurrence - combined single limit / $2,000,000 general aggregate, to include products and completed operations.

Automobile Liability:
$1,000,000 per occurrence - combined single limit (Coverage shall include bodily injury and property damage and cover all vehicles including owned, non-owned and hired)

Statutory Worker's Compensation:
Coverage A - State of SC
Coverage B - Employers liability
$1,000,000 Each Accident
$1,000,000 Disease, Per Employee
$1,000,000 Disease, Policy Limit
Policy shall contain a waiver of subrogation in favor of and/or applies to the County of Greenville, its departments, agencies, boards, employees, and commissions for losses from work performed by or on behalf of the contractor.

No deviation from this coverage's will be accepted unless, in the County's sole discretion, it is more advantageous to the County, i.e., $1,000,000 - a $2,000,000 or $5,000,000 limit would be acceptable.

XI. Evaluation Criteria

The bids will be evaluated on the following criteria which are in no particular order. Greenville County reserves the right to interview responders to this IFB at its discretion. Greenville County will not be responsible for any costs associated with interviews of responders.

- Responsiveness to this Invitation for Bids
- Cost
- Experience in providing services of similar size and scope
- References

XII. Illegal Immigration Reform Act Compliance

By submitting an offer, Contractor certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws (originally enacted as Section 3 of The South Carolina Illegal Immigration Reform Act , 2008 S.C. Act No. 280) and agrees to provide upon request any documentation required to establish either: (a) the applicability of Title 8, Chapter 14 to Contractor and any subcontractors or sub-subcontractors; or (b) the compliance with Title 8, Chapter 14 by Contractor and any subcontractor or sub-subcontractor. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring the subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in any contracts with the sub-subcontractors language requiring the sub- subcontractor to comply with the applicable requirements of Title 8, Chapter 14. In the event any contractor, subcontractor and/or sub-subcontractor is found not to be in compliance with the SC Immigration Reform Act [hereinafter "The Act"], the contractor agrees to fully indemnify the County for any loss suffered by the County as a result of such contractor, subcontractor or sub-subcontractor's failure to comply with the Act.

XIII. Sample Contract

A sample Contract is attached for review.

COUNTY OF GREENVILLE
PROCUREMENT SERVICES DIVISION
CONSTRUCTION OF INFIRMARY
IFB #01-07/14/16

INSTRUCTIONS/TERMS AND CONDITIONS:

1. IFB Opening and Award: Bids will be examined promptly after opening and each bid will be announced to all participants. However, no decision will be made until Procurement and the user Division have had ample time to review each bid. However, award will be made at the earliest possible date. The County reserves the right to award in whole or in part, by item, group of items, geographic area or by section where such action serves the County's best interest. The contract will be awarded to the bid that meets the requirements and criteria set forth in the invitation for bid. No bid may be withdrawn for a period of sixty (60) days after bid opening date. Bids, whether mailed or hand delivered, must be received and time/date stamped in the Procurement Services Office by the closing time and date indicated on the bid. Bids received after the bid closing time/date will not be accepted. By submission of a bid, you are guaranteeing that all goods and services meet the requirement of the solicitation during the contract period.

2. Rights Reserved by Greenville County: Greenville County reserves the right to reject any and all bids, any portion thereof, and waive any technicalities. Accordingly, the right is reserved to make awards in the best interest of the County. Integrity, reputation, experience and past performance will be heavily weighed in bid evaluation. This solicitation does not commit the County of Greenville to award a contract, to pay any costs incurred in the preparation of the bid, or to procure or contract for goods or services listed herein.

3. Responders Qualification: Responders must, upon request of the County, furnish satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. The County reserves the right to make the final determination as to the bidders ability to provide the products or services requested herein.

4. Responders Responsibility: Each bidder shall be fully acquainted with the conditions relating to the scope and restrictions attending the execution of the work under the conditions of this bid. It is expected that this will sometimes require on-site observation. The failure or omission of a bidder to be acquainted with existing conditions shall in no way relieve the bidder of any obligations with respect to this bid or to any contract as a result of this bid.

5. References: The County requires bidders to list at least three (3) references, names, addresses and telephone numbers of contact persons for companies with whom the bidder has performed or provided similar work, service or product.

6. Waiver: The County reserves the right to waive any Instructions to Bidders, General or Special Terms and Conditions, specifications, or technicalities when it is deemed to be in the best interest of the County to do so.

7. Rejection: Greenville County reserves the right to reject any bid that contains prices for individual items or services that are inconsistent or unrealistic when compared to pricing of like bids; or ambiguous bids which are uncertain as to terms, delivery, quantity, or compliance with specifications may be rejected or otherwise disregarded if such action is in the best interest of the County.

8. Bid form: Each bidder must submit a bid on the form provided. The bidder shall sign his bid correctly or the bid may be rejected. If the bid shows any omissions, alteration of form, unauthorized additions, a conditional bid or any irregularities of any kind, bid may be rejected. Bid may not be accepted on any other form then the bid form provided.

9. Questions: Questions shall be submitted in writing to Bob Brewer, CPPB, Procurement Services Division, County of Greenville, 301 University Ridge, Suite 100 by Fax (864) 467-7304 or by E-Mail to rbrewer@greenvillecounty.org by 5:00 P.M., E.D.T., June 30, 2016.

10. Bid Bond: Bidders shall submit with their bid a bid bond in the amount of 5% of the bid price. This bond may be in the form of Bid Bond from the American Institute of Architects, Certified Check, Cashier's or Bank Money Order of any national or state bank and shall be made payable to Greenville County. Bids submitted without being accompanied by any of the foregoing as required, shall be considered informal and will be rejected. Any bid accompanied by a bid bond not properly executed in the opinion of the County Attorney, may be rejected. The bond will be forfeited to the County by the successful bidder as liquidated damages in case a bid award is made to that bidder and the contract and bond are not promptly and properly executed.

11. Return of Bid Bond: When bids are awarded, the Procurement Services Division will return immediately all checks, except that of the successful bidder. The check of the successful bidder will be returned upon compliance with the performance and payment bond requirements.

12. Performance and Payment Bond: The successful bidder, within fifteen (15) working days after acceptance of the bidder's offer by the County, shall furnish a satisfactory performance and payment bond in the amount of the total bid price. The performance and payment bond must be received by the county prior to issuance of an executed contract and Notice to Proceed. The fifteen (15) working days may be extended upon written approval by the Procurement Services Director. A copy of the written approval shall be transmitted to the successful bidder stating the terms of any extension. In the event that the bidder fails to deliver to the County Procurement Services Division the performance and payment bond in said period of fifteen (15) working days after acceptance of the bidder's offer by the County, then the bid bond of the bidder shall be retained by the County in its entirety and the award will be withdrawn from the bidder. The Bond must have approval by the County Attorney's Office before it is made effective. The successful bidder shall have as surety a corporate surety authorized to act as surety in South Carolina. The Performance and Payment Bond will insure that the successful bidder will promptly make payments to all persons supplying labor or materials to the bidder; and shall guarantee to indemnify and save the County, its officers, divisions, and employees harmless from all costs, damages, and expenses growing out of or by reason of the successful bidder's failure to comply and perform the work and complete the contract in accordance with the specifications in the matter of making, furnishing and/or delivering said work or supplies. The Performance and Payment Bond will be in effect for one year after completion of the contract.

13. Availability of Bonding Agency: In addition, the bonding company must have an agent available to meet with County officials to clarify and explain the County's responsibility in maintaining the integrity of the bond.

14. Specification Changes, Additions and Deletions: All changes in specifications shall be in writing in the form of an addendum and furnished to all bidders. The County of Greenville shall not be responsible for any verbal information given by any employees of the County of Greenville in regard to this bid.

15. Number of Bid Copies: Please submit One (1) Original and Five (5) Copies of your bid.

16. Bid Changes: Bids, amendments thereto or withdrawal requests received after the advertised time for bid opening, shall be void regardless of when they were mailed.

17. Bid Price: The bid price presented as a result of these specifications shall be for the contract period. The bid shall be acceptable for sixty (60) days from the date of opening. All prices and notations shall be printed in ink or typewritten. Errors should be crossed out, corrections entered and initialed by the person signing the bid. Erasures or use of typewriter correction fluids may be cause for rejection. No bid shall be altered or amended after specified time for opening.

18. Federal, State and Local Laws: The contractor assumes full responsibility and liability for compliance with any and all local, state and federal laws and regulations applicable to the contractor and his employees including, but not limited to, compliance with the EEO guidelines, the Occupational Safety and Health Act of 1970, and minimum wage guidelines.

19. Tie Bids: In the case of tie bids, the County reserves the right to make the award based on the factors outlined in Section 3-202 of the Procurement Ordinance, or in what it considers to be in the best interest of the County.

20. Deduction and Holdbacks: In addition to the County's right of termination, the County shall be entitled to full reimbursement for any costs incurred by the County by reason of the contractor's failure to perform or to satisfactorily perform its responsibilities and duties. Such costs may include, but are not limited to, the cost of using the County's employees or employees of any other entity to perform the obligations of the contract. The County may obtain any such reimbursement by deduction from payments otherwise due to the contractor or by any other proper and lawful means. All deductions from any money due the contractor are to be as liquidated damages and not as a penalty. It is the County's intent to give the contractor a reasonable opportunity whenever practicable, to correct any such failure to perform or satisfactorily perform its responsibilities and duties. In no circumstances shall any uncorrected situation extend for more than five (5) days. The County will make the following deductions from the contract sum in the event that the contractor fails to perform any of the required work within the required time limits in the event the County carries out the work using its forces or another contractor.

    1. For use of County's forces – actual cost involved.

    2. For use of another contractor – the amount charged by said contractor.

The County reserves the right to hold back and/or withhold part of complete payments for unsatisfactory work, deficiencies, etc. until said defects are satisfactorily corrected or cleared.

21. Evaluation Criteria: The bids will be evaluated on the following criteria which are in no particular order. Greenville County reserves the right to interview responders to this IFB at its discretion. Greenville County will not be responsible for any costs associated with interviews of responders.

- Responsiveness to this Invitation for Bids
- Cost
- Experience in providing services of similar size and scope
- References

22. Quality: Unless otherwise indicated in this bid it is understood and agreed that any items offered or shipped on this bid shall be new and in first class condition unless otherwise indicated herein.

23. MBE/WBE Participation – Affirmative Action:

A. MBE/WBE – Vendors submitting bids are encouraged to solicit MBE/WBE participation in fulfilling their contract. Indicate in your response any MBE/WBE areas of involvement for monitoring purposes.

B. The successful bidder will take affirmative action in complying with all Federal and State requirements concerning fair employment and treatment of all employees, without regard or discrimination by reason of race, color, religion, age, sex, national origin or physical handicap.

24. Default: In case of default by vendor the County may procure the item or services from other sources and may recover the loss occasioned thereby from any unpaid balance due the vendor or by proceeding against the vendor's performance bond, if any, and/or by suit against vendor.

25. Termination: This contract is subject to termination for failure to comply with the specifications, terms and conditions by the County or the contractor upon written notice by registered mail. Such termination will be effective not less than ten (10) days nor more than sixty (60) days after receipt of such notice from the County nor less than thirty (30) days nor more than sixty (60) days after receipt by the County from the contractor. Receipt of notice by one party to terminate the contract will nullify any subsequent reciprocal notice by the receiving party prior to the announced termination date. In the event of termination the County shall be responsible to pay the contractor only for work satisfactorily completed upon the effective date of termination and shall not be responsible for any other charges.

26. Termination for Convenience: Greenville County may terminate for convenience any contract resulting from this solicitation by providing sixty (60) calendar days advance written notice to the vendor.

27. Non-Appropriation: Any contract entered into by the County resulting from this invitation shall

be subject to cancellation without damages or further obligation when funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period or appropriated year.

28. Incorporation of Bid into Contract: The terms, conditions, and specifications of this bid and the selected firm's response are to be incorporated into the contract.

29. S.C. Law Clause: Upon award of contract under this bid, the person, partnership, association or corporation to whom the award is made must comply with the laws of South Carolina which require such person or entity to be authorized and/or licensed to do business with this State. Notwithstanding the fact that applicable statutes may exempt or exclude the successful bidder from requirements that it be authorized and/or licensed to do business in this State, by submission of this signed bid, the bidder understands and agrees to be bound to the jurisdiction and process of the courts of the State of South Carolina, as to all matters and conflicts or future conflicts under the contract and the performance thereof, including any questions as to the liability for taxes, licenses, or fees levied by the State.

30. Assignment Clause: Successful bidder will be required to give the County ninety (90) days notice in the event of a change in the ownership of this contract. The County is under no obligation to continue this contract with an assignee. No contract or its provisions may be assigned, sublet, or transferred without the written consent of the County.

31. Indemnification: The contractor agrees to indemnify and save harmless the County of Greenville and all County officers, agents and employees from any and all claims, suits, actions, legal proceedings, damages, costs, expenses & attorney fees of every name and description, arising out of or resulting from the use of any materials furnished by the contractor, or any work done in the performance of the contract arising out of a willful or negligent act or omission of the provider, its officers, agents and employees; provided that such liability is not attributable to a willful or negligent act or omission on the part of the County, its officers, agents and employees.

32. Deviations from Specifications: Any deviation from specifications indicated herein must be clearly pointed out; otherwise, it will be considered that items offered are in strict compliance with these specifications, and successful bidder will be held responsible therefore. Deviations must be explained in detail on separate attached sheets(s). The listing of deviations, if any, is required but will not be construed as waiving any requirements of the specifications. Deviations found in the evaluation of the bid and not listed may be cause for rejection. Bidders offering substitute or equal items must provide information sufficient enough to determine acceptability of item offered.

33. Minor Deviations: The County reserves the right to negotiate minor deviations from the prescribed terms, conditions and requirements with the selected vendor.

34. Price Reductions: By submitting a bid in response to this solicitation, bidder guarantees that Greenville County is receiving the lowest price offered by bidder's company for like items/services to other customers. If at any time during the contract period, bidder offers a lower

price to another customer, upon discovery Greenville County shall reserve the right to take any or all of the following actions:

a) Cancel the contract, if it is currently in effect;

b) Determine the amount, which the County was overcharged and submit a request for payment from the bidder for that amount or deduct the difference from any amount due the bidder;

c) Demand that the bidder offer the County the same pricing schedule;

d) Take the necessary steps to collect any performance surety provided on the applicable contract.

35. Contractor License Requirement: The contractor shall procure all permits and licenses, and pay all charges and fees necessary and incidental to the lawful conduct of his business. He shall keep himself fully informed of existing and future Federal, State, and Local Laws, ordinances and regulations, which in any manner affect the fulfillment of his contract and shall comply with the same.

36. Conflict of Interest Statement: The contractor may become involved in situations where a conflict of interest could occur due to individual or organizational activities within the County. The vendor, by submitting a bid, is in essence assuring the County that his company, and/or subcontractors, is in compliance with all federal, state, and local conflict of interest laws, statutes, and regulations.

37. Insurance:

The Contractor is responsible for and must have all required insurance listed below and shall not commence work under the associated contract until it has obtained all insurance required, and the County has approved such insurance in writing, nor shall the Contractor allow any subcontractor to commence work on its subcontract until all similar insurance required of the subcontractor has been obtained. All insurance policies shall be maintained for the life of the contract.

A. THE COUNTY SHALL BE NAMED AS "ADDITIONAL INSURED" FOR ITS INTEREST on all policies of insurance except Worker's Compensation and Professional Errors and Omissions regarding ongoing operations, products and completed operations, and this shall be noted on the face of the Certificate of Insurance. As a part of the certificate of insurance requirement the contractor shall also include acknowledgement and acceptance of the wavier of subrogation provision granted to the County of Greenville. This acknowledgement and acceptance should be included in the same section of the Certificate of Insurance that evidences the "Additional Insured" provision.

B. Certificates for all such policies of insurance shall be provided by the contractor's insurance agent or broker to the County within 10 working days from the date of Notice of Award.

C All Certificates of Insurance submitted shall provide on the face of the certificate reference to County's IFB# 01-07/14/16.

D. Contractor will provide County a minimum of 30 days advance notice in the event the insurance policies (or an insurance policy) is canceled.
Subcontractors approved to perform work on this project are subject to all of the requirements in this Section.

E. Contractor agrees to maintain and keep in force during the life of this Agreement, with a company or companies authorized to do business in South Carolina, the following insurance policies:

Comprehensive General Liability:
1,000,000 per occurrence - combined single limit / $2,000,000 general aggregate, to include products and completed operations.

Automobile Liability:
$1,000,000 per occurrence - combined single limit (Coverage shall include bodily injury and property damage and cover all vehicles including owned, non-owned and hired)

Statutory Worker's Compensation:
Coverage A - State of SC
Coverage B - Employers liability
$1,000,000 Each Accident
$1,000,000 Disease, Per Employee
$1,000,000 Disease, Policy Limit
Policy shall contain a waiver of subrogation in favor of and/or applies to the County of Greenville, its departments, agencies, boards, employees, and commissions for losses from work performed by or on behalf of the contractor.

No deviation from these coverages will be accepted unless, in the County's sole discretion, it is more advantageous to the County, i.e., $1,000,000 - a $2,000,000 or $5,000,000 limit would be acceptable.

38. Contracts: The County reserves the option to prepare and negotiate its own contract with the vendor, giving due consideration to the stipulations of the vendor's contracts and associated legal documents. Vendors should include with their submittal a copy of any proposed standard contract.

39. Contractor Liability: The contractor assumes full responsibility for all injuries to, or death of any person and for all damage to property, including property and employees of the County and for all claims, losses or expense which may in any way arise out of the performance of the work, whether caused by negligence or otherwise; and the contractor shall indemnify and save the County harmless from all claims, losses, expense, or suits for any such injuries, death or damages to property, and from all liens, losses, expenses, claims or causes of action of any sort which may arise out of the performance of the work, and shall defend, on behalf of the County and suit brought against the County for attorney's fees and for all other expenses incurred by the County in connection with or as a result of any such suit, claims, or loss. Under no

circumstances and with no exception will Greenville County act as arbitrator between the contractor and any subcontractor. The contractor will be solely responsible for compliance with building code requirements, all dimensions, and all conditions relating to his work under this contract. Workmanship shall be first quality in every respect. All measures necessary to ensure a first class job shall be taken.

40. Sub-Contracting: The contractor shall not subcontract any portion of this contract without proper written approval from the County.

41. Non-Collusion: The contractor expressly warrants and certifies that neither the Contractor nor its employees or associates has directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in conjunction with this bid.

42. Prohibition of Gratuities: Neither the contractor nor any person, firm or corporation employed by the contractor in the performance of the contract shall offer or give, directly or indirectly, to any employee or agent of the County, any gift, money, or anything of value, or promise any obligations, or contract for future reward or compensation at any time during the term of this contract.

43. Publicity Releases: Contractor agrees not to refer to the award of this contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by the user. The contractor shall not have the right to include the County's name in its published list of customers without prior approval of the County. With regard to news releases, only the name of the County, type and duration of contract may be used and then only with prior approval of the County. The contractor also agrees not to publish, or cite in any form, any comments or quotes from the County Staff unless it is a direct quote from the Public Information Officer.

44. Public Record: All information submitted relating to this bid, except for proprietary information, shall become part of the public record to the extent required by the Freedom of Information Act. Vendors shall be responsible for clearly marking all information submitted that is proprietary based on the Freedom of Information Act. The County assumes no responsibility for the release of information not clearly and properly labeled as proprietary.

45. Precedence: In the event of conflict between the terms and conditions and the specifications, the more restrictive instruction shall take precedence unless stated otherwise in the specifications.

46. Illegal Immigration Reform Act Compliance: By submitting an offer, Contractor certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws (originally enacted as Section 3 of The South Carolina Illegal Immigration Reform Act , 2008 S.C. Act No. 280) and agrees to provide upon request any documentation required to establish either: (a) the applicability of Title 8, Chapter 14 to Contractor and any subcontractors or sub-subcontractors; or (b) the compliance with Title 8, Chapter 14 by Contractor and any subcontractor or sub-subcontractor. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this

chapter is guilty of a felony, and upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring the subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in any contracts with the sub-subcontractors language requiring the sub- subcontractor to comply with the applicable requirements of Title 8, Chapter 14. In the event any contractor, subcontractor and/or sub-subcontractor is found not to be in compliance with the SC Immigration Reform Act [hereinafter "The Act"], the contractor agrees to fully indemnify the County for any loss suffered by the County as a result of such contractor, subcontractor or sub-subcontractor's failure to comply with the Act.

47. Safety, Health, and Security: Contractor shall be solely responsible for its activities, that of its employees on the site and activities of its consultants, contractors and/or subcontractors for maintaining a safe job site. Contractor's activities and activities of its consultants, contractors and/or subcontractors shall comply with all local, state, and federal safety regulations and their enforcement agencies. Contractor shall at all times conduct its operations under this Contract in a manner to avoid risk of endangerment to the health and safety of persons and property. The Contractor shall have sole responsibility for implementing its safety and health programs, taking all safety and health precautions necessary and continuously inspecting all equipment, materials and work to prevent, discover, determine and correct any conditions which might result in personal injury, equipment damage or damage to property or the public. Contractor's safety, health and security programs shall be in compliance with all regulatory requirements and shall furnish accident, incident, injury, and other records and reports required by the Occupational Safety and Health Administration, State and Local laws, or by the County.

48. ADA Compliance: All work shall be compliant with the full intent of all ADA (Title II) guidelines for accessibility, play components and design. The Department of Justice's regulation implementing Title II, subtitle A, of the ADA applies to State and local government entities, and protects qualified individuals with disabilities from discrimination on the basis of disability in services, programs, and activities provided by State and local government entities. Further, all Local and County code compliances regarding ADA must be met. For additional information on ADA compliance, refer to (ADA.gov).

STATE OF SOUTH CAROLINA)
COUNTY OF GREENVILLE)

CONSTRUCTION AGREEMENT

THIS AGREEMENT is made and entered into on this _____ day of _____, 2016, by and between the **COUNTY OF GREENVILLE**, a political subdivision of the State of South Carolina, having its principle place of business at 301 University Ridge, Greenville, S.C. 29601 ("**COUNTY**"), and _____, located at _____ ("**CONTRACTOR**").

IN CONSIDERATION of the covenants hereinafter set forth, the parties mutually agree as follows:

1. **CONTRACT PERIOD**

This Agreement shall begin on the date the NOTICE TO PROCEED is issued by **COUNTY**. All work phases specified herein must be completed no later than sixty (60) calendar days from the effective date of the Notice to Proceed. If the **Contractor** fails to satisfactorily complete the work within the specified time, liquidated damages of $250.00 per calendar day shall be assessed up to value of the contract (total bid). The penalty may be drawn from any payment due, or the performance bond, at the discretion of the **County**.

2. **PROJECT SCOPE**

COUNTY has employed **CONTRACTOR** to provide construction of the Dr. Cary E. Stroud Camper Care Center. The services to be provided by **CONTRACTOR** are more particularly described in **COUNTY'S** IFB #01-07/14/16 and in **CONTRACTOR'S** response to IFB #01-07/14/16 received _____, which are both attached hereto and incorporated herein by reference. **CONTRACTOR** acknowledges that it is an independent contractor and that it will at all times act as such. Nothing in this Agreement shall be deemed to constitute **CONTRACTOR** or any of its employees as the agent, representative or employee of **COUNTY**, or create a joint venture between the parties.

3. **PAYMENT TERMS**

3.1 **COUNTY** agrees to pay **CONTRACTOR** for the services described in the Project Scope an amount not to exceed _____.

3.2 **CONTRACTOR** will submit monthly invoices to the **COUNTY**. Such invoices shall include a detailed listing of charges. **COUNTY** shall notify **CONTRACTOR** within ten (10) days of receipt of invoice of any dispute with the invoice and **CONTRACTOR**, upon such notice, shall provide back-up data to **COUNTY**. **COUNTY** and **CONTRACTOR** will, thereafter, promptly resolve any disputed items. Payment on undisputed invoice amounts is due upon receipt of invoice by **COUNTY** and is past due thirty (30) days from the date the invoice is received. If payment on undisputed invoice amounts remains past due sixty (60) days from the date the invoice is received by **COUNTY**, then **CONTRACTOR** shall have the right to either suspend all work under this Agreement, without prejudice, or terminate this Agreement in accordance with the provisions of Section 13.2. **COUNTY** shall, prior to making

SAMPLE CONTRACT

payment on any invoice, withhold ten (10%) percent from any payment due. The amounts so withheld shall be released to **CONTRACTOR** upon satisfactory completion of the Project.

3.3 Approval and/or payment of such invoices shall not in any way relieve **CONTRACTOR** of its liability to **COUNTY** for deficiencies in the performance of its services. **COUNTY'S** approval or acceptance of, or payment for any of the services shall not operate as a waiver of any rights to which **COUNTY** may be entitled.

3.4 **NO INTEREST OR OTHER LATE PENALTIES SHALL ACCRUE ON LATE PAYMENTS.**

3.5 **IT IS UNDERSTOOD AND AGREED BY THE PARTIES THAT IN THE EVENT FUNDS ARE NOT APPROPRIATED IN THE CURRENT FISCAL YEAR OR ANY SUBSEQUENT FISCAL YEAR, THIS CONTRACT WILL BECOME NULL AND VOID AND THE COUNTY WILL ONLY BE REQUIRED TO PAY FOR SERVICES COMPLETED TO THE SATISFACTION OF THE COUNTY.**

4. **CHANGES**

4.1 **COUNTY** may, at any time, in writing, and within the general scope of this Agreement, make "Request for Changes" in the services or work to be performed. In the event **CONTRACTOR** is requested to perform additional services or work not contemplated by this Agreement, **CONTRACTOR** will promptly notify **COUNTY** if such change causes an increase in **CONTRACTOR'S** cost of, or time required for, performance of any services under this Agreement, an equitable adjustment shall be made and this Agreement shall be modified in writing accordingly. In the event **CONTRACTOR** is requested to reduce the performance of services or scope of work, such request must be in writing. In the event **CONTRACTOR** is requested to reduce the performance of services or scope of work **COUNTY** shall be entitled to a decrease in the amount of compensation to be paid to **CONTRACTOR** accordingly.

4.2 All change orders must be in writing to be valid, and no services for which any additional compensation will be charged by **CONTRACTOR** shall be furnished without the written authorization of **COUNTY**.

4.3 **COUNTY** may add to or reduce the scope of work by generating mutually agreed upon contract exhibits to this basic agreement.

5. **WARRANTIES**

In addition to any express and/or implied warranties provided to **COUNTY** by law, **CONTRACTOR** warrants to **COUNTY** that the performance of the services covered by this Agreement will be competent to perform the tasks undertaken, that the product of such paving services will yield only first-class results, that materials and equipment furnished will be of good quality and new unless otherwise permitted by this Agreement, and that the work will be of good quality, free from faults and defects and in strict conformance with this Agreement. All work not conforming to these requirements may be considered defective. In

SAMPLE CONTRACT

the event any of the work is found to be defective or not in accordance with this Agreement within one (1) year after completion of the contract services, **CONTRACTOR** will promptly correct the work without additional compensation from **COUNTY**, upon written notice from **COUNTY**. All corrective work shall be completed within thirty (30) days of receipt of written notice from **COUNTY**. Establishment of the one year time period in this section relates only to the duty of **CONTRACTOR** to specifically correct the work.

6. **WITHHOLDING PAYMENT**

COUNTY has the right, but not the obligation, to withhold funds to the extent and only to the extent necessary to protect **COUNTY** from loss because of:

a) Defective work not remedied by **CONTRACTOR** within a reasonable time or for which **CONTRACTOR** has failed to initiate a remedy within a reasonable time;

b) Claims of third parties against **COUNTY** or **COUNTY'S** property for which **CONTRACTOR** is liable;

c) Failure by **CONTRACTOR** to pay subcontractors or others in a prompt and proper fashion the amounts due and owing to such subcontractor or others relating to the Project.

d) Evidence that the balance of the work cannot be completed in accordance with this Agreement for the unpaid balance of the Contract Price;

e) Evidence that the work will not be completed in the time required for final completion;

f) Persistent failure to carry out the work in accordance with this Agreement, or

g) Damage to the **COUNTY** or a third party to whom the **COUNTY** is, or may be, liable and for which **CONTRACTOR** is liable pursuant to the terms of this Agreement.

7. **RIGHT TO STOP WORK**

In the event **CONTRACTOR** fails to perform the work in accordance with this Agreement, **COUNTY** may order **CONTRACTOR** to stop the work and **COUNTY** may then perform the work in accordance with Section 8, below, or terminate this Agreement in accordance with Section 13.1.2. In such event, **CONTRACTOR** shall immediately obey such stop work order.

8. **COUNTY'S RIGHT TO PERFORM WORK**

In the event **CONTRACTOR'S** work is stopped pursuant to Section 7, above, entitled "Right to Stop Work", and **CONTRACTOR** fails to provide adequate assurance to **COUNTY**, within seven (7) days of such stoppage, that the cause of such stoppage will be eliminated or corrected, then **COUNTY** may proceed to carry out the subject work or terminate this Agreement. In such a situation, an appropriate Change Order shall be issued deducting from the Contract Price the documented and agreed to cost of correcting the deficiencies, including any professional services and expenses necessitated thereby. If the unpaid portion of the Contract Price is insufficient to cover the amount due **COUNTY**, **CONTRACTOR** shall pay the difference to **COUNTY**; provided, however if **COUNTY** stops the work, takes over a portion of or all of the work and performs the work, then **CONTRACTOR'S WARRANTY OBLIGATIONS** relating to such work performed by **COUNTY** shall be null and void.

SAMPLE CONTRACT

9. **INDEMNIFICATION.**

CONTRACTOR agrees to assume responsibility for any damage, loss, or injury, including death, of any kind or nature whatever to person or property, including employees and property of **COUNTY**, caused by or resulting from any negligent act or omission of **CONTRACTOR** or its subcontractors or any of their officers, agents, servants, or employees, arising from the performance of the work under this Agreement. **CONTRACTOR** shall defend, indemnify, and hold harmless **COUNTY** and all of its officers, agents, servants, or employees from and against any and all claims, loss, damage, charge, or expense to which they or any of them may be put or subjected by reason of any such damage, loss, or injury. **CONTRACTOR** expressly agrees to defend against any claims brought or filed against **COUNTY** where such claim or action involves, in whole or in part, the subject of the indemnity contained herein, whether such claims or actions are rightfully or wrongfully brought or filed.

10. **INSURANCE.**

The contractor is responsible for and must have all required insurance listed below and shall not commence work under the associated contract until it has obtained all insurance required, and the County has approved such insurance in writing, nor shall the Contractor allow any subcontractor to commence work on its subcontract until all similar insurance required of the subcontractor has been obtained. All insurance policies shall be maintained for the life of the contract.

A. **THE COUNTY SHALL BE NAMED AS "ADDITIONAL INSURED" FOR ITS INTEREST** on all policies of insurance, except Worker's Compensation, Auto Liability and Professional Errors and Omissions, regarding ongoing operations, products and completed operations, and this shall be noted on the face of the Certificate of Insurance. As a part of the certificate of insurance requirement the contractor shall also include acknowledgement and acceptance of the wavier of subrogation provision granted to the County of Greenville. This acknowledgement and acceptance should be included in the same section of the Certificate of Insurance that evidences the "Additional Insured" provision.

B. Certificates for all such policies of insurance shall be provided by the **Contractor's** insurance agent or broker to the **County** within 10 working days from the date of Notice of Award.

C. All Certificates of Insurance submitted shall provide on the face of the certificate reference to County's IFB #01-07/14/16.

D. **Contractor** will provide **County** a minimum of 30 days advance notice in the event the insurance policies (or an insurance policy) is canceled.
Subcontractors approved to perform work on this project are subject to all of the requirements in this Section.

E. **Contractor** agrees to maintain and keep in force during the life of this Agreement, with a company or companies authorized to do business in South Carolina, the following

SAMPLE CONTRACT

insurance policies:

Comprehensive General Liability:
1,000,000 per occurrence - combined single limit / $2,000,000 general aggregate, to include products and completed operations.

Automobile Liability:
$1,000,000 per occurrence - combined single limit (Coverage shall include bodily injury and property damage and cover all vehicles including owned, non-owned and hired)

Statutory Worker's Compensation:
Coverage A - State of SC
Coverage B - Employers liability
$1,000,000 Each Accident
$1,000,000 Disease, Per Employee
$1,000,000 Disease, Policy Limit
Policies shall contain a waiver of subrogation in favor of and/or that applies to the County of Greenville, its departments, agencies, boards, employees, and commissions for losses from work performed by or on behalf of the contractor.

No deviation from these coverages will be accepted unless, in the County's sole discretion, it is more advantageous to the County, i.e., $1,000,000 - a $2,000,000 or $5,000,000 limit would be acceptable.

11. **PERFORMANCE AND PAYMENT BOND**

Contractor shall furnish a satisfactory Performance and Payment Bond in the amount of the total contract price no later than fifteen (15) business days after the date of the Notice of Award. The Bond must have approval by the County Attorney's Office before it is made effective. The **Contractor** shall have as surety a corporate surety authorized to act as surety in South Carolina. The Performance and Payment Bond shall remain in effect for one year after completion of the contract.

12. **ILLEGAL IMMIGRATION REFORM ACT COMPLIANCE**

By submitting an offer, **Contractor** certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws (originally enacted as Section 3 of The South Carolina Illegal Immigration Reform Act , 2008 S.C. Act No. 280) and agrees to provide upon request any documentation required to establish either: (a) the applicability of Title 8, Chapter 14 to **Contractor** and any subcontractors or sub-subcontractors; or (b) the compliance with Title 8, Chapter 14 by **Contractor** and any subcontractor or sub-subcontractor. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony and upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." **Contractor** agrees to include in any contracts with its subcontractors language requiring the subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in any contracts with the sub-subcontractors language requiring the sub- subcontractor to comply with the applicable

SAMPLE CONTRACT

requirements of Title 8, Chapter 14. In the event any contractor, subcontractor and/or sub-subcontractor is found not to be in compliance with the SC Immigration Reform Act [hereinafter "The Act"], the contractor agrees to fully indemnify the County for any loss suffered by the County as a result of such contractor, subcontractor or sub-subcontractor's failure to comply with the Act.

13. TERMINATION

13.1 TERMINATION BY COUNTY

13.1.1 This Agreement may be terminated by **COUNTY** upon fifteen (15) days written notice at **COUNTY'S** election. In the event of termination at **COUNTY'S** election and not due to the fault of **CONTRACTOR**, **CONTRACTOR** will be paid only for the work actually completed to the satisfaction of the **County** as of the date of termination.

13.1.2 Should **CONTRACTOR** default or persistently fail or neglect to carry out the work in accordance with the terms of this Agreement, **COUNTY** may by written notice to **CONTRACTOR**, without prejudice to any other right or remedy under this Agreement, terminate the employment of **CONTRACTOR** and take possession of the site and all materials, equipment, tools and construction equipment and machinery thereon owned by **CONTRACTOR** as well as all drawings, plans and specifications and finish the work by whatever methods **COUNTY** may deem expedient; provided, however, prior to such termination, **CONTRACTOR** shall be given notice of the default and an opportunity to cure such default within seven (7) days. Such termination shall be deemed "for cause". Should this Agreement be terminated "for cause", **CONTRACTOR** shall not be entitled to any further payment. In the event the actual and documented cost of finishing the work, including compensation for professional services and expenses made necessary thereby, if any, exceed the unpaid balance, **CONTRACTOR** shall pay the difference to **COUNTY**. This obligation for payment shall survive the termination of this Agreement.

13.2 TERMINATION BY CONTRACTOR

Should **COUNTY** fail to make payment on any undisputed invoice amount within sixty (60) days of receipt of such invoice, **CONTRACTOR** may elect to either suspend the work or terminate this Agreement; provided, however, prior to termination, **COUNTY** shall be given notice of the default and an opportunity to cure such default within seven (7) days. Should this Agreement be terminated by **CONTRACTOR**, **CONTRACTOR** shall be entitled to be paid only for the work actually completed to the satisfaction of the **County** as of the date of termination.

14. CLEANING THE SITE AND SAFETY

14.1 **CONTRACTOR** shall keep the site reasonably clean during performance of the work. **CONTRACTOR** shall dispose of all refuse at a South Carolina DHEC approved landfill.

SAMPLE CONTRACT

14.2 **CONTRACTOR** shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to (1) employees on the job and other persons who may be affected thereby; (2) the work and materials and equipment to be incorporated herein; and (3) other property at or adjacent to the site.

14.3 **CONTRACTOR** shall give notices and comply with all laws, ordinances, rules, regulations and orders of public authorities bearing on the safety of persons and property and their protection from damage, injury or loss.

15. **ASSIGNMENT**

This Agreement shall not be assigned by either party without the prior written consent of the other party.

16. **SUBCONTRACTS**

16.1 **CONTRACTOR** shall promptly furnish to **COUNTY**, in writing, the bid list proposed by **CONTRACTOR** to act as subcontractors on the Project. **COUNTY** shall, within seven (7) days, reply to **CONTRACTOR**, in writing, stating any objections **COUNTY** may have to such proposed subcontractors. **CONTRACTOR** may enter into a subcontract with any subcontractor on the approved bid list. **CONTRACTOR** shall not be required to enter into a subcontract with any subcontractor to whom **CONTRACTOR** has objection.

16.2 All subcontractors shall provide performance and payment bonds in accordance with bonding requirements set forth in the Greenville County procurement policies and shall name **COUNTY** as an additional obligee on such bonds.

16.3 All subcontractors will be required to furnish Certificates of Insurance to the **County** in accordance with all of the requirements set forth in Section 10 of this Agreement.

17. **NOTICES**

All notices made pursuant to this Agreement shall be in writing and delivered personally or sent by registered or certified mail, return receipt requested, to the parties at their respective addresses set forth below:

COUNTY
Nadine Chasteen, CPPO, CPPB
Director
County of Greenville
Procurement Services Division
301 University Ridge, Suite 100
Greenville, SC 29601

CONTRACTOR

Any party may change the person to whom notices are to be sent by giving ten (10) days written notice of such change to the other party.

SAMPLE CONTRACT

18. **APPLICABLE LAW AND VENUE**

18.1 The construction, interpretation and performance of this Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina.

18.2 **CONTRACTOR** and **COUNTY** further agree that this Agreement shall be deemed to have been made and performed in Greenville County, South Carolina. For the purposes of venue, all suits or causes of action arising out of this Agreement shall be brought in the courts of Greenville County, South Carolina.

19. **COMPLIANCE WITH FEDERAL, STATE AND LOCAL LAWS**

CONTRACTOR shall comply with all federal, state and local statutes, ordinances and regulations, and shall obtain all permits that are applicable to this Agreement.

20. **SUCCESSORS AND ASSIGNS**

CONTRACTOR and **COUNTY** each binds itself and its partners, successors, executors, administrators and assigns to the other party of this Agreement and to the partners, successors, executors, administrators, and assigns of such other party, in respect to all covenants of this Agreement.

21. **SEVERABILITY**

Should any section, paragraph, clause, phrase, or provision of this Agreement be adjudged invalid or held unconstitutional by a court of competent jurisdiction, such declaration shall not affect the validity of this Agreement as a whole or any part or provision thereof, other than the part so decided to be invalid or unconstitutional.

22. **ENTIRE AGREEMENT**

This Agreement, along with the provisions contained in **COUNTY'S** IFB #01-07/14/16, and **CONTRACTOR'S** RESPONSE TO IFB #01-07/14/16, attached hereto, represents the entire agreement between the parties and supersedes any and all prior agreements, whether written or oral, that may exist between the parties regarding same. If there is a conflict between any of the terms of these contract documents the order of precedence of these contract documents shall be:

A. Any Change Order or Amendment signed and executed by the parties;
B. This Agreement;
C. **CONTRACTOR'S** RESPONSE TO IFB #01-07/14/16
D. Addenda to **COUNTY'S** IFB# 01-07/14/16
E. **COUNTY'S** IFB #01-07/14/16.

SAMPLE CONTRACT

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date hereinabove written.

WITNESSES:

_____

_____

CONTRACTOR

By: _____

Its: _____

COUNTY OF GREENVILLE

By: _____
Bob Taylor, Chairman
Greenville County Council

By: _____
Joseph M. Kernell
County Administrator

ATTEST:

_____
Theresa B. Kizer, c.c.c.
Clerk to Council

SAMPLE CONTRACT

GREENVILLE COUNTY
PROCUREMENT SERVICES DIVISION
GREENVILLE COUNTY SQUARE
301 UNIVERSITY RIDGE, SUITE 100
GREENVILLE, SOUTH CAROLINA 29601-3660

Greenville County

CONSTRUCTION OF INFIRMARY
IFB# 01-07/14/16
Bid Sheet

QUANTITY	COMMODITIES OR SERVICES	UNIT	PRICE
1EA	CONSTRUCTION OF INFIRMARY	1LS	_____
1EA	ALTERNATE 1: PROVIDE WOOD CEILING IN ROOM #113 ADD / DELETE $_____ LISTING OF SUB-CONTRACTORS AND THEIR SERVICE (MECHANICAL, ELECTRICAL, ETC.) _____ _____ _____ _____ _____ _____ _____ _____ _____ NOTICE TO BIDDERS: All taxes on any item, that Greenville County may require to pay, must be shown separately, not included in the price bid.		

_____
Authorized Signature

_____
Date

Attachment A

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

Issue Date/ Description: 2016.06.01 BID SET
MPS Project No: 015292.00

*3D IMAGE IS INCLUDED FOR ILLUSTRATIVE PURPOSES ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION, PRICING, OR DETAILING PURPOSES.

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OWNER

GREENVILLE COUNTY
GREENVILLE COUNTY SQUARE
301 UNIVERSITY RIDGE
GREENVILLE, SC 29601
RBROOKEY@GREENVILLECOUNTY.ORG

RICK BROOKEY

GENERAL CONTRACTOR

TBD

ARCHITECT

McMILLAN PAZDAN SMITH ARCHITECTS
400 AUGUSTA ST. SUITE 200
GREENVILLE, SC 29601
PHONE AND FAX NUMBER
EHUNGERFORD@MCMILLANPAZDANSMITH.COM

EARLE HUNGERFORD

CIVIL

BLUEWATER CIVIL DESIGN, LLC
19 WASHINGTON PARK SUITE 100
GREENVILLE, SC 29601
864-326-4202
LYNN@BLUEWATERCIVIL.COM

LYNN SOLESBEE

STRUCTURAL

ARROWOOD & ARROWOOD, PC
412-B PETTIGRU ST.
GREENVILLE, SC 29601
864-233-9383
JOHN@ARROWOODARROWOOD.COM

JOHN ARROWOOD

PLUMBING

LEBLANC-WELCH, INC.
25 WOODS LAKE ROAD SUITE 405
GREENVILLE, SC 29607
864-271-6535
CLAY@LEBLANCWELCH.COM

CLAY LONG

MECHANICAL

LEBLANC-WELCH, INC.
25 WOODS LAKE ROAD SUITE 405
GREENVILLE, SC 29607
864-271-6535
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CLAY LONG

ELECTRICAL

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102 PILGRIM ROAD
GREENVILLE, SC 29607
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DON BURDETTE

DRAWING LIST

SHEET NO	SHEET NAME
General	
G0.01	COVER SHEET
G1.11	LIFE SAFETY PLAN
Civil	
C001	TITLE SHEET
C002	EXISTING CONDITIONS & DEMOLITION PLAN
C101	SITE PLAN
C201	GRADING & DRAINAGE PLAN
C202	EROSION CONTROL PLAN
C301	UTILITY PLAN
C401	OVERFLOW PARKING AREA PLAN
C501	SITEWORK NOTES & DETAILS
C502	SITEWORK NOTES & DETAILS
C503	SITEWORK NOTES & DETAILS
C504	SITEWORK NOTES & DETAILS
C505	SITEWORK NOTES & DETAILS
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A1.12	OVERFLOW PARKING PLAN
A2.11	FIRST FLOOR PLAN
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A4.11	ROOF PLAN
A5.11	EXTERIOR ELEVATIONS
A6.11	BUILDING SECTIONS
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S1.2	PORCH AND HEADER FRAMING PLAN
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Mechanical	
M2.11	FIRST LEVEL HVAC PLAN
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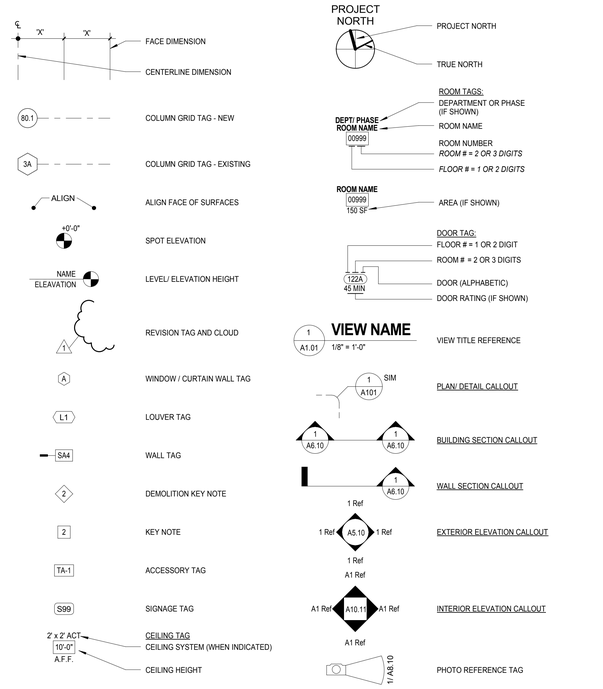
Electrical	
E0.01	ELECTRICAL LEGEND AND SCHEDULES
E0.02	ELECTRICAL SITE PLAN
E1.01	ELECTRICAL LIGHTING AND POWER PLAN



STANDARD GRAPHICS AND SYMBOLS

1. ALL WORK SHALL MEET THE MINIMUM REQUIREMENTS OF THE LATEST ADOPTED EDITIONS OF THE APPLICABLE CODES, AS INDICATED ON THIS SHEET AND ALL OTHER LOCAL, STATE OR FEDERAL CODES OR REGULATIONS HAVING JURISDICTION.
2. ALL CONSTRUCTION SHALL BE HANDICAPPED ACCESSIBLE AND COMPLY WITH BARRIER FREE DESIGN AND OTHER APPLICABLE STANDARDS.
3. DIMENSIONS SHOWN FOR EXTERIOR DOORS AND WINDOWS ARE TO EDGE OF FRAME UNLESS OTHERWISE NOTED.
4. PROVIDE FIRE EXTINGUISHERS IN ACCORDANCE W/ NFPA 10. INSTALL WALL MOUNTED FIRE EXTINGUISHERS (FE) AT 4'-0" AFF TO TOP OF CABINET. GENERAL CONTRACTOR TO COORDINATE LOCATIONS WITH LOCAL FIRE MARSHALL.
5. HORIZONTALLY BRACE (STIFFEN) ALL METAL STUD SYSTEMS AS RECOMMENDED AND BRACE TOPS OF ALL PARTITIONS TO STRUCTURE ABOVE.
6. THE GENERAL CONTRACTOR SHALL PROVIDE CONTROL JOINTS (CJ) IN ALL MASONRY WALLS AS SHOWN IN THE DRAWINGS, BUT NOT TO EXCEED 30'-0" LINEAR BETWEEN JOINTS. THE CONTROL JOINT SHALL CONTINUE UP FULL HEIGHT OF WALL. COLORS OF SOFT JOINT SEALANT SHALL MATCH THAT OF THE WALL CONSTRUCTION MATERIAL. THE GENERAL CONTRACTOR SHALL COORDINATE THE CONTROL JOINT QUANTITY, SPACING AND LOCATIONS WITH THE ARCHITECT PRIOR TO CONSTRUCTION.
7. DO NOT SCALE DRAWINGS. IF DIMENSIONS ARE IN QUESTION THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATION FROM THE ARCHITECT BEFORE CONTINUING WITH THE WORK.
8. IN THE EVENT OF ANY DISCREPANCIES FOUND IN THE DRAWINGS OR CONFLICTS BETWEEN THE ARCHITECTURAL DRAWINGS AND THOSE OF THE ENGINEERS, THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
9. ALL WOOD BLOCKING TO BE FIRE RETARDANT TREATED IF REQUIRED BY CODE. ALL WOOD IN CONTACT WITH MORTAR, CONCRETE, OR MASONRY TO BE PRESSURE TREATED.
10. ALL WORK LISTED, SHOWN OR IMPLIED ON THE CONSTRUCTION DOCUMENTS SHALL BE SUPPLIED AND INSTALLED BY THE GENERAL CONTRACTOR EXCEPT WHERE OTHERWISE NOTED. THE GENERAL CONTRACTOR SHALL CLOSELY COORDINATED HIS WORK WITH THAT OF OTHER CONTRACTORS OR VENDORS TO ASSURE THAT ALL SCHEDULES ARE MET AND THAT ALL WORK IS DONE IN CONFORMANCE TO THE SUPPLIERS REQUIREMENTS.
11. ALL INTERIOR DIMENSIONS GIVEN ARE FROM FACE OF STUD. OR CENTERLINE OF COLUMN, UNLESS OTHERWISE NOTED. EXTERIOR DIMENSIONS ARE FROM FACE/ EDGE OF MASONRY/ CONCRETE OR COLUMN CENTERLINE. UNLESS OTHERWISE NOTED.
12. ALL NEW ROOF WORK TO BE PERFORMED BY LANDLORD'S ROOFING CONTRACTOR SO AS NOT TO VOID MANUFACTURER'S WARRANTY.

GENERAL NOTES

VICINITY MAP

SITE MAP

ABBREVIATION NOTES:

1. ABBREVIATIONS LISTED BELOW APPLY TO THE ARCHITECTURAL DRAWINGS ONLY, REFER TO DRAWINGS BY OTHER TRADES FOR ABBREVIATIONS USED ON OTHER TRADES DRAWINGS.
2. REFER TO FINISH SCHEDULE FOR MATERIAL ABBREVIATIONS USED ON THE FINISH SCHEDULE.

ACT	ACOUSTICAL CEILING TILE	FE	FIRE EXTINGUISHER	OPH	OPPOSITE HAND
ADJ	ADJACENT or ADJUSTABLE	FEC	FIRE EXTINGUISHER CABINET	OPP	OPPOSITE
AFF	ABOVE FINISHED FLOOR	FIN GR	FINISH GRADE	P	PAINT
AFG	ABOVE FINISHED GRADE	FOF	FACE OF FINISH	PERF	PERFORATED
ALUM	ALUMINUM	FOM	FACE OF MASONRY	PERP	PERPENDICULAR
BATT	BATTING	FOS	FACE OF STUD	PL	PLATE
BD	BOARD	FOW	FACE OF WALL	PLAM	PLASTIC LAMINATE
BLDG	BUILDING	GA	GAUGE	PLYWD	PLYWOOD
BFF	BELOW FINISH FLOOR	GALV	GALVANIZED	PREFAB	PREFABRICATE
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED	GC	GENERAL CONTRACTOR	PREFIN	PREFINISH
CF/OI	CONTRACTOR FURNISHED/OWNER INSTALLED	GL	GLASS	PT	PRESSURE TREATED
CJ	CONSTRUCTION JOINT/ CONTROL JOINT	GLZ	GLAZING	R	RADIUS
CL	CENTER LINE	GWB	GYPSUM WALL BOARD	REINF	REINFORCE
CLG	CEILING	HB	HOSE BIBB	RVL	REVEAL
CLR	CLEAR	HC	HOLLOW CORE	SAB	SOUND ATTENUATION BLANKETS
CMU	CONCRETE MASONRY UNIT	HCP	HANDICAPPED	SAPC	SUSPENDED ACOUSTICAL PLASTER CEILING
CO	CLEANOUT	HCWD	HOLLOW CORE WOOD DOOR	SATC	SUSPENDED ACOUSTICAL TILE CEILING
COL	COLUMN	HDW	HARDWARE	SIM	SIMILAR
CONC	CONCRETE	HDWD	HARDWOOD	SPEC	SPECIFICATION(S)
COORD	COORDINATE	HM	HOLLOW METAL	STL	STEEL
CORR	CORRIDOR	INSUL	INSULATION	STOR	STORAGE
CPT	CARPET	KD	KNOCKED DOWN	TEMP	TEMPORARY
DEMO	DEMOLITION	KIT	KITCHEN	TO	TOP OF
DIA	DIAMETER	KPL	KICKPLATE	TOM	TOP OF MASONRY
DRWGS	DRAWINGS	LB	POUND(S)	TOP	TOP OF PARAPET
DS	DOWNSPOUT	LF	LINEAR FEET (FOOT)	TOS	TOP OF SLAB; TOP OF STEEL
DSP	DRY STANDPIPE	MECH	MECHANICAL	TOW	TOP OF WALL
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	MEZZ	MEZZANINE	TYP	TYPICAL
EJ	EXPANSION JOINT	MIN	MINIMUM	UNO	UNLESS NOTED OTHERWISE
ELEC	ELECTRIC	MISC	MISCELLANEOUS	VERT	VERTICAL
ELEV	ELEVATOR OR ELEVATION	MO	MASONRY OPENING	VIF	VERIFY IN FIELD
EOS	EDGE OF SLAB	MTL	METAL	V.J	V JOINT
EQ	EQUAL	NA	NOT APPLICABLE	VNR	VENEER
EQUIP	EQUIPMENT	NIC	NOT IN CONTRACT	W/	WITH
EWH	ELECTRIC WATER HEATER	NLB	NONLOADBEARING	W/O	WITHOUT
EXIST	EXISTING	NTP	NOTICE TO PROCEED	WD	WOOD
FD	FLOOR DRAIN	OC	ON CENTER	WH	WATER HEATER
FDC	FIRE DEPARTMENT CONNECTION	OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED	WSCT	WAINSCOT
		OF/OI	OWNER FURNISHED/OWNER INSTALLED	WWM	WELDED WIRE MESH

ABBREVIATION LIST

mcmillan | pazdan | smith
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CONSULTANT LOGO

STATE OF SOUTH CAROLINA — EARLE G. HUNGERFORD — GREENVILLE, SC — 05029 — REGISTERED ARCHITECT

STATE OF SOUTH CAROLINA — McMILLAN PAZDAN SMITH, LLC — GREENVILLE, SC — 100573 — REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
COVER SHEET

SHEET NO. G0.01

PROJ. NO. 015292.00

FIRE RATING AND FIRE PROOFING NOTES:
1. SEE FLOOR PLAN(S) AND WALL TYPE SCHEDULE FOR WALL ASSEMBLY TYPES AND CONSTRUCTION

2. FIRE CAULK AROUND ALL ELECTRICAL CONDUIT PASSING THROUGH WALLS.

3. SEE MECHANICAL AND PLUMBING DRAWINGS FOR SPECIAL DETAILS WHERE DUCTWORK AND PIPING PASS THROUGH WALLS.

RATED - 1 HOUR

RATED SMOKE - 1 HOUR

EGRESS PATH OF TRAVEL

SMOKE COMPARTMENT PATH OF TRAVEL

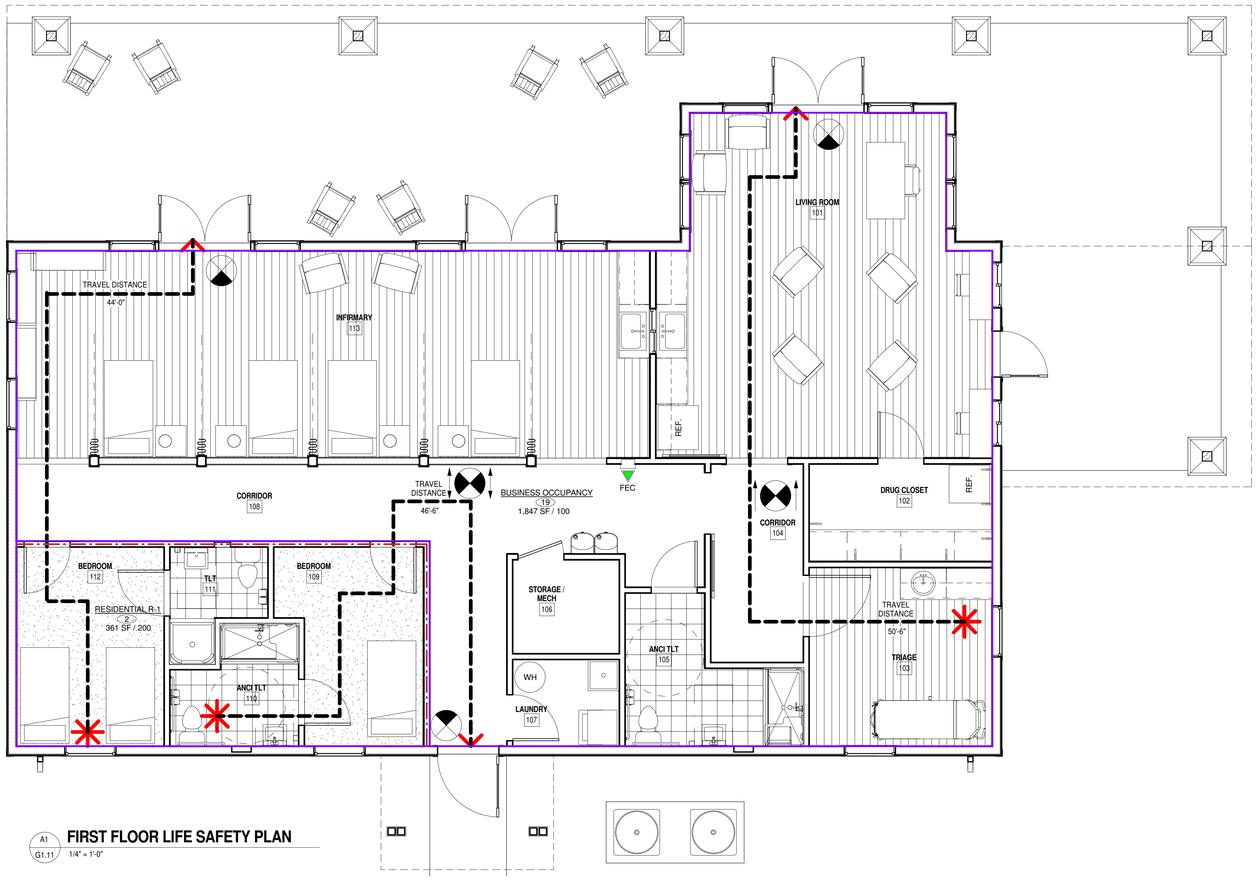
FE — BRACKET MOUNTED FIRE EXTINGUISHER

FEC — RECESSED OR SEMI-RECESSED FIRE EXTINGUISHER CABINET

CEILING MOUNTED EXIT SIGN (ARROWS WHEN INDICATED)

WALL MOUNTED EXIT SIGN (ARROWS WHEN INDICATED)

LIFE SAFETY LEGEND



A1 / G1.11 **FIRST FLOOR LIFE SAFETY PLAN**
1/4" = 1'-0"

CODE SUMMARY

JOB NAME: DR. CARY E. STROUD CAMPER CARE CENTER
MPS JOB NUMBER: 015292.00
JOB LOCATION: 4232 HIGHWAY 11, MARIETTA, SC 29661

APPLICABLE CODES :

2012 INTERNATIONAL BUILDING CODE
2012 INTERNATIONAL FIRE PREVENTION CODE
2012 INTERNATIONAL PLUMBING CODE
2012 INTERNATIONAL MECHANICAL CODE
2012 INTERNATIONAL FUEL GAS CODE
2009 INTERNATIONAL ENERGY CONSERVATION CODE
2011 NATIONAL ELECTRICAL CODE-NFPA 70
2009 ICC/ANSI A117.1

TOTAL GROSS BUILDING AREA : 2,315 SF

OCCUPANCY CLASSIFICATION :
CLINIC, OUTPATIENT - GROUP B 1, 847 SF
RESIDENTIAL - GROUP R-1 361 SF
2,208 SF

CONSTRUCTION TYPE : TYPE V-B, UNPROTECTED FULLY SPRINKLERED WITH NFPA-13 SYSTEM.

ALLOWABLE AREA :
BUSINESS ALLOWABLE 9,000 SF
RESIDENTIAL ALLOWABLE 7,000 SF

MAXIMUM NUMBER OF STORIES ALLOWED: 2 STORIES ALLOWED (TABLE 503), 1 STORY PROVIDED

MAXIMUM HEIGHT ALLOWED: 40'-0"

ACTUAL BUILDING HEIGHT TO TOP OF ROOF : 1 STORY
+/- 20'-0" TO TOP OF HIGHEST RIDGE

OCCUPANT LOAD CALCULATIONS PER AREA (TABLE 1004.1.2) OCCUPANCY FOR EXITING

USE	AREA	AREA PER PERSON	OCCUPANCY LOAD
BUSINESS OCCUPANCY - B	1,847 SF	100 GROSS	19 PERSONS
RESIDENTIAL OCCUPANCY - R-1	361 SF	200 GROSS	2 PERSONS
TOTAL	**2,208 SF**		**21 PERSONS**

FIRE RESISTANCE RATINGS - CONSTRUCTION TYPE V-B, FULLY SPRINKLERED

	HOURLY RATING
EXTERIOR BEARING WALLS >30	0 HOUR
EXTERIOR NON-BEARING WALLS >30	0 HOUR
INTERIOR BEARING/NON-BEARING WALLS	0 HOUR
CORRIDOR WALLS (TABLE 1017.1)	0 HOUR
FLOORS/BEAMS/COLUMNS	0 HOUR
ROOF	0 HOUR
INCIDENTAL USE	0 HOUR
CEILINGS	1 HOUR IN ROOMS 109,110,111 AND 112 - UL PS22
OCCUPANCY SEPARATION	1 HOUR - UL U305

EXIT WIDTH CALCULATIONS (TABLE 1005.1):

ONE STORY
REQUIRED:
.15" x 74 = 11.1"
PROVIDED:
216" PROVIDED IN 5 TOTAL EXITS

MAXIMUM AREA OF EXTERIOR WALL OPENINGS (TABLE 602, 705.8) :
FIRE SEPARATION DISTANCE: X > 30' @ VB = 0
GREATER THAN 30 FEET = UNPROTECTED, SPRINKLED = NOT REQUIRED

MAXIMUM TRAVEL DISTANCE : (PER TABLE 1016.2)
GROUP B FULLY SPRINKLERED = 300 FT

COMMON PATH TRAVEL DISTANCE : (PER TABLE 1014.3)
GROUP B - FULLY SPRINKLERED = 100 FT

MAXIMUM DEAD END CORRIDOR : 50 FT. (SECTION 1018.4, EXCEPTION 2)

PLUMBING FIXTURES **21 TOTAL OCCUPANT LOAD**	WCs		LAVs		FOUNTAINS	OTHERS
	MALE	FEMALE	MALE	FEMALE		
REQUIRED (11 M / 11 W)	1	1	1	1	1	1 SERVICE SINK
PROVIDED	3	3	3	3	1 HI-LO FIXTURE	1 SERVICE SINK

B: WC'S 1 PER 25 FOR FIRST 50, 1 PER 50 REMAINING
LAV'S 1 PER 40 FOR FIRST 80, 1 PER 80 REMAINING

ATTIC VENTILATION (SECTION 1203.2, EXCEPTION 1):

ATTIC VENTILATION AREA: 1/300 OF ATTIC AREA 50% INTAKE / 50% EXHAUST METHOD
3,315 sq ft / 300 = 11.05 sq ft OF VENTILATION REQUIRED

PROVIDE 50% BY 11.05 sq ft X 0.5 = 5.525 sq ft

HIGH VENTS (EXHAUST): 8 LINEAR FEET OF SOFFIT VENTS = 1 sq ft OF VENTILATION
8 X 5.525 = 44.2 LINEAR FEET OF SOFFIT VENTS REQUIRED
64 LINEAR FEET PROVIDED

LOW VENTS (INTAKE): 8 LINEAR FEET OF SOFFIT VENTS = 1 sq ft OF VENTILATION
8 X 5.525 = 44.2 LINEAR FEET OF SOFFIT VENTS REQUIRED
64 LINEAR FEET PROVIDED

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CONSULTANT LOGO

STATE OF SOUTH CAROLINA — EARLE G. HUNGERFORD — GREENVILLE, SC — 05029 — REGISTERED ARCHITECT

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

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1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
LIFE SAFETY PLAN

SHEET NO. G1.11

PROJ. NO. 015292.00

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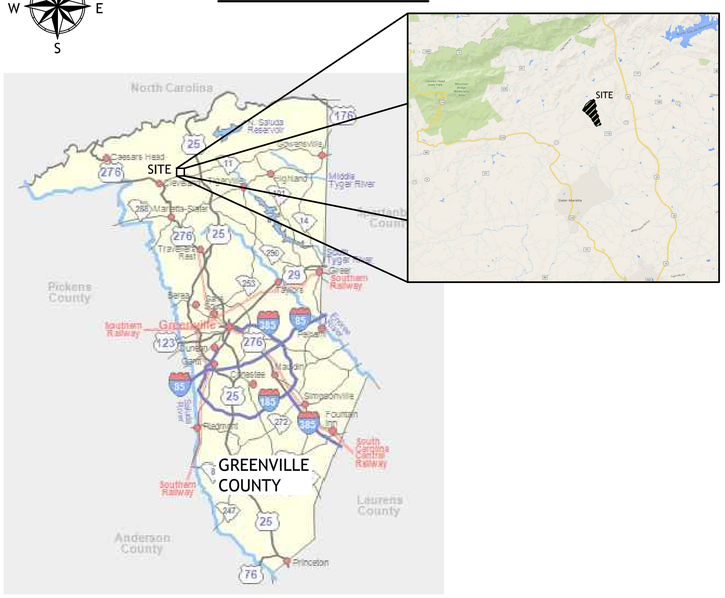
SITE DEVELOPMENT PLANS FOR:

GCRD Camp Spearhead - Phase II

Cherokee Foothills Scenic Hwy. (SC-11) - Greenville County, SC

VICINITY MAP



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PHONE: 864-372-3084
CONTACT: Roger Owens

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PHONE: 864-241-6155
CONTACT: Steve Blakeney

ELECTRIC DISTRIBUTION
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Travelers Rest, SC 29690
PHONE: 864-417-0905
CONTACT: Kevin Lewis

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PHONE: 864-286-7900
CONTACT: Dee Dee Hanks

SHEET INDEX

DESCRIPTION	DWG. NO.
TITLE SHEET	C001
EXISTING CONDITIONS & DEMOLITION PLAN	C002
SITE PLAN	C101
GRADING & DRAINAGE PLAN	C201
EROSION CONTROL PLAN	C202
UTILITY PLAN	C301
OVERFLOW PARKING AREA PLAN	C401
SITEWORK NOTES & DETAILS	C501-C505

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 15571 LYNN ALAN SOLESBEE

SOUTH CAROLINA BLUEWATER CIVIL DESIGN, LLC No. C04212 CERTIFICATE OF AUTHORIZATION

"I have placed my signature and seal on the design documents submitted signifying that I accept responsibility for the design of the system. Further, I certify to the best of my knowledge and belief that the design is consistent with the requirements of *Title 48, Chapter 14 of the Code of Laws of SC, 1976* as amended, pursuant to *Regulation 72-300* et seq. (if applicable), and in accordance with the terms and conditions of *SCR100000*."

LYNN A. SOLESBEE - SCPE# 15571 DATE

Know what's **below.**
Call before you dig.

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PHONE: 864-676-2180
CONTACT: RICK BROOKEY
EMAIL:

CIVIL ENGINEER
COMPANY: BLUEWATER CIVIL DESIGN, LLC
ADDRESS: 19 WASHINGTON PARK - SUITE 100
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PHONE: 864-326-4207
CONTACT: LYNN A. SOLESBEE, P.E.
EMAIL: LYNN@BLUEWATERCIVIL.COM

ARCHITECT
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EMAIL:

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Project Number: 2015-096
DWG Name: 2015-096 Details.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:
Lynn A. Solesbee, P.E.
South Carolina PE# 15571
North Carolina PE# 030285

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bluewater civil design, llc
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www.bluewatercivil.com • info@bluewatercivil.com
Certificates of Authorization:
SC C04212 - GA PEF005865
NC P0868 - AL CA4065E

CAMP SPEARHEAD - PHASE II
Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

PLAN REVISION	ISSUE DATE	ISSUE COMMENT
A	06-01-16	Issued for Bids
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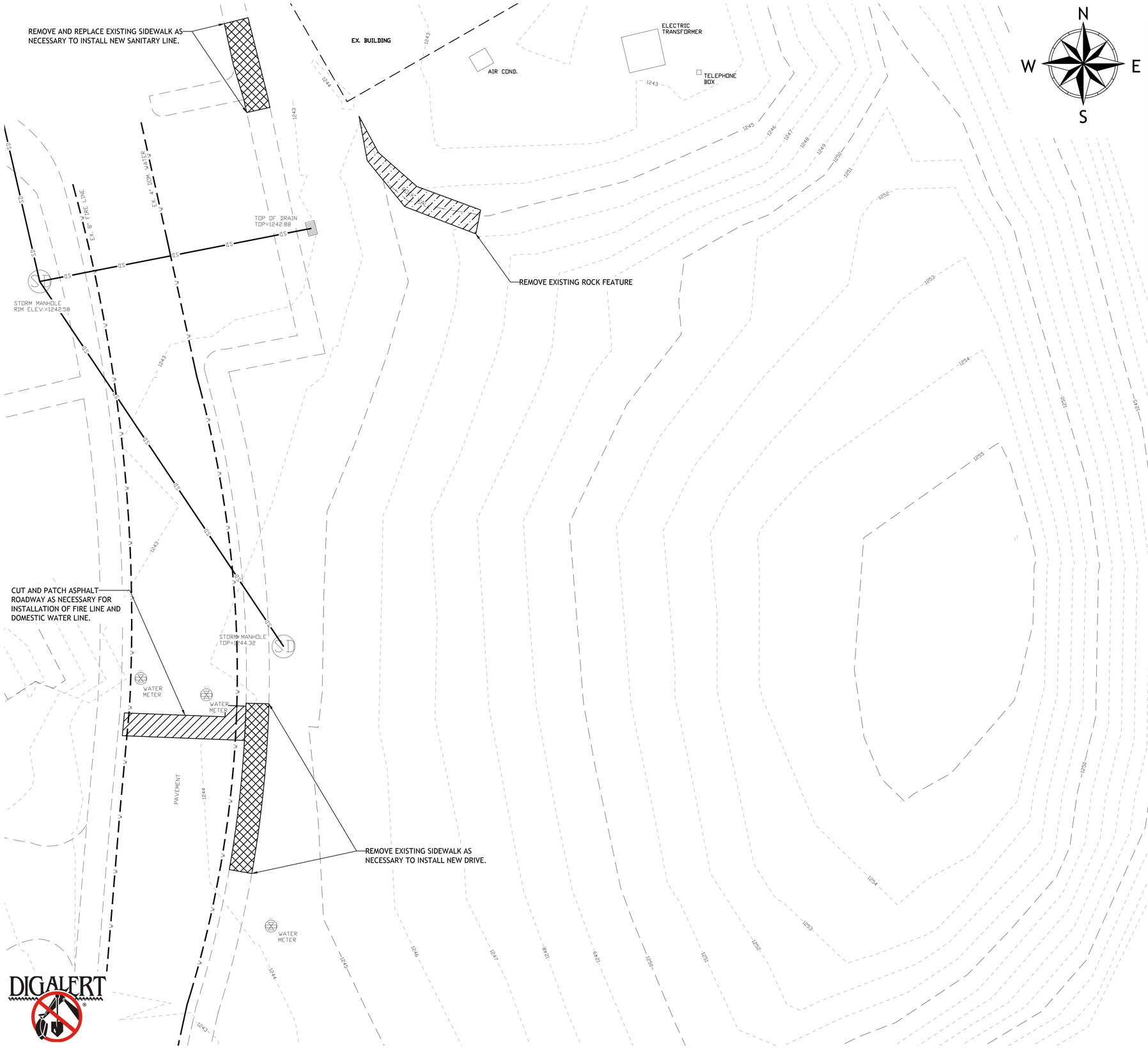
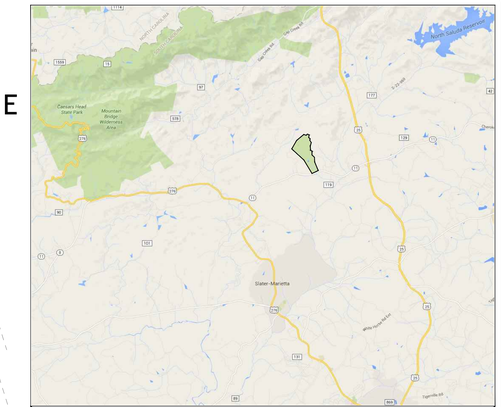
TITLE SHEET

C001





VICINITY MAP - N.T.S.

DEMOLITION NOTES:

1. The Contractor shall insure that all required permits are approved prior to beginning any demolition work.
2. Prior to beginning demolition the Contractor shall insure that all necessary safety measures are installed to protect the Owner's property, people, vehicles, and the public in general.
3. No hazardous material is expected to be encountered. However, if contractor discovers hazardous material he is to inform the Owner in writing immediately. All hazardous materials shall be hauled off-site legally, on an Owner approved route, and disposed of legally at a landfill permitted to accept the specific hazardous material.
4. Demolition work shall be performed during hours of operation as approved by the Owner's Representative.
5. All demolition work shall meet the minimum requirements of OSHA, Federal Laws, State Laws, and Local Laws. The stricter shall govern.
6. Any existing utilities (e.g., storm water lines, water lines, sanitary sewer lines, etc.) that are encountered within the proposed development area should be abandoned and/or removed per direction of Geotechnical Engineer and in coordination with appropriate utility provider. Open pipes or conduits, if any, left in-place adjacent to the construction area should be bulkheaded and grouted as they might serve as conduits for subsurface erosion.
7. The Contractor shall Demolish or Relocate as needed any and all items that interfere with new construction. The Contractor shall immediately bring to Owner's and Engineer's attention any items not shown on Demolition Plan.
8. The contractor is responsible for coordinating with Blue Ridge Electric to adjust locations and/or elevations of existing power poles, guy wires, or other electrical components as needed to make all improvements. The contractor is responsible for any costs involved.
9. The contractor shall provide a temporary perimeter safety fence during construction. The fence shall meet all Owner requirements.

Project Number: 2015-096
DWG Name: 2015-096 D1.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:

Lynn A. Solesbee, P.E.
South Carolina 15571
North Carolina PE# 030285

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Certificates of Authorization:
SC C04212 · GA PEF005865
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CAMP SPEARHEAD - PHASE II

Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 15571 LYNN ALAN SOLESBEE

SOUTH CAROLINA BLUEWATER CIVIL DESIGN, LLC No. C04212 CERTIFICATE OF AUTHORIZATION

PLAN REVISION	ISSUE DATE	ISSUE COMMENT
A	06-01-16	Issued for Bids

EXISTING CONDITIONS & DEMOLITION PLAN

C002

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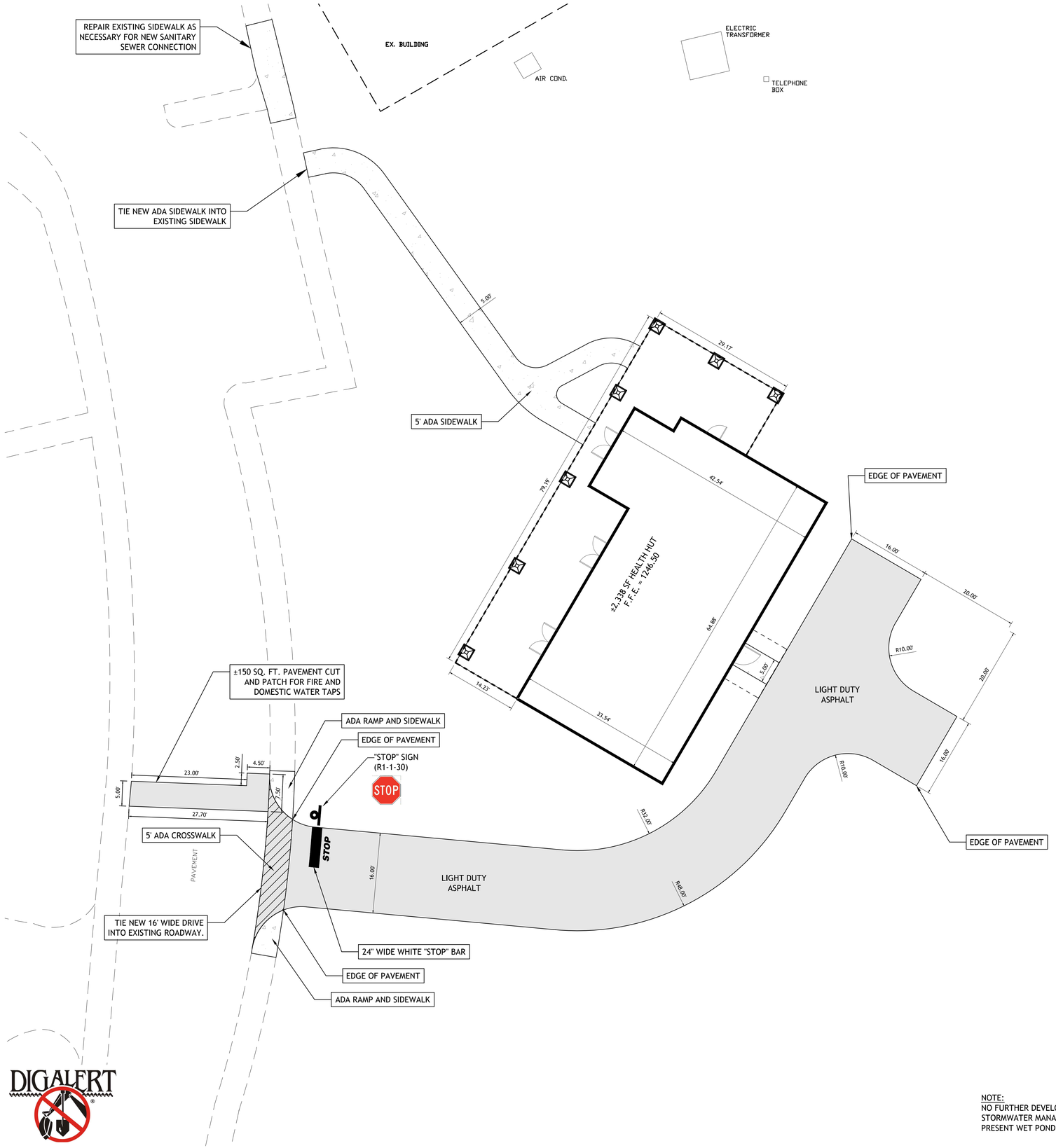

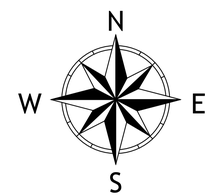

VICINITY MAP - N.T.S.

NOTES:

1. THE CONTRACTOR SHALL COORDINATE THE EXACT BUILDING DIMENSIONS, EXTERIOR BUILDING ELEVATIONS, ATTACHED CONCRETE FLATWORK, UTILITY LOCATIONS, ETC. WITH THE ARCHITECTURAL PLANS PRIOR TO STARTING CONSTRUCTION AND IMMEDIATELY BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY COSTS INCURRED BY A FAILURE TO COORDINATE BETWEEN CIVIL AND ARCHITECTURAL PLANS.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE BETWEEN THE CIVIL PLANS / ARCHITECTURAL PLANS / STRUCTURAL PLANS REGARDING THE GROUND ELEVATIONS DIRECTLY EXTERNAL OF THE BUILDING IN RELATION TO THE STRUCTURAL BUILDING FOOTINGS.
3. CONTRACTOR'S SURVEYOR TO STAKE ALL BUILDING CORNERS PRIOR TO CONSTRUCTION. CONTRACTOR TO CONTACT LICENSED LAND SURVEYOR TO VERIFY AND TO APPROVE PRIOR TO BEGINNING BUILDING CONSTRUCTION. THE CONTRACTOR IS ESPECIALLY CAUTIONED TO INSURE THE CANOPY REMAINS INSIDE THE PROPERTY.
4. THE CONTRACTOR SHALL SEE THE ARCHITECTURAL BUILDING PLANS FOR EXACT BUILDING DIMENSIONS, COLUMN LINES, WALL DIMENSIONS, DOOR LOCATIONS, STOOP/STEP LOCATIONS, ETC. ANY CONFLICTS SHALL BE BROUGHT TO ATTENTION OF ENGINEER.
5. ALL CURBING ON PRIVATE PROPERTY SHALL BE 18" CURB AND GUTTER PER S.C.D.O.T. LATEST STANDARD.
6. ALL SIDEWALKS AND ADA PATHS SHALL BE A.D.A. COMPLIANT AND HAVE A MAXIMUM CROSS-SLOPE OF 2.00% (1:50) AND A MAXIMUM LONGITUDINAL SLOPE OF 5.00% (1:20).
7. TACTILE WARNING MATS ARE TO BE INSTALLED ON ALL WHEELCHAIR RAMPS.
8. THE CONTRACTOR SHALL FIELD VERIFY ELEVATIONS AND LOCATIONS OF ALL CURBING, UTILITY POLES, CONTROL BOXES, CATCH BASINS, ETC. NEAR PROPOSED ADA SIDEWALKS PRIOR TO STARTING CONSTRUCTION AND NOTIFY ENGINEER AND OWNER'S REPRESENTATIVE OF ANY CONFLICTS THAT WOULD NOT ALLOW SIDEWALK TO BE INSTALLED PER ADA REQUIREMENTS WITHOUT RELOCATING EXISTING ITEMS.
9. ALL PAVEMENT MARKINGS WITHIN SCDOT & PRIVATE ROAD RIGHTS-OF-WAYS SHALL MEET MUTCD AND SCDOT STANDARDS.
10. ALL STRIPING IN SCDOT RIGHT-OF-WAY SHALL BE THERMOPLASTIC AND INSTALLED TO SCDOT STANDARD DRAWINGS AND SPECIFICATIONS. ALL OTHER STRIPING IS PAINTED.
11. NO WORK IS TO BE PERFORMED IN THE SCDOT OR COUNTY RIGHTS-OF-WAYS WITHOUT COPIES OF APPROPRIATE ENCROACHMENT PERMITS.
12. THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECT ON FINISH PATTERNS OF ALL SIDEWALKS AND CONCRETE FLATWORK. DETAILS AND INFORMATION ON CIVIL PLANS IS FOR INFORMATION ONLY AND DOES NOT ADDRESS SCORING AND FINISH.

GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

NOTE:
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Project Number: 2015-096
DWG Name: 2015-096 D1.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:

Lynn A. Solesbee, P.E.
South Carolina PE# 15571
North Carolina PE# 030285

bluewater civil design, pllc
19 Washington Park Suite 100 • Greenville, SC 29601
www.bluewatercivil.com • info@bluewatercivil.com

Certificates of Authorization:
SC C04212 · GA PEF005865
NC P0868 · AL CA4065E

CAMP SPEARHEAD - PHASE II

Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 15571 LYNN ALAN SOLESBEE

SOUTH CAROLINA BLUEWATER CIVIL DESIGN, LLC No. C04212 CERTIFICATE OF AUTHORIZATION

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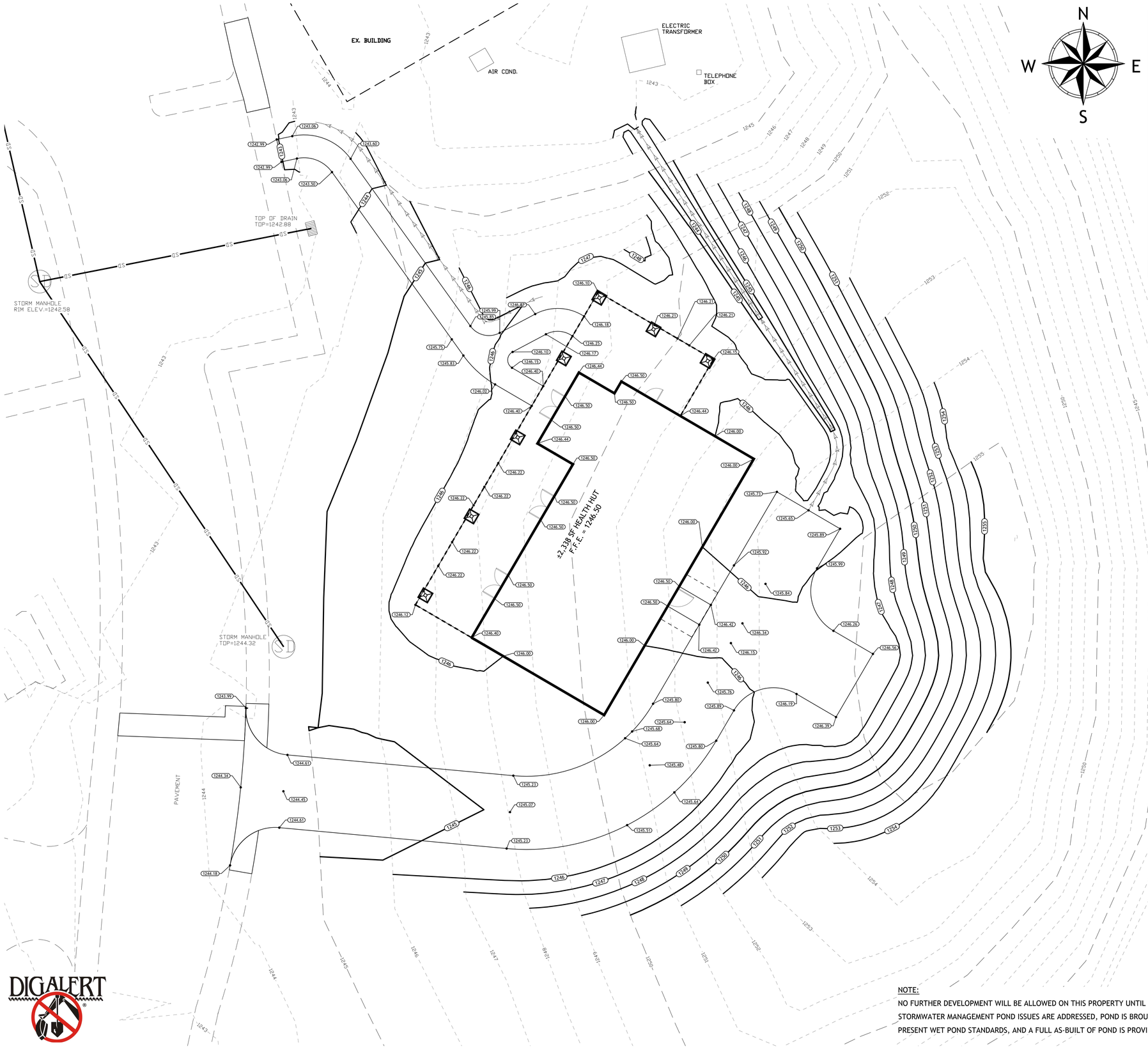
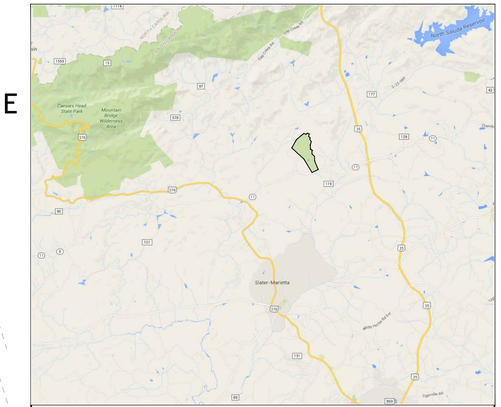
SITE PLAN

C101





VICINITY MAP - N.T.S.

GRADING NOTES:

1. ALL SITE A.D.A. ACCESSIBLE ROUTES SHALL BE GRADED TO HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5.00% (1:20) AND A MAXIMUM CROSS-SLOPE OF 2.00%.
2. ALL SITE A.D.A. PARKING SPACES SHALL BE GRADED TO HAVE A MAXIMUM SLOPE IN ANY DIRECTION OF 2.00%.
3. MINIMUM SLOPE IN ANY AREA SHALL BE 1.00%.
4. ALL FILL/CUT SLOPES SHOWN ON THE SITE SHALL BE 3:1 OR AS INDICATED ON THE PLAN.
5. CUT SLOPES IN ROCK MAY BE LEFT EXPOSED IF APPROVED BY THE OWNER'S REPRESENTATIVE.
6. THE CONTRACTOR SHALL GRADE AROUND ALL LANDSCAPE ISLANDS TO PROVIDE POSITIVE DRAINAGE AROUND THE ISLAND AT A MINIMUM 1.00% SLOPE.
7. THE CONTRACTOR SHALL COORDINATE ALL EXCAVATION WITH THE GEOTECHNICAL TESTING COMPANY.
8. THE CONTRACTOR SHALL INCLUDE IN PRICE ALL CUT/FILL NECESSARY TO COMPLETE THE PROJECT AS DESIGNED. UNIT PRICES SHALL BE PROVIDED FOR MASS ROCK EXCAVATION, TRENCH ROCK EXCAVATION, HAUL OFF, AND HAUL IN.
9. ALL EXISTING FIELD CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT SITE ENGINEER AND OWNER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE CONTRACTOR AGREES THAT HE AGREES TO ALL EXISTING SITE CONDITIONS AFTER TOPSOIL STRIPPING BEGINS.
10. THE CONTRACTOR IS TO DISPOSE OF ALL EXCESS CUT SOIL IN A LEGAL MANNER OFF-SITE. THIS REMOVAL OF SOIL SHALL BE BID AS A PART OF THE OVERALL GRADING OF THE SITE.
11. THE INVERT AND PIPE DIRECTION OF ALL EXISTING STORM AND SANITARY STRUCTURES SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
12. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF DOWNSPOUT/ROOF DRAIN CONNECTIONS WITH ARCHITECT/MEP. ALL ROOF DRAIN LINES SHALL HAVE MINIMUM OF 3' OF COVER, HAVE MINIMUM SIZE OF 8", AND HAVE MINIMUM SLOPE OF 2.0%.

NOTE:

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GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

DIGALERT

South Carolina 811 Call 811 Before You Dig

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GRADING & DRAINAGE PLAN

C201

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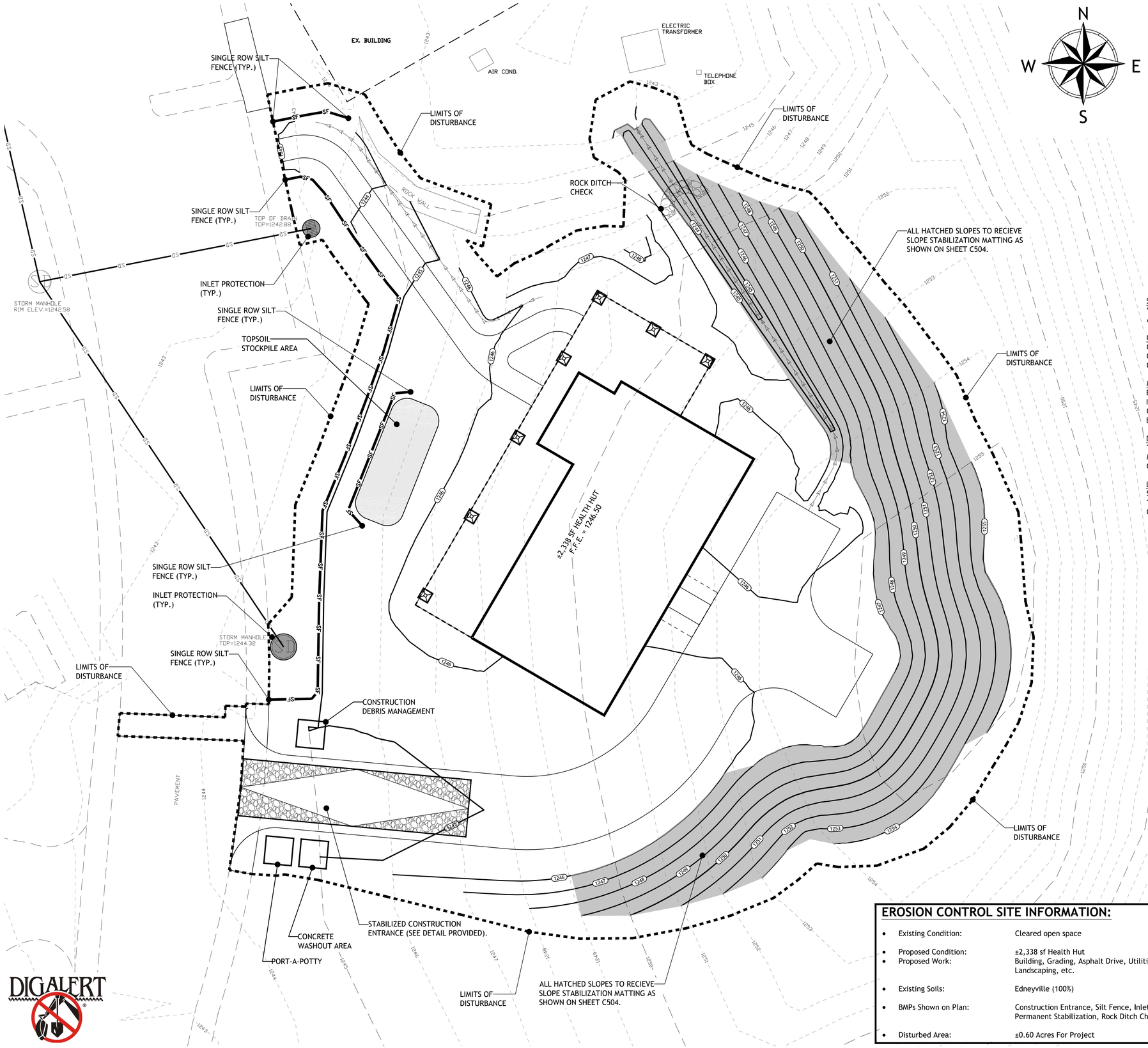

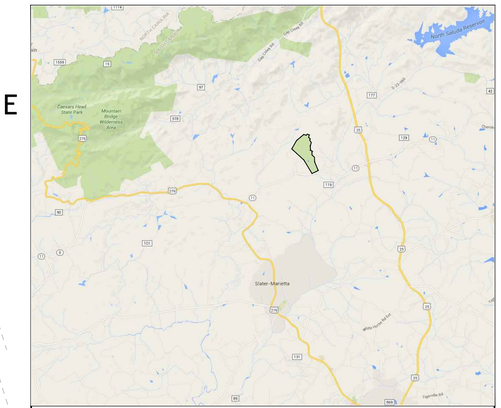

VICINITY MAP - N.T.S.

SLOPE PROTECTION NOTE:
** THE CONTRACTOR SHALL PROVIDE JUTE MATTING OR APPROVED EQUIVALENT ON ALL SLOPES 3:1 OR GREATER. **

CONSTRUCTION TRAFFIC NOTE:
CONSTRUCTION TRAFFIC WILL SHALL USE THE RIP RAP CONSTRUCTION ENTRANCE. CONTRACTOR SHALL INSURE THAT THEY ARE NOT TRACKING SEDIMENT OFF-SITE. CONTRACTOR SHALL MONITOR AND WASH OFF TIRES IF REQUIRED.

MAINTENANCE STATEMENT:
EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

DUST CONTROL:
THE CONTRACTOR SHALL USE ALL REASONABLE MEANS (e.g. WATER TRUCK, TARPS, MULCH, GRASSING, ETC.) NECESSARY TO REDUCE DUST DURING DEMOLITION AND CONSTRUCTION.

LAND DISTURBANCE NOTE:
STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED.

BMP LEGEND

- PROPOSED GRADE LINES
- SILT FENCE
- INLET PROTECTION
- DISTURBED LIMITS
- CONSTRUCTION ENTRANCE
- PROPOSED STORM DRAINAGE
- ROCK DITCH CHECK

EROSION CONTROL SITE INFORMATION:

Existing Condition:	Cleared open space
Proposed Condition:	±2,338 sf Health Hut
Proposed Work:	Building, Grading, Asphalt Drive, Utilities, Landscaping, etc.
Existing Soils:	Edneyville (100%)
BMPs Shown on Plan:	Construction Entrance, Silt Fence, Inlet Protection, Permanent Stabilization, Rock Ditch Checks, etc.
Disturbed Area:	±0.60 Acres For Project

GRAPHIC SCALE
(IN FEET)
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DIGALERT

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EROSION CONTROL PLAN

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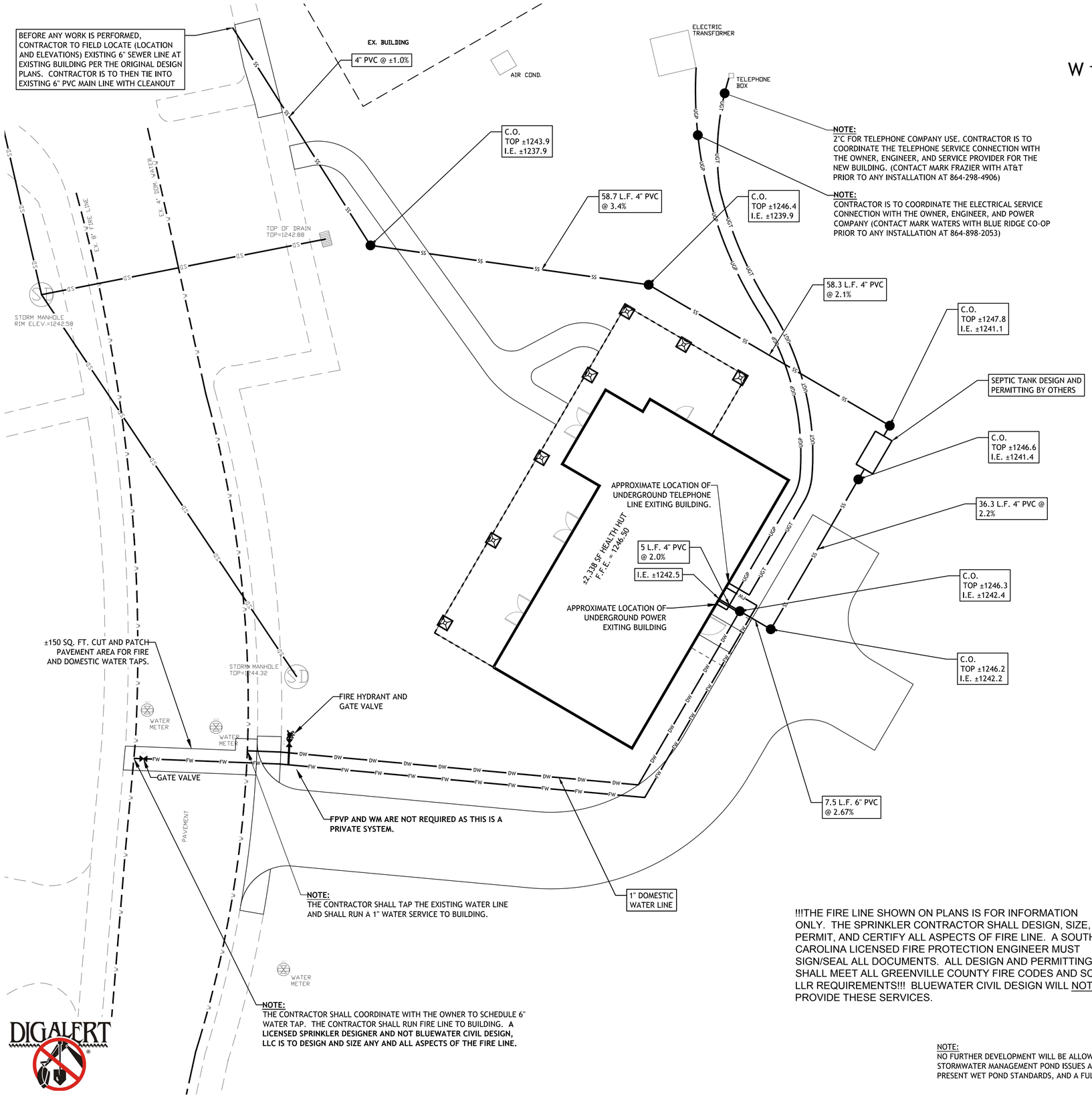

!!!THE FIRE LINE SHOWN ON PLANS IS FOR INFORMATION ONLY. THE SPRINKLER CONTRACTOR SHALL DESIGN, SIZE, PERMIT, AND CERTIFY ALL ASPECTS OF FIRE LINE. A SOUTH CAROLINA LICENSED FIRE PROTECTION ENGINEER MUST SIGN/SEAL ALL DOCUMENTS. ALL DESIGN AND PERMITTING SHALL MEET ALL GREENVILLE COUNTY FIRE CODES AND SC LLR REQUIREMENTS!!! BLUEWATER CIVIL DESIGN WILL NOT PROVIDE THESE SERVICES.

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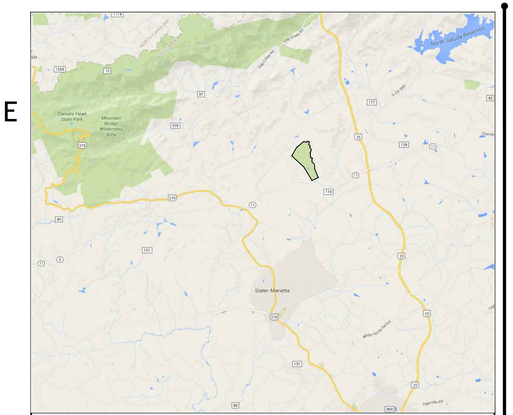

VICINITY MAP - N.T.S.

GENERAL UTILITY PLAN NOTES:

1. THE CONTRACTOR SHALL CONTACT ALL UTILITY AUTHORITIES (e.g. POWER, TELEPHONE, CABLE, DATA, GAS, WATER, SEWER, ETC) REGARDING PROJECT COORDINATION. THE CONTRACTOR SHALL INCLUDE IN PRICE/BID ALL WORK NECESSARY TO COORDINATE THE RELOCATION OF EXISTING UTILITY SERVICES OR MAINS THAT CONFLICT WITH THIS PROJECT'S COMPLETION. UTILITY SERVICES OR MAINS, OTHER THAN DOMESTIC WATER AND SEWER, HAVE NOT BEEN DESIGNED AS PART OF THIS PLAN.

2. THE CONTRACTOR SHALL CONTACT ALL UTILITY AUTHORITIES PRIOR TO START OF CONSTRUCTION SET UP A PRE-CONSTRUCTION MEETING WITH ALL AUTHORITIES (INCLUDING FIRE DEPARTMENT) TO COORDINATE INSTALLATIONS, INSPECTIONS, AND PAYMENT OF ANY RELATED FEES. THE CONTRACTOR SHALL INCLUDE IN PRICE/BID ALL TAP FEES, INSPECTION FEES, METER FEES, ETC. FOR WATER AND SEWER WORK UNLESS SPECIFICALLY INSTRUCTED OTHERWISE.

3. SEE SITE LIGHTING PLANS AND SITE ELECTRICAL PLANS FOR COORDINATION OF SITE LIGHTING AND SITE ELECTRICAL ROUTING, SITE ELECTRICAL RELOCATION, TELEPHONE ROUTING, DATA ROUTING, ETC.

4. THE CONTRACTOR SHALL ONLY USE MATERIALS MEETING STATE AND LOCAL UTILITY AUTHORITY STANDARDS AND SPECIFICATIONS FOR THE WATER AND SEWER WORK.

5. SANITARY SEWER SERVICE LINES THAT ARE SPECIFIED ON THIS PLAN SHALL TERMINATE 5' OUTSIDE THE BUILDING. THE CONTINUATION SHALL BE PICKED UP ON THE INTERNAL PLUMBING DRAWINGS. ALL EXTERNAL SANITARY SEWER SERVICE PIPING 5' OUTSIDE THE BUILDING SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 OR CLASS 50 DUCTILE IRON PIPE AS NOTED ON THE PLANS. 6" SEWER SERVICES SHALL BE CONSTRUCTED WITH NO LESS THAN A 1.04% SLOPE AND NOT MORE THAN 75' BETWEEN CLEANOUTS. 4" SEWER SERVICES SHALL BE CONSTRUCTED WITH NO LESS THAN 2.08% SLOPE AND NOT MORE THAN 50' BETWEEN CLEANOUTS. THE MINIMUM COVER IS 3' AND THE MAXIMUM COVER IS 14' ON PVC SERVICES. DIP IS REQUIRED ON ALL LINES OUTSIDE OF 3' MINIMUM AND 14' MAXIMUM COVER.

6. TOPS, INVERTS, SLOPES, AND MATERIAL OF 4" SEWER SERVICE SHOWN ARE APPROXIMATE. CONTRACTOR SHALL INSTALL SEWER SERVICE IN ACCORDANCE WITH TEN STATE STANDARDS, GREENVILLE COUNTY CODES, S.C.D.H.E.C. CODES, AND CRITERIA IN NOTES.

7. DOMESTIC WATER LINES THAT ARE SPECIFIED ON THIS PLAN SHALL TERMINATE 5' OUTSIDE THE BUILDING. THE CONTINUATION SHALL BE PICKED UP ON THE INTERNAL PLUMBING DRAWINGS. ALL ¾" TO 2" WATER LINES SHALL BE P.E. PIPE, COPPER (K) MATERIAL, OR APPROVED EQUAL. ALL WATER LINES 2.5", 3", 4", 6", 8", ETC. SHALL BE C-900 POLYVINYL CHLORIDE (PVC) OR CLASS 350 DUCTILE IRON PIPE (D.I.P.) AS NOTED ON THE PLAN.

8. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION CONFERENCE WITH ALL UTILITY COMPANIES (GREENVILLE WATER, GAS COMPANY, POWER COMPANY, AT&T, ETC.), GREENVILLE COUNTY PLANNING/ENGINEERING, FIRE MARSHAL, OWNER, ENGINEER, AND OTHER INTERESTED PARTIES PRIOR TO STARTING CONSTRUCTION AND COORDINATE AMONG ALL OF THE PARTIES THE SCHEDULE AND PROCEDURES FOR ALL ASPECTS OF CONSTRUCTION.

9. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT ALL WATER AND SEWER LINE WORK SHALL BE PER ALL LOCAL AND SCDHEC REQUIREMENTS AND SPECIFICATIONS.

10. ALL PVC SEWER AND ROOF DRAINAGE LINES SHALL BE SCHEDULE 40 PVC.

11. SITE LIGHTING AND OTHER SITE ELECTRICAL/PHONE/DATA INFORMATION SHOWN IS FOR INFORMATION ONLY AND NOT FOR CONSTRUCTION. THE ELECTRICAL ENGINEER WILL ISSUE FOR CONSTRUCTION SITE LIGHTING AND OTHER SITE ELECTRICAL PLANS.

12. THE INVERT AND PIPE DIRECTION OF ALL EXISTING STORM AND SANITARY STRUCTURES SHALL BE FIELD VERIFIED BY THE CONTRACTOR.

GRAPHIC SCALE

(IN FEET)
1 inch = 10 ft.

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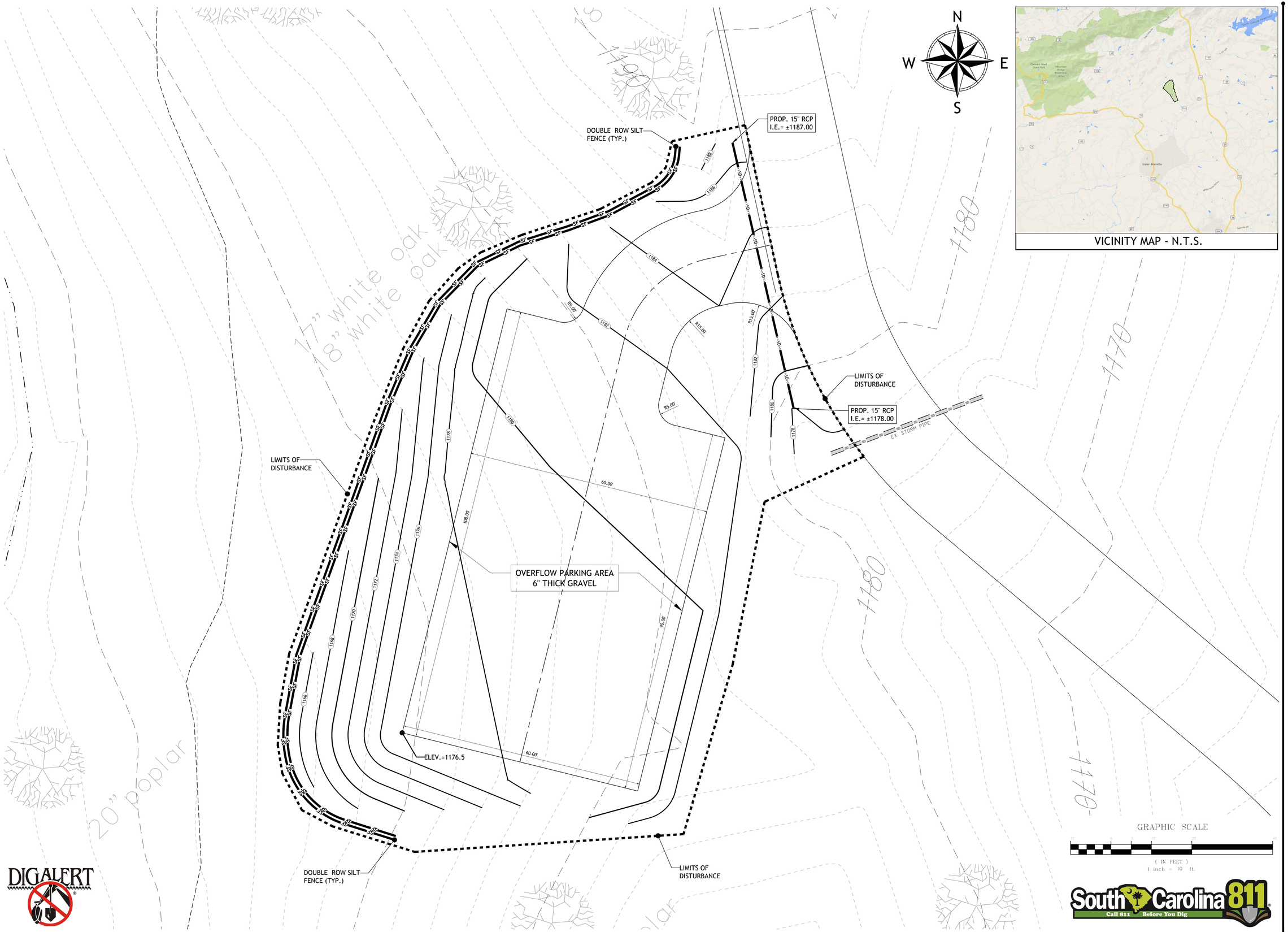
UTILITY PLAN

C301



VICINITY MAP - N.T.S.

DIGALERT

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OVERFLOW PARKING AREA PLAN

C401

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GENERAL NOTES FOR SITEWORK

1. The Contractor shall call 811 Utility Locate Service prior to start of any construction activity.

2. Survey:
   - 2.1. Survey Information provided by H & M SURVEYING, LLC (864-335-8995)
   - 2.2. The Contractor shall verify all benchmarks, easements, the location and invert elevation of all underground utilities within the construction area, verify property corners, and verify topography before any construction is begun.
   - 2.3. The Contractor shall contact all utility companies prior to excavation to request a locate for all buried cables and underground utilities in the construction area or utilities that will be impacted by construction.

3. Permits:
   - 3.1. The Contractor shall have copies of any necessary encroachment and construction permits prior to entering any right-of-way or beginning construction.
   - 3.2. Permits typically required include but are not limited to: State NPDES Coverage, Local Issuing Authority Grading Permit, DOT Encroachment Permits (access and utility taps), State or Local Water Authority water extension permit, State or Local Sewer Authority sewer extension permit, Fire Marshall approval, and Local Municipality Zoning and Site Plan Approval.
   - 3.3. The Contractor shall immediately notify the Owner's Representative when notices or verbal instructions are received from regulatory authorities, inspectors, or similar. The Contractor shall proceed with work associated with such notices or instructions once approved to do so by the Owner's Representative or as required by law.

4. Safety:
   - 4.1. By Law, the Contractor shall comply with all OSHA regulations, including safety protocol, safety gear, safety education, etc.
   - 4.2. The Contractor is exclusively responsible for the conditions of the site, including safety of all persons and property throughout the term of the project construction, 24 hrs per day/ 7 days per week.
   - 4.3. The Engineer's review of the Contractor's work product and performance will not include review of the Contractors safety programs. Such reviews are to be by OSHA inspectors and the Owner's Representative.
   - 4.4. The Contractor is responsible for providing and maintaining all necessary traffic control devices during construction. Under no circumstances shall equipment be loaded or off-loaded on an open roadway. If such activity is required the Contractor shall coordinate shutting down the road with the appropriate DOT and utililize appropriate traffic control warning devices.

5. SWPPP:
   - 5.1. The Contractor is responsible for reviewing the requirements in the SWPPP manual and maintaining all records as required by Local, State, and Federal Laws.
   - 5.2. The SWPPP manual/plans shall be kept on-site in a secure location accessible to the inspector at all times during construction.
   - 5.3. The Contractor shall post a 24-Hour Contact and phone # and rain gauge at the job site.

6. Pre-construction Meeting:
   - 6.1. The Contractor shall immediately contact the state or local issuing authority, utility companies, etc. and set up a pre-construction conference at the site.
   - 6.2. The Contractor shall make sure the Engineer of Record, Owner, Inspector, Superintendent, and any relevant erosion control sub-contractor are in attendance.
   - 6.3. The Contractor shall develop an attendance sign in sheet and keep minutes of the meeting with the SWPPP.

7. Tree Protection:
   - 7.1. The Contractor shall protect trees that are noted to remain on the plans or as marked in the field by Owner's Representative. Trees that are to be protected shall have a protective fencing installed around the critical root zone (1' for every 1" DBH) and shall not disturb the root zone of such trees unless approved to do so in writing by the Owner's Representative.
   - 7.2. The Contractor shall remove all trees and vegetation that interfere with new construction not noted to be protected. Remove debris from site or burn in accordance with local laws.
   - 7.3. The Contractor shall be responsible for obtaining all necessary dumping or burning permits.

8. Earthwork:
   - 8.1. The Contractor shall grade the site to the lines and grades shown and shall proof-roll and test compaction on all areas.
   - 8.2. The Owner shall retain the services of a testing company to test all areas to insure they meet the minimum compaction requirements as noted in these notes or as required by the Owner's Geotechnical Engineer's report.
   - 8.3. The Grading Contractor shall proof-roll the construction area with a fully-loaded tandem-axle dump truck, or approved equal, by making 2 complete passes in each of 2 perpendicular directions. all soft spots shall be undercut and re-compacted with suitable structural fill material and re-tested. Proof-rolling shall be observed by a qualified Geotechnical Engineer or Engineering Technician.
   - 8.4. All proposed elevations shown are finish grade elevation and the Grading Contractor shall deduct quantities from the finished grades as required due to depth of pavement sections, sidewalks, turf areas with topsoil, building foundations, etc. to develop the true finished sub-grade.
   - 8.5. Any topsoil in the construction area shall be stripped to a depth as required (see Geotechnical Report for referenced depths) and stockpiled as directed by the Owner's Representative. Topsoil shall be re-used on-site unless approved otherwise.
   - 8.6. The upper 18" of fill under pavement or buildings shall be compacted to 98% of maximum dry density (STD. PROCTOR) ASTM D-698. All other structural fill (including fill slopes) shall be compacted to 95% maximum dry density (STD. PROCTOR). The Contractor is responsible for reviewing the Geotechnical Report for further compaction requirements.
   - 8.7. All excavation shall be "Classified Excavation". Excavation shall be "Classified" as "Common Excavation" or "Rock Excavation". Rock Excavation is removing material that has been observed by the testing company to only be removed by blasting or with an air hammer. Common Excavation is removing of materials by means of ripping and do not fall in the category of rock excavation as defined above (includes boulders, typical weathered rock, etc.)
   - 8.8. The classification of soils include: topsoil, fill material, unsuitable material, and rock excavation. The classification of soils is the responsibility of the geotechnical soil testing firm.
   - 8.9. Rock Excavation is classified as:
     - 8.9.A. Massive rock excavation - Material of 1 c.y. or more unable to be excavated with a single tooth ripper drawn by a crawler tractor having a minimum draw bar rated at not less than 53,000 pounds (Caterpillar D-8 or equivalent).
     - 8.9.B. Trench excavation - Material of ½ c.y. or more which cannot be excavated with a power shovel having the capacity of at least that of a Caterpillar 225.
   - 8.10. Fill material (including off site borrow) shall be from a source approved by the soil testing company and shall be free of roots, organics and other deleterious material. Fill shall be placed in lifts not exceeding 10 inches in loose lift thickness and moisture conditioned to within 2%-3% of the optimum moisture content. The fill shall have a Liquid Limit (LL) and a Plasticity Index (PI) less than 40 and 20, respectively. All fills shall have a Standard Proctor (ASTM D698) maximum density of at least 100 pounds per cubic foot (pcf) and a maximum particle size of 3 inches.
   - 8.11. All existing pavement to be left in a fill area shall be scarified prior to placement of any fill material.
   - 8.12. All slopes steeper than 4:1 receiving fill shall be plowed and scarified to enhance the bonding of new fill with existing surfaces.
   - 8.13. The Grading Contractor shall include in contract price the total cost and unit price for all cut/fill necessary for earthwork balance including if necessary unit prices for hauling in material and hauling off material.
   - 8.14. The wetting/drying of soils to achieve specified compaction shall be included in the Grading Contractor's contract price.
   - 8.15. All private roads and parking lots shall have a minimum 5'-0" wide grassed shoulder with a maximum 2.0% cross slope. All public roads shall have a 6'-0" wide grassed shoulder with a maximum 2.0% cross slope.
   - 8.16. Tolerances for final constructed grades shall be plus or minus 0.05 feet. The final graded surface under all building slabs shall be within a tolerance of 3/8" when measured with a 10' straight edge. All designated ADA accessible paths shall have a maximum 2.00% (1:50) cross-slope and maximum 5.00% (1:20) running slope, no exceptions. All designated ADA accessible parking spaces and landings (including 4' area out from all doorways) shall have a maximum 2.00% (1:50) slope in any direction, no exceptions. All designated ADA accessible ramps shall have a maximum slope of 8.33% (1:12), no exceptions.

9. Storm Drainage:
   - 9.1. Reinforced Concrete Pipe (RCP) shall conform to ASTM C 76, latest edition. RCP with cover less than 15' and greater than 2' shall be CLASS III bell and spigot type and installed with flexible plastic (Bitumen) gaskets at all joints, unless otherwise noted. All other depths of cover shall be CLASS IV or V as noted. Gaskets shall comply with AASHTO M-198 751, Type B, and shall be installed in strict accordance with pipe manufacturer's recommendations.
   - 9.2. All corrugated plastic pipe shall meet the requirements of AASHTO M-294, Type S, shall be smooth interior with annular corrugated exterior. HI-Q Sure-Lock 10.8 pipe, ADS, N-12, or approved equal. All joints shall be bell and spigot and shall meet the requirements of AASHTO M-294, shall be watertight, meeting the requirements of ASTM D 3212. The gaskets shall be made of Polyisoprene meeting the requirements of ASTM F 477. Installation shall conform to AASHTO M-294, ASTM D-2321, and manufacturers installation procedures. The maximum cover allowed over the top of CCP is 15'.

10. Utilities:
    - 10.1. All water shall be per the approved drawing and the latest standards and specifications of the local water authority. The Contractor shall coordinate construction with the local water authority, including schedule & laydown areas. Any deviation from the approved plan shall be brought to the attention of the Engineer of Record and the appropriate inspector immediately. Deviations from the approved plan shall not be installed unless approved in writing by the local water authority.
    - 10.2. Sanitary sewer lines and appurtenances shall be installed per the approved drawing and latest standards and specs of the local sewer authority.
    - 10.3. The Contractor shall insure they have the proper approvals from the SCDHEC and/or SCLLR prior to installation of any domestic water, fire water, or sanitary sewer system.
    - 10.4. All utility trenches shall be thoroughly compacted as required by the local authority and tested to prevent settlement and damage to future pavement and structures.
    - 10.5. The Contractor shall be responsible for relocating any existing utilities necessary for site construction, including all permits and fees. The Contractor is responsible for contacting all utility companies and including in his price all fees, charges, expenses, etc. in his cost to the Owner.

11. Pavement:
    - 11.1. All paving work (materials and construction) shall comply with state standards and specifications for Hot-mixed Asphalt Pavement. (See Pavement Section Details for depths of layers)
    - 11.2. All pavement shall be installed on a finished and well-drained sub-grade compacted as specified in previous notes.
    - 11.3. Base course material for asphalt pavement shall be stone aggregate base course (ABC) and compacted to 95% modified proctor.
    - 11.4. Concrete pavement shall consist of a base course with stone aggregate base course compacted to 95% modified proctor. The concrete shall be poured to with either WWF or fiber reinforcing. Concrete shall be broom finished and jointed as required.
    - 11.5. Concrete curb and gutter shall be 18" wide with standard curb constructed with 4,000 PSI concrete with expansion joints and contraction joints installed to comply with state DOT standard specification for materials and construction of curb and gutter.
    - 11.6. All parking lot striping shall be per State D.O.T. specifications with two (2) coats of paint applied. The bases of all light poles, all bollards, and the face of all sidewalk, are to be painted traffic yellow. The Contractor is responsible for providing fire lane striping and signage meeting all local requirements. Parking lot striping shall be reflective white paint. Stop bars, directional arrows, and parcel pickup are to be white reflective paint. All ADA striping shall be reflective ADA blue.

12. Erosion Control and Drainage:
    - 12.1. All areas outside paving limits and building foundations shall have a minimum 4" layer of topsoil added and permanently grassed in accordance with state seeding specifications or landscaped per the Landscape Plan if applicable.
    - 12.2. The Grading Contractor shall maintain positive drainage away from buildings at all times. The Contractor shall bring to the attention of the Engineer any areas that may not drain properly during construction.
    - 12.3. The sequence of work shall conform to the erosion control narrative.
    - 12.4. Sediment controls during construction shall comply with all local, state, and federal laws and regulations. After all sitework is completed and grassing established, the Grading Contractor shall remove all silt from the site and legally dispose of all silt off-site at no additional cost to the Owner, or bury on-site in non-structural area.

13. General:
    - 13.1. The Contractor shall review the plans and specifications carefully and shall immediately notify the Engineer for a review if any discrepancies are discovered at the site or on the drawings.
    - 13.2. All reference to state standards and specifications are made from the South Carolina Highway Department's standard specification, latest edition.
    - 13.3. All dimensions shown on the drawings are measured as shown and from outside face of building wall or to face of curb line, unless otherwise noted. Curb and Gutter is shown as three (3) lines (outside edge of gutter, face of curb, and back of curb).
    - 13.4. All retaining wall design shall be per Architectural Plan or separate Structural Engineer's design notes and details. The Civil Plans shall not be considered plans for retaining wall construction.
    - 13.5. The General Contractor is responsible for posting all required bonds that General Contractors are allowed to post.
    - 13.6. All material's, construction, and plans are to comply with SCDHEC and Greenville County as applicable.
    - 13.7. If any conflicts between the notes, details, specifications, and drawings occur, then by rule the stricter shall govern.

STANDARD EROSION AND SEDIMENT CONTROL NOTES

Startup

1. Sediment and erosion control devices shall be installed and functioning prior to beginning any project earth disturbing activities.
2. To secure the project site, locate limits of construction, protect areas that are to remain undisturbed, and prevent migration of construction debris, orange construction fencing shall be installed around areas not requiring silt fencing. Any accumulation of construction debris on public roadways or adjacent properties shall be removed within 24 hours. Care shall be taken when installing construction fencing to not obscure oncoming traffic at intersections, adjacent driveways and the project construction entrance.
3. All Waters of the State (WoS), including wetlands, are to be flagged or otherwise clearly marked in the field. A double row of silt fence is to be installed in all areas where a 50-foot buffer cannot be maintained between the disturbed area and WoS. A 10-foot buffer should be maintained between the last row of silt fence and all WoS.

Inspections and Maintenance

4. All sediment and erosion control devices shall be inspected every seven (7) days and within 24 hours after each rainfall event that produces ¼ inch or more of precipitation. Damaged or ineffective devices shall be repaired or replaced, as necessary.
5. All sediment and erosion controls shall be inspected, at the specified inspection frequency, until construction is complete and the site is permanently stabilized.
6. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been permanently stabilized. Additional control devices may be required during construction in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is permanently stabilized.
7. All existing and new storm water structures, affected by this project, shall be inspected and maintained clean of accumulated demolition debris or sediments. The inspection and maintenance of these structures shall be accomplished on the same schedule as the sediment and erosion control devices.
8. Disposal of all recovered sediments and construction debris shall be in accordance with all applicable City, State and Federal Regulations.
9. All erosion and sediment control plans and documentation (e.g., certification statements, inspection records, and maintenance records) shall be available on site during construction. All plans and documents shall be updated as required per SC NPDES General Permit SCR100000.

Best Management Practices (BMPs)

10. A stabilized construction entrance shall be installed and maintained on the project site. Storm water inlet protection shall be provided for all inlets (upstream and downstream) within 50 ft. of the construction entrance (on both sides of the public roadway).
11. During the course of construction activities erosion and sediment controls shall be used to prevent; sediment accumulation on public roadways (including street gutters), sediment laden runoff from entering into existing storm water system inlets or depositing on adjacent properties, and airborne dust migration off-site. Any accumulation of sediment from the project site on public roadways or adjacent properties shall be removed within 24 hours.
12. Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized immediately after the utility installation.
13. Silt fencing shall be placed no closer than 5 ft. downhill from the toe of any fill area.
14. Temporary stockpiling of useable or waste materials for more than fourteen (14) days shall have appropriate erosion and sediment control measures installed. Temporary stockpiles shall be placed away from storm water inlet structures, adjacent property and public roadways.
15. Temporary diversion berms and/or ditches will be provided as needed during construction to protect areas from upslope runoff and/or to divert sediment laden water to appropriate traps or stable outlets.
16. Cat track or surface roughening is required for all slopes greater than 4:1 prior to seeding and lying of synthetic or vegetative mats. Cat tracking or surface roughening shall produce a surface with furrows running cross slope, parallel with slope contours, and perpendicular to surface runoff.

Close-out

17. Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during construction or provide an individual plan meeting section R.72-307 of the Storm Water Management and Sediment Reduction Act.
18. The site shall be considered permanently stabilized when all surface disturbing activities are complete and either of the two following criteria are met:
    - a. A uniform (e.g., evenly disturbed, without large bare areas) perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or
    - b. Equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) have been employed.
22. Upon completion of construction activities and meeting the conditions of permanent stabilization a Notice of Termination (NOT) shall be submitted to SC DHEC and a copy of the submitted NOT shall be sent to the Office of the State Engineer.

SCDHEC STANDARD NOTES

1. If necessary, slopes, which exceed eight (8) vertical feet should be stabilized with synthetic or vegetative mats, in addition to hydroseeding. It may be necessary to install temporary slope drains during construction. Temporary berms may be needed until the slope is brought to grade.

2. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than fourteen (14) days after work has ceased, except as stated below.
   - Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions stabilization measures must be initiated as soon as practicable.
   - Where construction activity on a portion of the Site is temporarily ceased, and earth-disturbing activities will be resumed within 14 days, temporary stabilization measures do not have to be initiated on that portion of the Site.

3. All sediment and erosion control devices shall be inspected once every calendar week. If periodic inspection or other information indicates that a BMP has been inappropriately or incorrectly installed, the Permittee must address the necessary replacement or modification required to correct the BMP within 48 hours of identification.

4. Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized with grassing immediately after the utility installation. Fill, cover, and temporary seeding at the end of each day are recommended. If water is encountered while trenching, the water should be filtered to remove sediment before being pumped back into any waters of the State.

5. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized.

6. The contractor must take necessary action to minimize the tracking of mud onto paved roadway(s) from construction areas and the generation of dust. The contractor shall daily remove mud/soil from pavement, as may be required.

7. Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during construction or obtain approval of an individual plan in accordance with S.C Reg. 72-300 et seq. and SCR100000.

8. Temporary diversion berms and/or ditches will be provided as needed during construction to protect work areas from upslope runoff and/or to divert sediment-laden water to appropriate traps or stable outlets.

9. All waters of the State (WoS), including wetlands, are to be flagged or otherwise clearly marked in the field. A double row of silt fence is to be installed in all areas where a 50-foot buffer can't be maintained between the disturbed area and all WoS. A 10-foot buffer should be maintained between the last row of silt fence and all WoS.

10. Litter, construction debris, oils, fuels, and building products with significant potential for impact (such as stockpiles of freshly treated lumber) and construction chemicals that could be exposed to storm water must be prevented from becoming a pollutant source in storm water discharges.

11. A copy of the SWPPP, inspections records, and rainfall data must be retained at the construction site or a nearby location easily accessible during normal business hours, from the date of commencement of construction activities to the date that final stabilization is reached.

12. Initiate stabilization measures on any exposed steep slope (3H:1V or greater) where land-disturbing activities have permanently or temporarily ceased, and will not resume for a period of 7 calendar days.

13. Minimize soil compaction and, unless infeasible, preserve topsoil.

14. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

15. Minimize the discharge of pollutants from dewatering of trenches and excavated areas. These discharges are to be routed through appropriate BMPs (sediment basin, filter bag, etc.).

16. The following discharges from sites are prohibited:
    - Wastewater from washout of concrete, unless managed by an appropriate control;
    - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
    - Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and
    - Soaps or solvents used in vehicle and equipment washing.

17. After construction activities begin, inspections must be conducted at a minimum of at least once every calendar week and must be conducted until final stabilization is reached on all areas of the construction site.

18. If existing BMPs need to be modified or if additional BMPs are necessary to comply with the requirements of this permit and/or SC's Water Quality Standards, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented in the SWPPP and alternative BMPs must be implemented as soon as reasonably possible.

19. A Pre-Construction Conference must be held for each construction site with an approved On-Site SWPPP prior to the implementation of construction activities. For non-linear projects that disturb 10 acres or more this conference must be held on-site unless the Department has approved otherwise.

Temporary Stabilization

Temporary Stabilization is defined as a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Initiating Temporary Stabilization

Initiate temporary stabilization by mulch or temporary stabilization by seeding within 7 calendar days where land disturbing activities have temporarily ceased on the Project and will not resume for a period exceeding 14 calendar days. Where land disturbing activities on a portion of the Project are temporarily ceased, and the land disturbing activities are resumed within 14 days, temporary stabilization measures are not required to be initiated on that portion of the Project.

Temporary stabilization by seeding is required if the Project will not be worked for a period longer than 60 days.

Initiate temporary stabilization measures as soon as practicable for areas where initiating temporary stabilization measures within 7 days is infeasible (e.g., where snow cover, frozen ground, or drought conditions preclude stabilization).

Temporary Stabilization

Acceptance of Temporary Stabilization

Before acceptance of temporary stabilization by the regulatory agency and the Design Engineer or Landscape Architect, temporary stabilization is required that is sufficient to control erosion for a given area and length of time before the next phase of construction or the establishment of permanent seeding is to commence. A satisfactory stand of temporary stabilization meeting the requirements of this Specification is required regardless of the time of the year the work is performed.

Temporary Cover by Mulch

Use temporary cover by mulch where it is not feasible or practicable to bring an area to final slope and grade. Finish the surface so that permanent seeding can be performed without subsequent disturbance by additional grading.

Temporary Cover by Seeding

Following the preparation of the seedbed, sow seed per the seeding Tables and apply an appropriate Mulch prior to a rainfall event that compacts the seedbed. The CONTRACTOR may add granular lime and fertilizer as necessary to enhance growth.

Final Stabilization

Final Stabilization is defined that all land-disturbing activities at the construction site have been completed and that on all areas not covered by permanent structures, either

(1) A uniform (e.g., evenly distributed, without large bare areas) permanent vegetative cover with a density of 70 percent has been established, or

(2) Equivalent permanent stabilization measures (such as the use of landscaping mulch, riprap, pavement, and gravel) have been implemented to provide effective cover for exposed portions of the construction site not stabilized with permanent vegetation.

Final stabilization by vegetation must be achieved with permanent perennial vegetation prior to issuing the Notice of Termination (NOT).

Permanent Seeding

Initiate permanent seeding within 7 calendar days where land disturbing activities have permanently ceased on the Project. Where land disturbing activities are resumed within 14 days, stabilization measures are not required to be initiated on that portion of the Project. Initiate permanent seeding measures as soon as practicable for areas where initiating permanent seeding measures within 7 days is infeasible (e.g., where snow cover, frozen ground, or drought conditions preclude stabilization).

When performing permanent seeding for permanent detention ponds, ensure that the detention pond is cleaned of any deposited sediment and graded to the required permanent detention basin configuration. Ensure the seedbed for the permanent seeding is established in accordance with this Specification.

Acceptance of Permanent Seeding

Before acceptance, a uniform perennial vegetative cover with a density of 70% of each square yard of the seeded area is required. A well developed root system must be established to sufficiently survive dry periods and winter weather and be capable of reestablishment in the spring.

Permanent Seeding Installation

Following the preparation of the seedbed, perform permanent seeding per the seeding Tables and apply an appropriate Mulch within 5 working days and/or prior to a rainfall event that compacts the prepared seedbed. If a rain event occurs that compacts or erodes the seedbed prior to performing permanent seeding, the seedbed must be re-prepared prior to conducting permanent seeding. Add fertilizer and lime as required by a soil test.

Sod

Initiate Sod applications within 7 calendar days where land disturbing activities have permanently ceased on the Project. Initiate Sod applications measures as soon as practicable for areas where initiating Sod applications within 7 days is infeasible (e.g., where snow cover, frozen ground, or drought conditions preclude stabilization). Use Sod on slopes less than 2H:1V.

Acceptance of Sod

Acceptance is contingent on establishing a satisfactory stand of perennial grass. Sod application areas are acceptable when all requirements including maintenance are met and a healthy, evenly colored, viable stand of grass is established. A satisfactory stand of grass must have a root system that is sufficient to survive dry periods and winter weather and is capable of re-establishing in the spring.

Project Number: 2015-096
DWG Name: 2015-096 Details.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:
Lynn A. Solesbee, P.E.
South Carolina PE# 15571
North Carolina PE# 030285

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Certificates of Authorization:
SC C04212 · GA PEF005865
NC P0868 · AL CA-0065E

CAMP SPEARHEAD - PHASE II
Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 15571 LYNN ALAN SOLESBEE

SOUTH CAROLINA BLUEWATER CIVIL DESIGN, LLC No. C04212 CERTIFICATE OF AUTHORIZATION

PLAN REVISION	ISSUE DATE	ISSUE COMMENT
A	06-01-16	Issued for Bids
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SITEWORK NOTES & DETAILS

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Greenville County Standard Notes

Seeding Dates and Rates of Application

Perform seeding during the periods and at the rates specified in the seeding tables. Do not use temporary cover by seeding or permanent seeding for projects when:

- The ground is frozen and/or when the 10–day forecasted low temperature remains below 35 degrees Fahrenheit;
- The ground is excessively wet; or
- The ground is excessively dry (periods of drought) unless watering is specified.

During periods of adverse conditions, use temporary cover by mulch.

Seedbed Preparation

- Ensure that the areas receiving permanent seeding are uniform and conform to the finished grade of the Project.
- Perform minor shaping and evening of uneven and rough areas outside of the graded area in order to provide for more effective erosion control and for ease of subsequent mowing operations.
- Loosen the seedbed (including cut slopes) to a minimum depth of three (3) inches before initiating permanent seeding and temporary seeding.
- An acceptable method of preparing the seedbed on slopes is vertically tracking the seedbed up and seedbed up and down the slope with proper equipment.
- Remove stones larger than two and one–half (2½) inches in any dimension, large dirt clods, roots, or other debris brought to the surface.
- Use compost if good seedbed material is not located on site or results of the soil test show the seedbed is excessively nutrient deficient to the extent of requiring costly fertilizer additions and or have excessively low pH values (lower than 5.0).
- Consider the use of mechanical seed drills to perform permanent seeding on areas where temporary seeding or temporary cover by mulch was previously utilized.

Mulch

Required for all permanent seeding, temporary seeding, and temporary cover applications. Do not use Mulch in areas where concentrated flow is expected. Use HECP Mulch for temporary seeding and temporary cover applications when the application area will require additional grading prior to permanent seeding. Do not use Erosion Control Blankets (ECB) or Turf Reinforcement Matting (TRM) in this situation.

Wood Chip Mulch

Wood chip mulch is not acceptable for seeding applications. If wood chip mulch is used for temporary cover by mulch, it must be removed prior to performing permanent seeding

Straw or Hay Mulch with Tackifier

Use material that is certified weed. Do not use on slopes steeper than 4H:1V. Anchor using one of the following tacking agents:

- Organic or Chemical Tackifier
- Hydraulic Straw Tackifiers
- Emulsified Asphalt
-

Applying Straw or Hay Mulch

Uniformly apply material at the rate of 2,000 pounds per acre.

Compost Mulch

Only use from producer that participates in the USCC STA program. Do not use materials that have been treated with chemical preservatives as a compost mulch. Do not use mixed municipal solid waste compost.

Hydraulic Erosion Control Products (HECPs)

Use as an allowable mulch for temporary cover by mulch, temporary cover by seeding or permanent cover by seeding applications. Do not use as a channel liner or for areas receiving concentrated flow.

Temporary Erosion Control Blankets (ECB) and Turf Reinforcement Matting (TRM)

Consider for permanent seeding application areas with steep slopes or areas where there is a significant erosion problem or potential for erosion. Use in areas where concentrated flow is expected. Do not use for temporary seeding applications when the application areas will require additional grading or modifications prior to permanent seeding.

Protection of Structures

Cover any parts of bridges, culverts, guardrails, signs, sidewalks, curb and gutters, catch basins, pipe ends, and other structures as necessary to prevent discoloration before spraying HECPs, organic or chemical tackifiers.

Sod

Do not use sodding on slopes steeper than 2H:1V, and if sodding is mowed, do not place on slopes greater than 3H:1V. Install Warm Season Sod between March 1st and September 1st. Install Cool Season Sod anytime during the year as long as the soil is not frozen. Do not place Sod on:

- Soil that is frozen and/or when the 10–day forecasted low temperature remains below 35 degrees Fahrenheit;
- Soil that is excessively wet;
- Soil that is excessively dry (periods of heat or drought) unless watering is specified;
- Soil that is composed of compacted clay; and
- Soil than has been treated with pesticides.

Sod Bed Preparation

- Ensure the Sod bed is uniform and conforms to the finished grade of the Project.
- Loosen the Sod Bed to a minimum depth of 3 inches before placing Sod.
- Furnish and place topsoil or compost in the Sod Bed in areas where the existing Sod Bed has little or no topsoil,
- Lay Sod when Sod Bed is moist. Moisten dry Sod Beds before sod is laid.

Sod Material

Provide Sod with living, well–established growth, with a dense root mat of predominant grass Specified. Provide vigorous, well rooted, healthy turf, free from disease, insect pests, weeds, other grasses, stones, and any other harmful or detrimental materials.

Sod Installations

Ensure Sod is not installed until the end of the project or when final stabilization is achieved on adjacent areas of the project that drain or discharge to the Sod application.

Fertilizer

Granular Fertilizer

Use for all permanent seeding applications and all Sodding applications. Proper mixture is dependent on the existing soil conditions and it is recommended that a soil analysis be performed if the soil conditions are uncertain in the area of fertilizer application.

Use fertilizer that incorporates a minimum of 50% water insoluble (slow release) nitrogen. Animal by–product or municipal waste fertilizers are not acceptable under this Specification.

Unless a soil analysis is performed to determine otherwise, a good rule of thumb granular fertilizer to apply in the Upstate of South Carolina is 10–10–10. In no case should a 20–20–20 fertilizer be used due to the potential burning of the seedbed.

Compost Soil Amendment

For seedbeds that have little or no topsoil, are highly acidic, or are lacking sufficient nutrients to sustain a health stand of grass place, and mix certified weed free compost into the seedbed to ensure a good stand of grass.

Biological Growth Stimulant

Use for all permanent seeding, Sodding, and temporary seeding applications. Animal by–products or municipal waste products are not acceptable. Liquid fertilizers are not acceptable, and can cause burning of the seedbed if applied as such.

Slope Interruption Devices

The maximum allowable continuous slope length for straw or hay mulch, HECPs, compost and ECB applications is 50 feet. Slope interruption devices (such as sediment tubes) or TRMs are required for continuous slope length longer than 50 feet.

Inspection

Ensure that all seed, Sod, fast acting lime, biological growth stimulants, agricultural granular lime, granular fertilizer, straw and hay mulch, HECPs, compost mulch, and ECBs are applied as Specified. The Design Engineer or Landscape Architect, or member of the Design Engineer or Landscape Architect staff must document on–site that these materials are applied correctly by completing and signing proper forms.

Maintenance

Perform all maintenance necessary to keep Stabilization areas in a satisfactory condition until the work is finally accepted. This includes mowing, repairing areas of erosion and washes, and applying additional seed, fertilizer, and mulch to areas where a satisfactory stand of grass has not been achieved.

Mowing

Mow road shoulders and medians when vegetation reaches a height of approximately 18 to 24 inches. Do not perform excessive mowing of Slopes resulting in ruts, furrows or grooves. Do not perform excessive mowing of Slopes that inhibits the establishment of the slope vegetation.Do not perform mowing when soil and weather conditions are such that rutting or other damage to the Project may occur.

Ensure mowing results in a uniform vegetation height of 4 to 6 inches, unless otherwise directed. When utilizing a nurse crop for permanent seeding, mow Millet (no lower than 3 inches) once it reaches a height of 18 inches to reduce competitiveness with the permanent vegetation. Mow Wheat and Rye Grain (no lower than 3 inches) once they reach a height of 6–8 inches to reduce competitiveness with permanent vegetation.

TABLE 2: MULCH APPLICATIONS

Mulch	Applicable Slopes (H:V)[1]	Minimum Application Rate (lbs/acre -dry)[2]
Wood Chip	≤ 4:1	500 CY/acre
Straw or Hay with Tackifier	≤ 4:1	2,000
HECP Type 1	≤ 4:1	2,000
HECP Type 2	4:1< S ≤ 3:1	2,500
HECP Type 3	3:1< S ≤ 2:1	3,000
HECP Type 4	2:1< S ≤ 1:1	3,500
	>1:1	4,000 (temp cover only)[3]
Compost Mulch	≤ 2:1	200 CY/acre

1 The maximum allowable continuous slope length for all mulch applications is 50 feet. Slope interruption devices or TRMs are required for continuous slope length longer than 50 feet.

2 Strictly comply with the manufacturer's mixing recommendations for the actual slope steepness and the actual continuous slope length of the application.

3 HECP Type 4 may be used for permanent cover applications on slopes 1:1 or greater at a minimum rate of 4,500 pounds per acre.

TABLE 3: ECB and TRM APPLICATIONS

ECB/TRM Type[1]	Slope (H:V)[2]	Minimum Slope Length (ft)
Temporary ECB or Type 1 TRM	≤ 2:1	5
Type 2 TRM	≤ 1.5:1	5
Type 3 TRM	≤ 1:1	5

1 Strictly comply with the manufacturer's specifications.

2 The maximum allowable continuous slope length for ECBs is 50 feet. Slope interruption devices or TRMs are required for continuous slope length longer than 50 feet.

Amendments

Lime

Agricultural Granular Lime

Use agricultural grade, standard ground limestone for all permanent seeding applications and Sodding applications.

Applying Granular Lime

A soil analysis is recommended prior to application. Apply at a rate within ±10% of weight recommendation of soil analysis. Do not apply more than 2,500 lbs/acre of in a single application.

Fast Acting Lime

Use fast acting liquid and/or dry forms of lime for all temporary seeding and permanent seeding applications.

Non Slope Areas

Spring / Summer Non Slope Areas (during establishment, mow when Millet reaches 18-inches in height)

Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
Common Bermudagrass[1] (hulled = hull absent)	*Cynodon dactylon*	50	1.15				●	●	●	●						Long-lived, warm season perennial, grows 4-6 inches tall. High heat tolerance, salt tolerant, high nitrogen requirement.
White Clover	*Trifolium repens*	5	0.11			●	●				●					Grows to 1 foot tall. Full sun, low drought tolerance. Good erosion control cover.
Browntop Millet	*Panicum ramosum*	10	0.23				●	●	●	●	●					Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance, high salt tolerance.

Fall / Winter Non Slope Areas (during establishment, mow when Rye reaches 6 to 8-inches in height)

Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
Tall Fescue (KY-31)	*Festuca arundinacea*	50	1.15	●	●	●	●					●	●	●	●	Bunch-type grass, grows 2-4 feet tall. Full sun to part shade. Good heat and drought tolerance as well as shade tolerance. Tolerant to marginal, acidic, and poorly drained soils and in areas of low fertility.
Common Bermudagrass[1] (unhulled = hull present)	*Cynodon dactylon*	15	0.34	●	●	●						●	●	●	●	Long-lived, warm season perennial, grows 4-6 inches tall. High heat tolerance, salt tolerant, high nitrogen requirement.
White Clover	*Trifolium repens*	5	0.11		●	●	●					●	●	●		Grows to 1 foot tall. Full sun, low drought tolerance, low salt tolerance. Good erosion control cover.
Crimson Clover[2]	*Trifolium incarnatum*	20	0.46	●	●	●	●					●	●	●	●	Upright winter legume, grows from 1-3 feet tall. Full sun, low drought tolerance, no salt tolerance.
Rye Grain[3]	*Secale cereale*	15	0.34	●	●	●	●					●	●	●	●	Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance, high salt tolerance.

[1] Common Bermudagrass: Do not use Giant Bermudagrass(NK-37).
[2] Only use pre-inoculated legumes or use an appropriate inoculant with the seed at planting.
[3] Mow Rye Grain (no lower than 3 inches) once it reaches a height of 6-8 inches to reduce competitiveness with permanent vegetation.
[4] If the Common Name of the seed listed in the Tables is not available, use seed with the listed Botanical Name.

Road Medians & Shoulders

Spring / Summer Road Median & Shoulders (during establishment, mow when Millet reaches 18-inches in height)

Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
Common Bermudagrass[1] (hulled = hull absent)	*Cynodon dactylon*	25	0.57				●	●	●	●						Long-lived, warm season perennial, grows 4-6 inches tall. High heat tolerance, salt tolerant, high nitrogen requirement.
Browntop Millet	*Panicum ramosum*	10	0.23				●	●	●	●	●					Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance, high salt tolerance.

Fall / Winter Road Median & Shoulders (during establishment, mow when Rye reaches 6 to 8-inches in height)

Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
Tall Fescue (KY-31)	*Festuca arunincacea*	50	1.15	●	●	●	●					●	●	●	●	Bunch-type grass, grows 2-4 feet tall. Full sun to part shade. Good heat and drought tolerance as well as shade tolerance. Tolerant to marginal, acidic, and poorly drained soils and in areas of low fertility.
Common Bermudagrass[1] (unhulled = hull present)	*Cynodon dactylon*	15	0.34	●	●	●						●	●	●	●	Long-lived, warm season perennial, spreads by rhizomes/stolons seed, grows 4-6 inches tall. High heat tolerance, salt tolerant, high nitrogen requirement.
Crimson Clover[2]	*Trfolium incarnatum*	20	0.46	●	●	●						●	●	●	●	Upright winter legume, grows from 1-3 feet tall. Full sun, low drought tolerance, no salt tolerance.
Rye Grain[3]	*Secale cereale*	15	0.34	●	●	●						●	●	●	●	Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance, high salt tolerance.

[1] Common Bermudagrass: Do not use Giant Bermudagrass(NK-37).
[2] Only use pre-inoculated legumes or use an appropriate inoculant with the seed at planting.
[3] Mow Rye Grain (no lower than 3 inches) once it reaches a height of 6-8 inches to reduce competitiveness with permanent vegetation.
[4] If the Common Name of the seed listed in the Tables is not available, use seed with the listed Botanical Name.

Slopes & Buffers

Spring / Summer Slopes (during establishment, mow when Millet reaches 18-inches in height. After establishment, only mow at end of winter season)

	Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
Pick 1	Tall Fescue (KY-31)	*Festuca aruninacea*	50	1.15			●	●									Bunch-type grass, grows 2-4 feet tall. Full sun to part shade. Good heat and drought tolerance as well as shade tolerance. Tolerant to marginal, acidic, and poorly drained soils and in areas of low fertility.
	Bahiagrass	*Paspalum notatum*	30	0.69			●	●	●	●	●						Warm season perennial, spreads by rhizomes, grows 1-2 feet tall, deep root system. Shade tolerant, salt tolerant, drought tolerant. Low maintenance, tough grass surviving conditions that destroy most turf grasses. Adapts to most soil conditions and extremely tolerant to wear and traffic.
	Common Bermudagrass[1] (hulled = hull absent)	*Cynodon dactylon*	15	0.34				●	●	●	●						Long-lived, warm season perennial, grows 4-6 inches tall. High heat tolerance, high nitrogen requirement.
	White Clover	*Trifolium repens*	5	0.11			●	●				●					Warm season bunch grass, deep root system, grows 3-6 feet tall. Full sun, high drought tolerance.
	Weeping Lovegrass	*Erograstis curvula*	5	0.11			●	●	●	●	●	●					Warm season bunch grass, grows 3 feet tall. Full sun, high drought tolerance. Plant at 10%-20% of mix.
	Hairy Vetch[2]	*Vicia villosa*	10	0.23				●									Cool season biennial or annual legume. Viney, trailing or climbing growth. Wide range of soil types, best adapted to loamy and sandy soils.
	Browntop Millet	*Panicum ramosum*	10	0.23				●	●	●	●	●					Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance.

Fall / Winter Slopes (during establishment, mow when Rye reaches 6 to 8-inches in height. After establishment, only mow at end of winter season)

	Common Name[4]	Botanical Name	Planting Rate (lbs/acre)	Planting Rate (lbs/1000sf)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Characteristics
	Tall Fescue (KY-31)	*Festuca aruninacea*	50	1.15	●	●	●						●	●	●	●	Bunch-type grass, grows 2-4 feet tall. Full sun to part shade. Good heat and drought tolerance as well as shade tolerance. Tolerant to marginal, acidic, and poorly drained soils and in areas of low fertility.
	Common Bermudagrass[1] (unhulled = hull present)	*Cynodon dactylon*	15	0.34	●	●	●						●	●	●	●	Long-lived, warm season perennial, grows 4-6 inches tall. High heat tolerance, high nitrogen requirement.
	White Clover[2]	*Trifolium repens*	5	0.11		●	●						●	●	●		Grows to 1 foot tall. Full sun, low drought tolerance, low salt tolerance. Good erosion control cover.
	Weeping Lovegrass	*Erograstis curvula*	5	0.11	●	●	●						●	●	●	●	Warm season bunch grass, grows 3 feet tall. Full sun, high drought tolerance.
Pick 1	Crimson Clover[2]	*Trfolium incarnatum*	20	0.46	●	●	●						●	●	●	●	Upright winter legume, grows from 1-3 feet tall. Full sun, low drought tolerance, no salt tolerance.
	Hairy Vetch[2]	*Vicia villosa*	10	0.23	●	●	●						●	●	●	●	Cool season biennial or annual legume. Viney, trailing or climbing growth. Wide range of soil types, best adapted to loamy and sandy soils.
	Rye Grain[3]	*Secale cereale*	15	0.34	●	●	●						●	●	●	●	Bunch type grain, grows 2-5 feet tall. Full sun, moderate drought tolerance, high salt tolerance.

[1] Common Bermudagrass: Do not use Giant Bermudagrass(NK-37).
[2] Only use pre-inoculated legumes or use an appropriate inoculant with the seed at planting.
[3] Mow Rye Grain (no lower than 3 inches) once it reaches a height of 6-8 inches to reduce competitiveness with permanent vegetation.
[4] If the Common Name of the seed listed in the Tables is not available, use seed with the listed Botanical Name.

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Project Number: 2015-096
DWG Name: 2015-096 Details.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:

Lynn A. Solesbee, P.E.
South Carolina PE# 15571
North Carolina PE# 030285

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Certificates of Authorization:
SC C04212 · GA PEF005865
NC P0868 · AL CA4065E

CAMP SPEARHEAD - PHASE II
Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

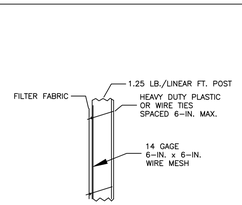
SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 15571 LYNN ALAN SOLESBEE

SOUTH CAROLINA BLUEWATER CIVIL DESIGN, LLC No. C04212 CERTIFICATE OF AUTHORIZATION

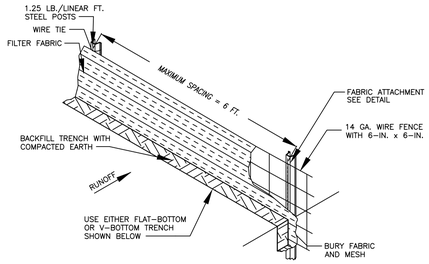
PLAN REVISION	ISSUE DATE	ISSUE COMMENT
A	06-01-16	Issued for Bids

SITEWORK NOTES & DETAILS

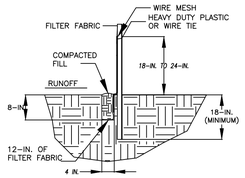
C502



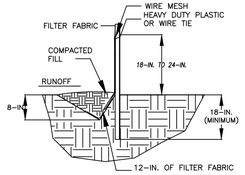
FABRIC ATTACHMENT DETAIL



SILT FENCE INSTALLATION



FLAT-BOTTOM TRENCH DETAIL



V-SHAPED TRENCH DETAIL

Greenville County
Storm Water Management

REINFORCED SILT FENCE

STANDARD DRAWING NO. SC-03B

APPROVED BY: GREENVILLE COUNTY STORM WATER MANAGEMENT — DATE: January, 2013

SILT FENCE - POST REQUIREMENTS

1. Silt Fence posts must be 48-inch long steel posts that meet, at a minimum, the following physical characteristics.
   - Composed of a high strength steel with a minimum yield strength of 50,000 psi.
   - Include a standard "T" section with a nominal face width of 1.38-inches and a nominal "T" length of 1.48-inches.
   - Weigh 1.25 pounds per foot (± 8%)
2. Posts shall be equipped with projections to aid in fastening of filter fabric.
3. Steel posts may need to have a metal soil stabilization plate welded near the bottom when installed along steep slopes or installed in loose soils. The plate should have a minimum cross section of 17-square inches and be composed of 15 gauge steel, at a minimum. The metal soil stabilization plate should be completely buried.
4. Install posts to a minimum of 24-inches. A minimum height of 1- to 2-inches above the fabric shall be maintained, and a maximum height of 3 feet shall be maintained above the ground.
5. Post spacing shall be at a maximum of 6-feet on center.

SILT FENCE - FABRIC REQUIREMENTS

1. Silt fence must be composed of woven geotextile filter fabric that consists of the following requirements:
   - Composed of fibers consisting of long chain synthetic polymers of at least 85% by weight of polyolefins, polyesters, or polyamides that are formed into a network such that the filaments or yarns retain dimensional stability relative to each other;
   - Free of any treatment or coating which might adversely alter its physical properties after installation;
   - Free of any defects or flaws that significantly affect its physical and/or filtering properties; and,
   - Have a minimum width of 36-inches.
2. Use only fabric appearing on SC DOT's Qualified Products Listing (QPL), Approval Sheet #34, meeting the requirements of the most current edition of the SC DOT Standard Specifications for Highway Construction.
3. 12-inches of the fabric should be placed within excavated trench and toed in when the trench is backfilled.
4. Filter Fabric shall be purchased in continuous rolls and cut to the length of the barrier to avoid joints.
5. Filter Fabric shall be installed at a minimum of 24-inches above the ground.

SILT FENCE - INSPECTION & MAINTENANCE

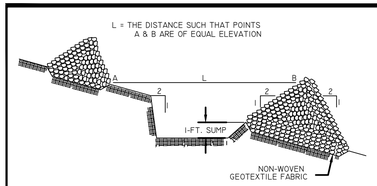
1. The key to functional silt fence is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of silt fence shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations along the silt fence is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the silt fence.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Check for areas where stormwater runoff has eroded a channel beneath the silt fence, or where the fence has sagged or collapsed due to runoff overtopping the silt fence. Install checks/tie-backs and/or reinstall silt fence, as necessary.
7. Check for tears within the silt fence, areas where silt fence has begun to decompose, and for any other circumstance that may render the silt fence ineffective. Removed damaged silt fence and reinstall new silt fence immediately.
8. Silt fence should be removed within 30 days after final stabilization is achieved and once it is removed, the resulting disturbed area shall be permanently stabilized.

South Carolina Department of Health and Environmental Control

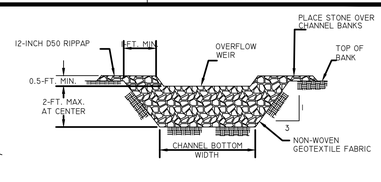
SILT FENCE

STANDARD DRAWING NO. SC-03 PAGE 2 of 2

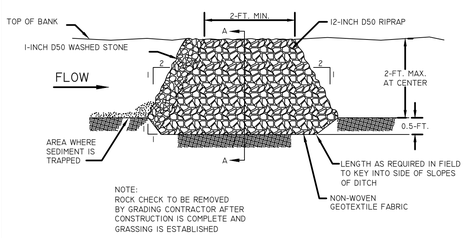
GENERAL NOTES — DATE: FEBRUARY 2014



SPACING BETWEEN DITCH CHECK



CROSS SECTION A-A THRU STONE DITCH CHECK



TYPICAL DITCH CHECK SECTION

Greenville County
Storm Water Management

ROCK DITCH CHECK

STANDARD DRAWING NO. SC-04

APPROVED BY: GREENVILLE COUNTY STORM WATER MANAGEMENT — DATE: January, 2013

ROCK DITCH CHECK - GENERAL NOTES

1. Rock Ditch Checks should not be placed in Waters of the State or USGS blue-line streams (unless approved by Federal Authorities).
2. Rock Ditch Checks should be installed in steeply sloped channels where adequate vegetation cannot be established. This BMP measure should only be used in small open channels.
3. A non-woven geotextile fabric shall be installed over the soil surface where the rock ditch check is to be placed.
4. The body of the rock ditch check shall be composed of 12-inch D50 Riprap. The upstream face may be composed of 1-inch D50 washed stone.
5. Rock Ditch Checks should not exceed a height of 2-feet at the centerline of the channel.
6. Rock Ditch Checks should have a minimum top flow length of 2-feet.
7. Riprap should be placed over channel banks to prevent water from cutting around the ditch check.
8. The riprap should be placed by hand or mechanical placement (no dumping of rock to form dam) to achieve complete coverage of the channel. Doing so will also ensure that the center of the check is lower than the edges.
9. The maximum spacing between the dams should be such that the toe of the upstream check is at the same elevation as the top of the downstream check.

ROCK DITCH CHECK - INSPECTION & MAINTENANCE

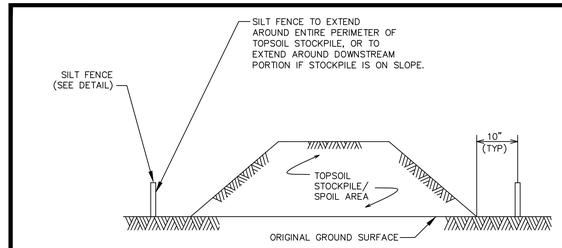
1. The key to functional rock ditch check is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of rock ditch checks shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations in front of the rock ditch check is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the rock ditch check.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Inspect Rock Ditch Checks' edges for erosion and evidence of runoff bypassing the installed check. If evident repair promptly as necessary to prevent erosion and bypassing.
7. In the case of grass-lined ditches, channels, and swales, rock ditch checks should be removed when the grass has matured sufficiently to protect the ditch or swale unless the slope of the swale is greater than 4%.
8. After construction is completed and final stabilization is reached, the entirety of the rock ditch check should be removed if vegetation will be used for permanent erosion control measures. The area beneath the removed rock ditch check must be addressed with permanent stabilization measures.

South Carolina Department of Health and Environmental Control

ROCK DITCH CHECK

STANDARD DRAWING NO. SC-04 PAGE 2 of 2

GENERAL NOTES — DATE: FEBRUARY 2014

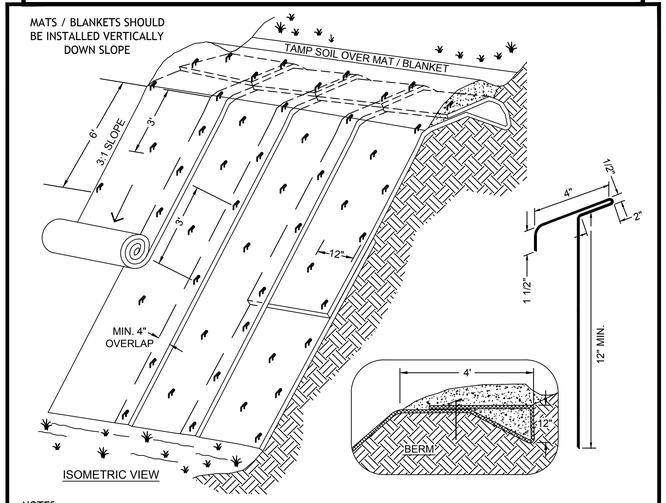


NOTES:

1. AN ON-SITE DRAINAGE SWALE SHALL BE LOCATED BETWEEN THE TOPSOIL STOCKPILE AND OFF-SITE PROPERTY.
2. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, IT SHALL BE STABILIZED PER SEEDING SPECIFICATIONS.
3. INSPECTION OF SILT FENCES SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF HALF INCH (1/2 ") PER DAY. REPAIR OR REPLACEMENT OF SILT FENCE SHALL BE MADE PROMPTLY AS NEEDED.
4. SEDIMENT TRAPPED BY THE SILT FENCES SHALL BE REMOVED AND PROPERLY DISPOSED OF WHENEVER SEDIMENT ACCUMULATION DEPTH AT THE SILT FENCE IS APPROXIMATELY EQUAL TO TWELVE (12) INCHES (ONE-HALF OF SILT FENCE HEIGHT).
5. SILT FENCES SHALL BE MAINTAINED IN PLACE UNTIL TOPSOIL STOCKPILE HAS BEEN ELIMINATED AND SHALL BE REMOVED ONLY WHEN DIRECTED BY OWNER OR SITE ENGINEER.

TEMPORARY STOCKPILE DETAIL

(NOT TO SCALE)



NOTES:

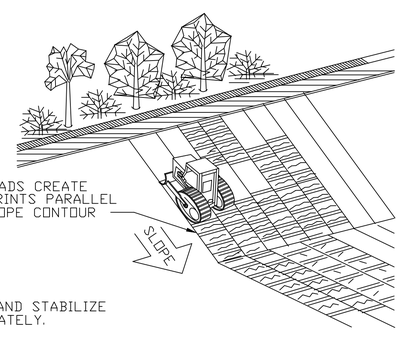
1. SLOPE SURFACE SHALL BE FREE OF ROCKS CLODS, STICKS AND GRASS. MATS / BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

SLOPE STABILIZATION AS NOTED ON PLANS
USE WESTERN EXCELSIOR MATTING
(R-1, ALL NATURAL)
TEL. 1-800-833-8573, TYP.

- TYPICAL SECTION -

TYPICAL SLOPE STABILIZATION DETAIL

NTS



TRACKING

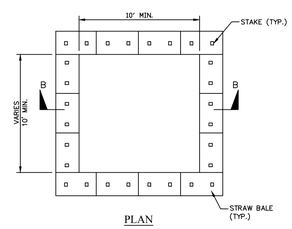
Greenville County
Storm Water Management

Tracking

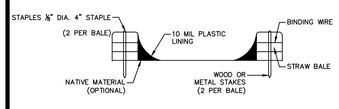
STANDARD DRAWING NO. EC-01A

APPROVED BY: GREENVILLE COUNTY STORM WATER MANAGEMENT — DATE: January 2013

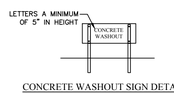
STRAW BALE BARRIER CONCRETE WASHOUT



PLAN
NOT TO SCALE
TYPE "ABOVE GRADE" WITH STRAW BALES

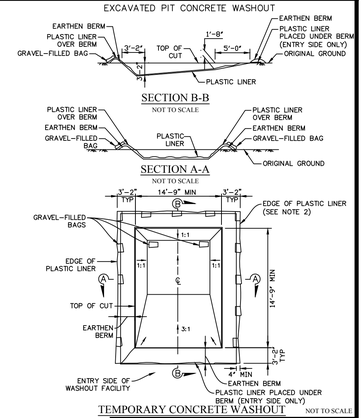


SECTION B-B
NOT TO SCALE



CONCRETE WASHOUT SIGN DETAIL
NOT TO SCALE

EXCAVATED PIT CONCRETE WASHOUT



TEMPORARY CONCRETE WASHOUT — NOT TO SCALE

NOTES:

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. INSTALL CONCRETE WASHOUT SIGN (24"X24", MINIMUM) WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. TEMPORARY WASHOUT AREA MUST BE AT LEAST 50' FROM A STORM DRAIN, CREEK BANK OR PERIMETER CONTROL.
4. CLEAN OUT CONCRETE WASHOUT AREA WHEN 50% FULL.

Greenville County
Storm Water Management

CONCRETE WASHOUT DETAIL

STANDARD DRAWING NO. SC-14

APPROVED BY: GREENVILLE COUNTY STORM WATER MANAGEMENT — DATE: January 2013

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Project Number: 2015-096
DWG Name: 2015-096 Details.dwg
Drawing Scale: as noted
Date of Project: November 2015
Engineer of Record:

Lynn A. Solesbee, P.E.
South Carolina PE# 15571
North Carolina PE# 030285

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Certificates of Authorization:
SC C04212 · GA PEF005865
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CAMP SPEARHEAD - PHASE II

Cherokee Foothills Scenic Hwy. (SC-11), Marietta
Greenville County, SC

SOUTH CAROLINA — LICENSED PROFESSIONAL ENGINEER — No. 15571 — LYNN ALAN SOLESBEE

SOUTH CAROLINA — BLUEWATER CIVIL DESIGN, LLC — No. C04212 — CERTIFICATE OF AUTHORIZATION

PLAN REVISION	ISSUE DATE	ISSUE COMMENT
A	06-01-16	Issued for Bids
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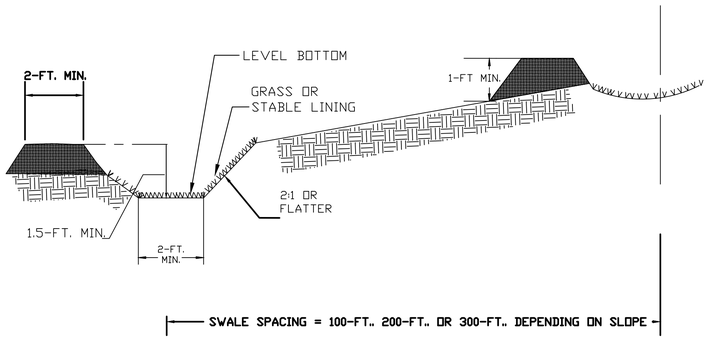
SITEWORK NOTES & DETAILS

C503



South Carolina Department of Health and Environmental Control

DIVERSION SWALE

STANDARD DRAWING NO. RC-03 Page 1 of 2

NOT TO SCALE — JULY 31, 2005 DATE

DIVERSION SWALE

Installation

The bottom width should be a minimum of 2-feet, and the bottom should be level.

The depth should be a minimum of 1.5-feet and the side slopes should be 2H:1V or flatter.

The maximum grade shall be 5%, with positive drainage to a suitable outlet.

Slopes shall be stabilized immediately using vegetation, sod, and erosion control blankets or turf reinforcement mats to prevent erosion.

The upslope side of the swale should provide positive drainage so no erosion occurs at the outlet. Provide energy dissipation measures as necessary.

Sediment-laden runoff shall be directed to a sediment trapping facility.

Inspection and Maintenance:

Swales should be inspected, every seven (7) calendar days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation and repairs made as necessary.

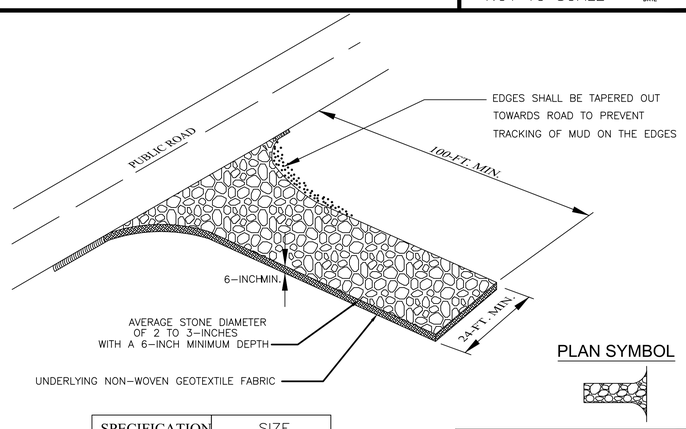
Damage caused by construction traffic or other activity must be repaired before the end of each working day.

South Carolina Department of Health and Environmental Control

DIVERSION SWALE

STANDARD DRAWING NO. RC-03 PAGE 2 of 2

GENERAL NOTES — JULY 31, 2005 DATE



PLAN SYMBOL

SPECIFICATION	SIZE
ROCK PAD THICKNESS	6 INCHES
ROCK PAD WIDTH	24 FEET
ROCK PAD LENGTH	100 FEET
ROCK PAD STONE SIZE	D = 2-3 INCHES

South Carolina Department of Health and Environmental Control

CONSTRUCTION ENTRANCE

STANDARD DRAWING NO. SC-06 PAGE 1 of 2

NOT TO SCALE — FEBRUARY 2014 DATE

CONSTRUCTION ENTRANCE - GENERAL NOTES

1. Stabilized construction entrances should be used at all points where traffic will egress/ingress a construction site onto a public road or any impervious surfaces, such as parking lots.
2. Install a non-woven geotextile fabric prior to placing any stone.
3. Install a culvert pipe across the entrance when needed to provide positive drainage.
4. The entrance shall consist of 2-inch to 3-inch D50 stone placed at a minimum depth of 6-inches.
5. Minimum dimensions of the entrance shall be 24-feet wide by 100-feet long, and may be modified as necessary to accommodate site constraints.
6. The edges of the entrance shall be tapered out towards the road to prevent tracking at the edge of the entrance.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin or other sediment trapping structure.
8. Limestone may not be used for the stone pad.

CONSTR. ENTRANCE - INSPECTION & MAINTENANCE

1. The key to functional construction entrances is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of construction entrances shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall event that produces 1/2-inch or more of precipitation.
3. During regular inspections, check for mud and sediment buildup and pad integrity. Inspection frequencies may need to be more frequent during long periods of wet weather.
4. Reshape the stone pad as necessary for drainage and runoff control.
5. Wash or replace stones as needed and as directed by site inspector. The stone in the entrance should be washed or replaced whenever the entrance fails to reduce the amount of mud being carried off-site by vehicles. Frequent washing will extend the useful life of stone pad.
6. Immediately remove mud and sediment tracked or washed onto adjacent impervious surfaces by brushing or sweeping. Flushing should only be used when the water can be discharged to a sediment trap or basin.
7. During maintenance activities, any broken pavement should be repaired immediately.
8. Construction entrances should be removed after the site has reached final stabilization. Permanent vegetation should replace areas from which construction entrances have been removed, unless area will be converted to an impervious surface to serve post-construction.

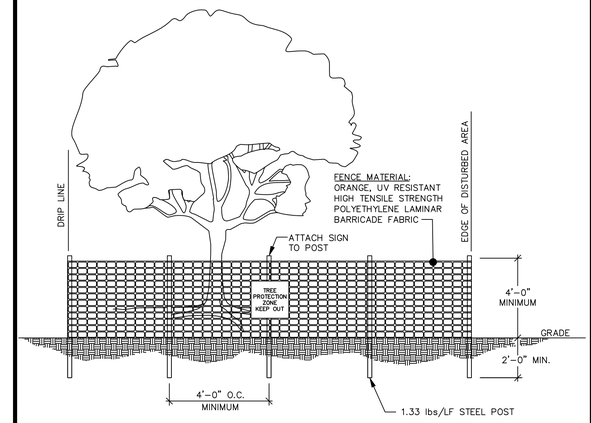
South Carolina Department of Health and Environmental Control

CONSTRUCTION ENTRANCE

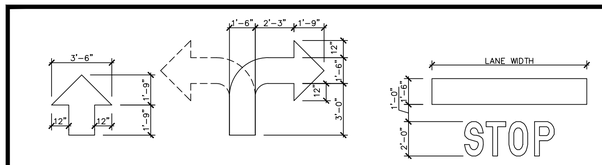
STANDARD DRAWING NO. SC-06 PAGE 2 of 2

GENERAL NOTES — FEBRUARY 2014 DATE

NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.



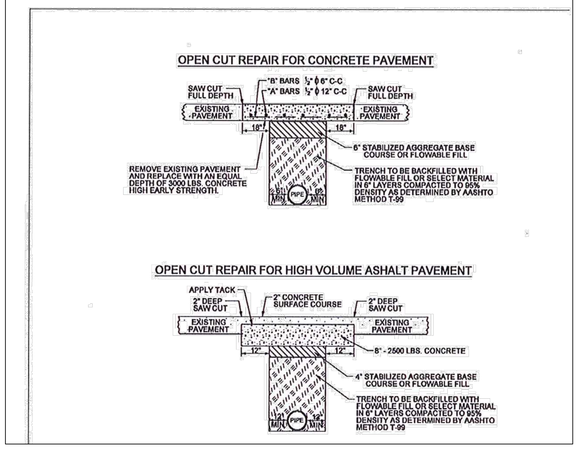
TREE PROTECTION FENCE
N.T.S.



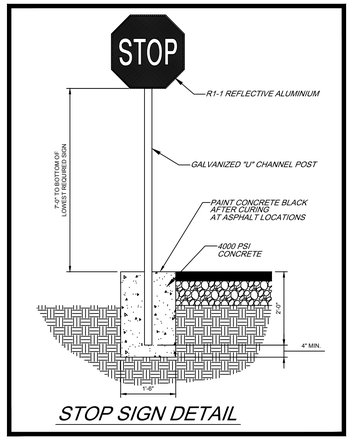
NOTES:
1. PAINT COLOR TO BE "YELLOW" FOR ARROW AND LETTERS. "STOP" LETTERS TO BE ELONGATED HELEVETICA MEDIUM - 4" WIDE STROKES.
2. PAINT 2" BLACK OUTLINE AROUND ARROW AND LETTERS FOR PROJECTS WITH CONCRETE PARKING LOTS.

PAVEMENT PAINTING
NOT TO SCALE

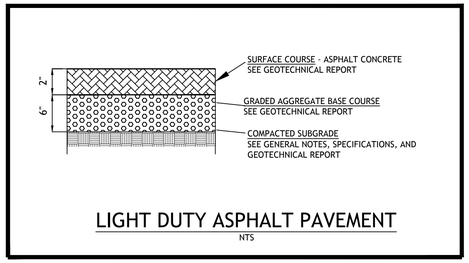
Appendix B: Pipelines
Figure 4 – Pavement Repairs



SCDOT OPEN CUT DETAIL



STOP SIGN DETAIL



LIGHT DUTY ASPHALT PAVEMENT
NTS

Project Number: 2015-096
DWG Name: 2015-096 Details.dwg
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SITEWORK NOTES & DETAILS

C504

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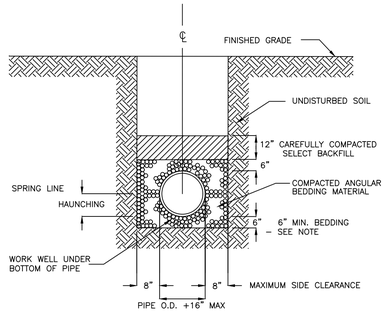
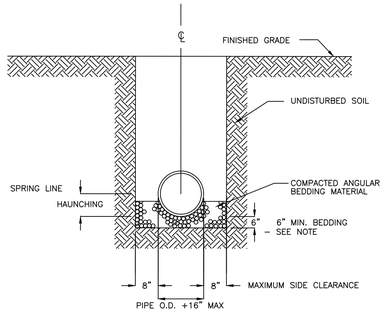


CLASS B–1
PVC BEDDING



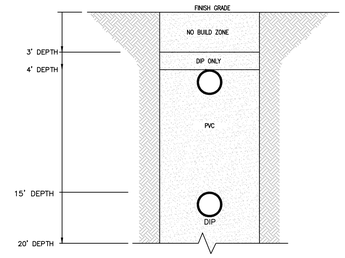
CLASS C–2
DIP BEDDING
VCP BEDDING

NOTES:

1. WET OR UNSTABLE BOTTOMS, EXCAVATE MIN. 6" BELOW BELL. BACKFILL WITH WASHED CRUSHED STONE.
2. ROCK BOTTOMS, EXCAVTE MIN. 6" BELOW BELL. BACKFILL WITH WASHED CRUSHED STONE.
3. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
4. NO ROCKS OR BOULDERS 6" OR LARGER TO BE USED IN BACKFILL.
5. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL, EXCEPT AS NOTED.
6. BACKFILL SHALL BE TAMPED IN 6" LAYERS IN TRAFFIC AREAS, 12" IN NON–TRAFFIC AREAS.

TYPICAL PIPE BEDDING DETAILS

NO SCALE



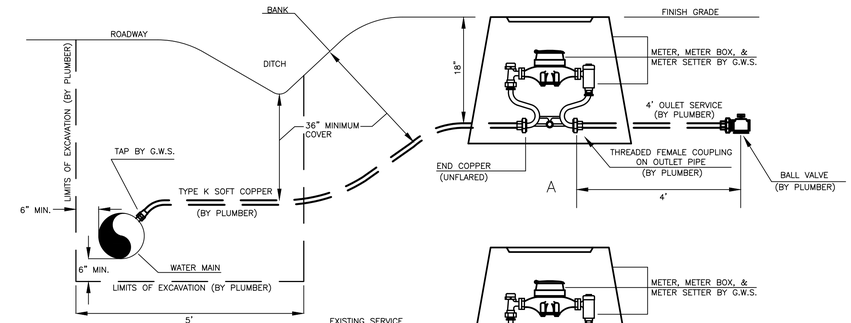
NOTE:

1. COVER DEPTH SHALL BE MEASURED FROM FINISHED GRADE SURFACE TO THE TOP OF PIPE.
2. INSTALLATIONS DEEPER THAN 20 FEET REQUIRE DUCTILE IRON PIPE (DIP) AND PRIOR APPROVAL BY THE CITY ENGINEER. BURIAL DEPTHS LESS THAN 3.0 FEET WILL NOT BE PERMITTED.
3. POLYVINYL CHLORIDE (PVC) SEWER PIPE SHALL BE SDR 26 OR SDR 35 MEETING ASTM D3034 FOR 4" TO 15" DIAMETER PIPE OR ASTM F679 FOR 18" TO 36" DIAMETER PIPE. PIPE SHALL BE MADE FROM PVC COMPOUNDS HAVING A CELL CLASSIFICATION OF 124548 AS DEFINED IN ASTM D1784. PIPE SHALL INCORPORATE AN INTEGRAL BELL JOINT WITH A SINGLE RUBBER GASKET CONFORMING TO ASTM F477. JOINTS SHALL BE IN ACCORDANCE WITH ASTM D3212, AND BE FURNISHED COMPLETE WITH ALL NECESSARY ACCESSORIES. PIPE, FITTINGS AND ACCESSORIES SHALL BE IN CONFORMANCE WITH CITY SPECIFICATIONS.
4. DIP SEWER PIPE SHALL BE ASPHALT COATED CEMENT MORTAR LINED CLASS 50 DUCTILE IRON PIPE. DIP SHALL BE PRESSURE CLASS 150. DIP SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND C151/A21.51. PIPE SHALL HAVE A STANDARD 1–MIL ASPHALTIC COATING APPLIED ON THE EXTERIOR OF THE PIPE IN ACCORDANCE WITH ANSI/AWWA C151/A21.51. PIPE SHALL ALSO HAVE A CEMENT–MORTAR LINING ON THE INTERIOR IN ACCORDANCE WITH ANSI/AWWA C104/A21.4. ALL PIPE SHALL BE FURNISHED WITH PUSH–ON TYPE JOINTS, SUCH AS TYTON® OR FASTITE®. JOINTS SHALL BE IN ACCORDANCE WITH ANSI/AWWA C111/A21.11, AND BE FURNISHED COMPLETE WITH ALL NECESSARY ACCESSORIES. PIPE, FITTINGS AND ACCESSORIES SHALL BE IN CONFORMANCE WITH CITY SPECIFICATIONS.
5. WHEN SOIL TESTS IN ACCORDANCE WITH APPENDIX A OF ANSI/AWWA C105/A21.5 AND/OR PERFORMANCE HISTORY INDICATE THAT CONDITIONS ARE CORROSIVE TO DIP, POSITIVE CORROSION PROTECTION IS REQUIRED IN ACCORDANCE WITH CITY SPECIFICATIONS.
6. WHEN DIP IS USED TO TRANSPORT SEPTIC SEWAGE, SPECIALLY LINED PIPE IS REQUIRED IN ACCORDANCE WITH CITY SPECIFICATIONS.

- TYPICAL DETAIL -

ALLOWABLE PIPE MATERIAL AND DEPTHS

NTS



METER SIZE		5/8"	1"
SPACE NEEDED BETWEEN FACE OF CHECK VALVE AND END OF UNFLARED COPPER	A	7 1/4"	10 3/4"
SPACE NEEDED BETWEEN FACE OF CHECK VALVE AND FACE OF EXISTION CURB STOP	B	8 3/4"	12 1/2"

- ALL EXCAVATION TO BE DONE BY PLUMBER.
- APPROXIMATE SIZE OF HOLE WHERE TAP IS MADE IS 5' X 5' (6" BEHIND AND UNDER MAIN). HOLE TO BE WIDER AND SHORED WHEN MAIN IS DEEPER THAN 5'.
- HOLE FOR METER BOX TO BE 3' X 3' X 21" DEEP.
- SERVICE LINE MUST HAVE 36" COVER (MIN.) UNDER ROADSIDE DITCH.
- METER NOT TO BE PLACED IN DRIVEWAY.
- OSHA APPROVED LADDER TO BE PROVIDED BY CONTRACTOR IN EXCAVATION DEEPER THAN 5'.
- PLUMBER SHOULD CALL G.W.S. ENGINEERING (241–6100) TO REPORT WHEN READY FOR METER TO BE SET OR FOR ASSISTANCE IF UNUSUAL CONDITIONS EXIST.
- OUTLET PIPING CONSISTING OF THREADED FEMALE COUPLING, 4' OF OUTLET SERVICE PIPE, AND BALL VALVE TO BE ASSEMBLED BY PLUMBER AND READY FOR INSTALLATION PRIOR TO GWS ARRIVAL TO SITE.

Greenville Water System

TYPICAL METER INSTALLATION

EFFECTIVE DATE: OCTOBER 31, 1977
REVISED DATE: JANUARY 1, 2007
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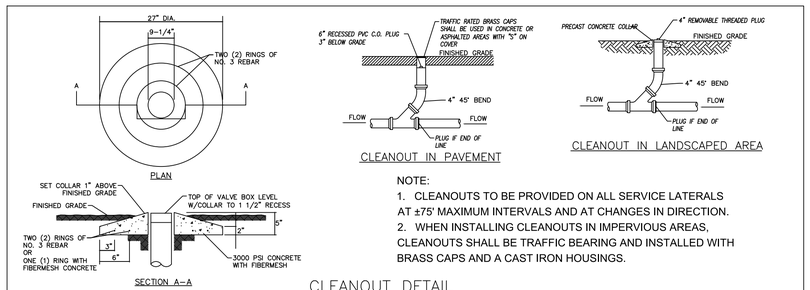
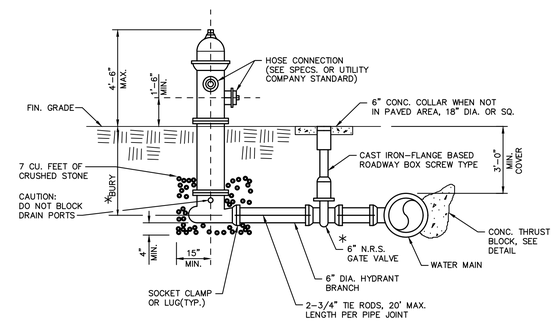


NOTE:

1. CLEANOUTS TO BE PROVIDED ON ALL SERVICE LATERALS AT ±75' MAXIMUM INTERVALS AND AT CHANGES IN DIRECTION.
2. WHEN INSTALLING CLEANOUTS IN IMPERVIOUS AREAS, CLEANOUTS SHALL BE TRAFFIC BEARING AND INSTALLED WITH BRASS CAPS AND A CAST IRON HOUSINGS.

CLEANOUT DETAIL

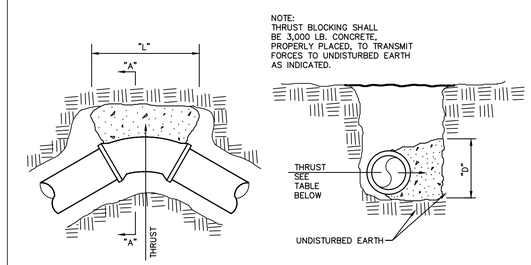
NOT TO SCALE



TYPICAL FIRE HYDRANT

(N.T.S.)

* NOTE: REVIEW F.H. TYPE, SPECS. VALVE–OPENING DIRECTION W/UTILITY COMPANY BEFORE PURCHASING.



THRUST TABULATION (KIP)

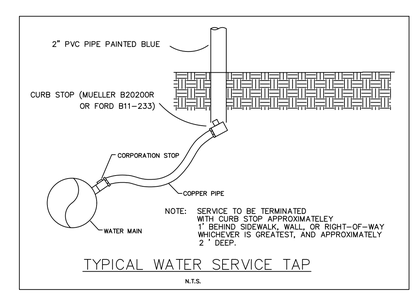
BEND PIPE DIA.		BEND 22–1/2°	BEND 45°	BEND 90°	PLUG TEE OR 60° BEND
2"–4"	0.7	1.3	2.5	4.7	3.3
6"	1.5	2.9	5.7	10.6	7.5
8"	2.9	5.0	9.8	18.2	12.9
10"	3.8	7.5	14.8	27.4	19.3
12"	5.4	10.7	20.9	38.7	27.4
14"	7.4	14.6	28.6	52.8	37.4
16"	9.3	18.5	36.4	67.2	47.5

END AREA SQ. FT. = THRUST X 1000 / BEARING X 2000

SOIL	MIN. SAFE BEARING TONS/FT.^{2}
ROCK, HARD THICK LAYERS	200
ROCK, EQUAL GOOD MASONRY	25
ROCK, EQUAL BEST BRICK	15
ROCK, EQUAL POOR BRICK	5
CLAY, ALWAYS DRY	4
CLAY, FAIRLY DRY	2
CLAY, SOFT	1
GRAVEL, COARSE SAND, FIRM	8
SAND, COMPACT, FIRM	4
SAND, CLEAN, DRY	2
QUICKSAND, ALLUVIAL SOIL	1/2

THRUST BLOCK DETAIL

(N.T.S.)



TYPICAL WATER SERVICE TAP

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SITEWORK NOTES & DETAILS

C505

A1 / A1.11 **ARCHITECTURAL SITE PLAN**
1" = 30'-0"

PROJECT NORTH

MAP KEY PLAN

PROJECT NORTH

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CONSULTANT LOGO

STATE OF SOUTH CAROLINA — EARLE G. HUNGERFORD — GREENVILLE, SC — 6/1/2016 — 05029 — REGISTERED ARCHITECT

STATE OF SOUTH CAROLINA — McMILLAN PAZDAN SMITH, LLC — GREENVILLE, SC — 100573 — REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
ARCHITECTURAL SITE PLAN

SHEET NO. A1.11

PROJ. NO. 015292.00

MAP KEY PLAN

PROJECT NORTH

A1 / A1.12 **OVERFLOW PARKING PLAN**
1/32" = 1'-0"

OVERFLOW PARKING NOTES

1. USE EXCESS CUT SOIL FROM CAMPER CARE CENTER FOR GRADING THE OVERFLOW PARKING AREA
2. GENERAL CONTRACTOR TO CLEAR GRUB AND HAUL OFF TREE MATERIAL / STUMPS.
3. PROVIDE SILT FENCE AS SHOWN
4. COMPACT BASE TO 95%
5. ADD CULVERT AS SHOWN
6. ADD 6" OF CRUSHER RUN AS SHOWN IN THE FOOTPRINT OF THE PARKING AREA
7. STABILIZE SLOPE WITH STRAW MIX AND SUMMER GRASS SEED

SEE CIVIL PLANS FOR ADDITIONAL DETAILS

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PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
OVERFLOW PARKING PLAN

SHEET NO. A1.12

PROJ. NO. 015292.00

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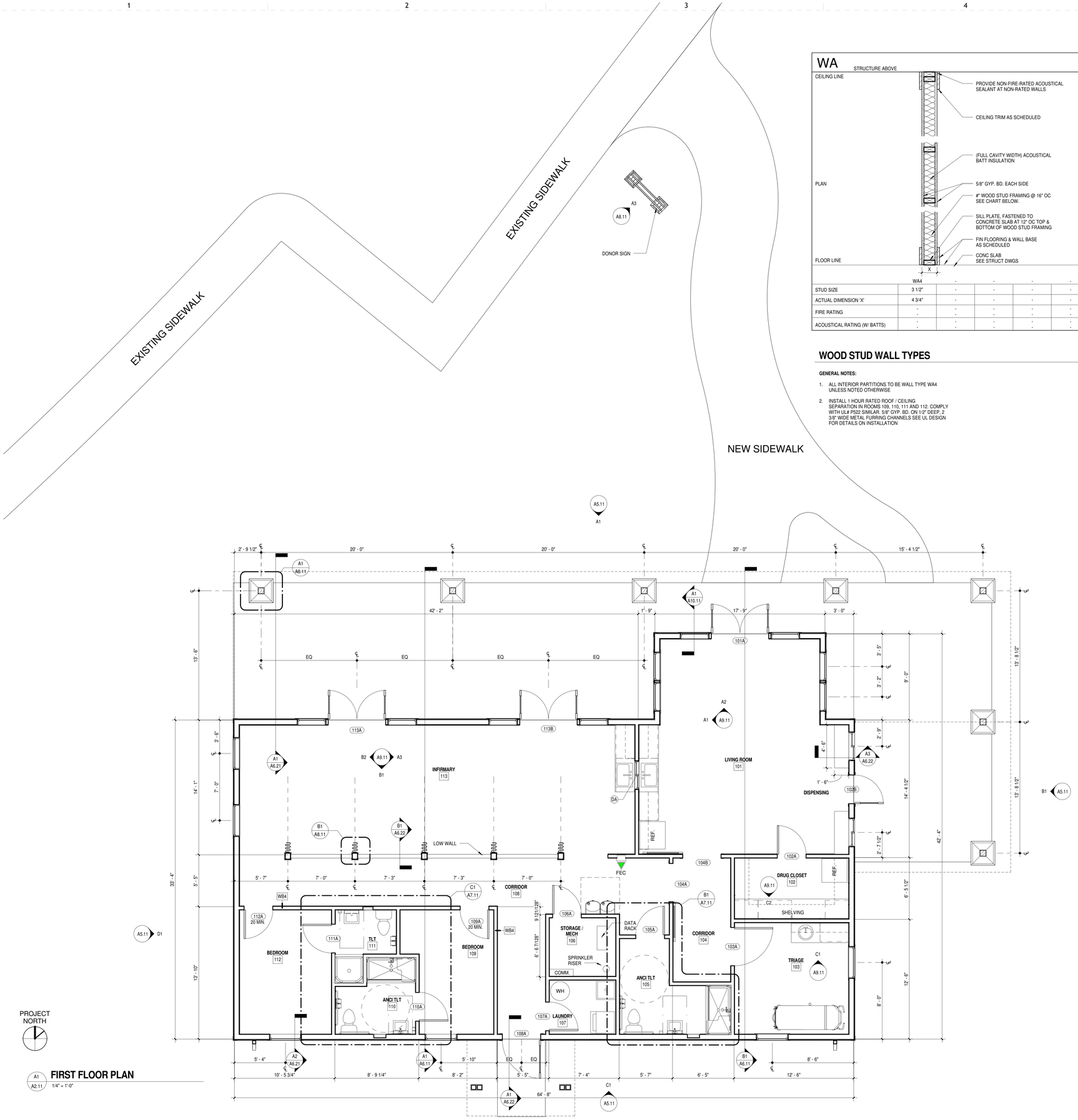


FIRST FLOOR PLAN

A1 / A2.11 1/4" = 1'-0"

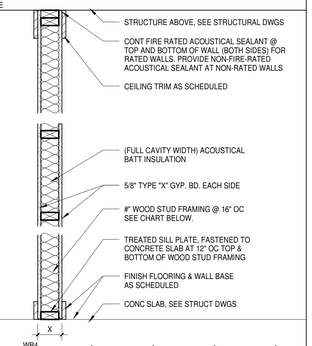
WA

STRUCTURE ABOVE

	WA4	-	-	-	-
STUD SIZE	3 1/2"	-	-	-	-
ACTUAL DIMENSION 'X'	4 3/4"	-	-	-	-
FIRE RATING	-	-	-	-	-
	-	-	-	-	-
ACOUSTICAL RATING (W/ BATTS)	-	-	-	-	-
	-	-	-	-	-

WB

STRUCTURE ABOVE



	WB4	-	-	-	-
STUD SIZE	3 1/2"	-	-	-	-
ACTUAL DIMENSION 'X'	4 3/4"	-	-	-	-
FIRE RATING	1 HR UL# U305	-	-	-	-
	-	-	-	-	-
ACOUSTICAL RATING (W/ BATTS)	-	-	-	-	-
	-	-	-	-	-

WOOD STUD WALL TYPES

GENERAL NOTES:

1. ALL INTERIOR PARTITIONS TO BE WALL TYPE WA4 UNLESS NOTED OTHERWISE
2. INSTALL 1 HOUR RATED ROOF / CEILING SEPARATION IN ROOMS 109, 110, 111 AND 112. COMPLY WITH UL# P522 SIMILAR. 5/8" GYP. BD. ON 1/2" DEEP, 2 3/8" WIDE METAL FURRING CHANNELS SEE UL DESIGN FOR DETAILS ON INSTALLATION

WALL TYPE

M - MASONRY
S - STEEL STUD
W - WOOD STUD
C - CHASE WALL
E - SHAFT WALL

WALL VARIANT - ALPHABETICALLY SEQUENTIAL

S A4

MEMBER THICKNESS

FURRING	STEEL STUD	WOOD STUD	SHAFT WALL	MASONRY
L - LAMINATED	1 - 1 5/8" STUD	1 - 1 1/2" NAILER	2 - 2 1/2" CH STUD	4 - 4" CMU
0 - 7/8" HAT	2 - 2 1/2" STUD	4 - 2 x 4" STUD	4 - 4" CH STUD	6 - 6" CMU
1 - 1 1 /2" HAT	3 - 3 5/8" STUD	6 - 2 x 6" STUD	6 - 6" CH STUD	8 - 8" CMU
	4 - 4" STUD	8 - 2 x 8" STUD		
	6 - 6" STUD			
	8 - 8" STUD			

WALL FRAMING PRIORITY

PARTITIONS SHALL BE PRIORITIZED BASED ON FIRE AND SMOKE RATING. PARTITIONS SHALL BE CONSTRUCTED SUCH THAT HIGHER PRIORITY IS FRAMED BEFORE LOWER PRIORITY. LOWER PRIORITY PARTITIONS SHALL BE FRAMED TIGHT TO, BUT NOT INTERRUPT HIGHER PRIORITY CONSTRUCTION. (SEE THE EXAMPLE BELOW)

2 HOUR FIRE RATED WITH SMOKE BARRIER	PRIORITY 1 (HIGHEST)
2 HOUR FIRE RATED	PRIORITY 2
1 HOUR FIRE RATED WITH SMOKE BARRIER	PRIORITY 3
1 HOUR FIRE RATED	PRIORITY 4
NONE RATED	PRIORITY 5 (LOWEST)

WALL TAG LEGEND

FLOOR PLAN GENERAL NOTES

GENERAL CONTRACTOR TO PROVIDE SECURITY SYSTEM - PROVIDE COMPATIBLE SYSTEM TO CAMP EXISTING SYSTEM AND 3 MOTION DETECTORS WITH A CONTROL PANEL IN THE LIVING ROOM BY THE FRONT DOOR AND BY THE BACK DOOR. NO CAMERAS OR CARD READERS SHALL BE PROVIDED.
EXISTING SECURITY SYSTEM IS DMP BRAND SYSTEM

GENERAL PARTITION NOTES:

1. PLAN DIMENSIONS ARE TO FACE OF STUD UNLESS SPECIFICALLY NOTED OTHERWISE
2. GYPSUM WALL BOARD LAYERS ON RATED WALLS SHALL BE CONTINUOUS THROUGH ALL INTERSECTIONS WITH NON-RATED WALLS. REFER TO FIRE WALL PRIORITY DIAGRAM.
3. REFERENCE ALL FLOOR PLANS AND LIFE SAFETY PLANS FOR RATED WALL LOCATIONS & RATINGS.
4. PROVIDE TYPE X, MOLD AND MOISTURE RESISTANT GYPSUM BOARD IN ALL TOILET AND JANITOR ROOMS.
5. PROVIDE CEMENT BOARD IN ALL WET SHOWER AREA WALLS WITH TILE FINISH.
6. AT ALL UL RATED WALLS THAT EXTEND TO THE STRUCTURE ABOVE, FILL VOIDS SOLID WITH MINERAL WOOL INSULATION WHERE WALL IS FRAMED AROUND BEAMS, BAR JOISTS, SLABS, AND ROOF DECK. MAINTAIN SCHEDULED SOUND RATING. AT ALL SOUND RATED WALLS PROVIDE FLEXIBLE SEALANT OR AN ACOUSTICAL GASKET BETWEEN THE STC RATED SYSTEM AND ALL DISSIMILAR SURFACES (IE PENETRATIONS) AND ALSO BETWEEN THE SYSTEM AND SIMILAR SURFACES WHERE PERIMETER RELIEF IS REQUIRED. ALL OPENINGS THROUGH THE SYSTEM, AND ITS ENTIRE PERIMETER, SHALL BE SEALED AIRTIGHT. TAPING GYPSUM BOARD WALL AND WALL-CEILING INTERSECTIONS PROVIDES AN ADEQUATE AIR SEAL AT THESE LOCATIONS.
7. AT ALL JOINTS AT TOP OF ALL FIRE RATED PARTITIONS: PROVIDE COMPLETE UL LISTED FIRE RESISTIVE JOINT SYSTEM TO MATCH FIRE RESISTANCE OF WALL ASSEMBLY AND THAT IS ALSO COMPATIBLE WITH JOINT SUBSTRATES. SUBMIT COMPLETE JOINT SYSTEM PRODUCT INFORMATION FOR ALL CONDITIONS.
8. ANY PORTION OF GYPSUM BOARD THAT BECOMES WET OR SHOWS SIGNS OF MOISTURE DAMAGE, EITHER BEFORE OR AFTER INSTALLATION, IS TO BE REMOVED IMMEDIATELY AND REPLACED WITH NEW DRY GYPSUM BOARD.
9. MANY INTERIOR PARTITIONS HAVE ADDITIONAL FINISHES, SUCH AS WALL TILES OR WOOD PANELING. SEE FINISH SCHEDULE AND DETAIL SHEETS FOR ADDITIONAL INFORMATION.
10. SOUND ATTENUATION BLANKET IS REQUIRED AT ALL INTERIOR PARTITIONS AND SHALL RUN FULL HEIGHT OF PARTITION UNLESS NOTED OTHERWISE. SOUND ATTENUATION BATT SHALL BE MADE OF MINERAL WOOL OR OTHER UL APPROVED MATERIAL.
11. IT IS NOT THE INTENT OF THE DOCUMENTS TO IDENTIFY EACH INDIVIDUAL WALL WITH A WALL TAG. MINOR WALLS OR OTHER WALLS NOT TAGGED WILL BE OF THE SAME WALL TYPE AS ADJACENT WALLS.
12. GENERAL CONTRACTOR IS TO COORDINATE AND PROVIDE ALL REQUIRED BLOCKING WITHIN THE WALLS. THIS INCLUDES BUT IS NOT LIMITED TO, ALL MILLWORK, CASEWORK, GRAB BARS, LCD MONITORS, AND TOILET PARTITIONS.
13. GYPSUM BOARD ON WALLS SHALL BE APPLIED WITH A MINIMUM 1/4" GAP BETWEEN THE GYPSUM BOARD AND THE FLOOR AND SHALL NOT BE APPLIED OVER OTHER BUILDING MATERIALS WHERE CONDITIONS EXIST THAT ARE FAVORABLE TO MOLD GROWTH.

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
FIRST FLOOR PLAN

SHEET NO. A2.11

PROJ. NO. 015292.00

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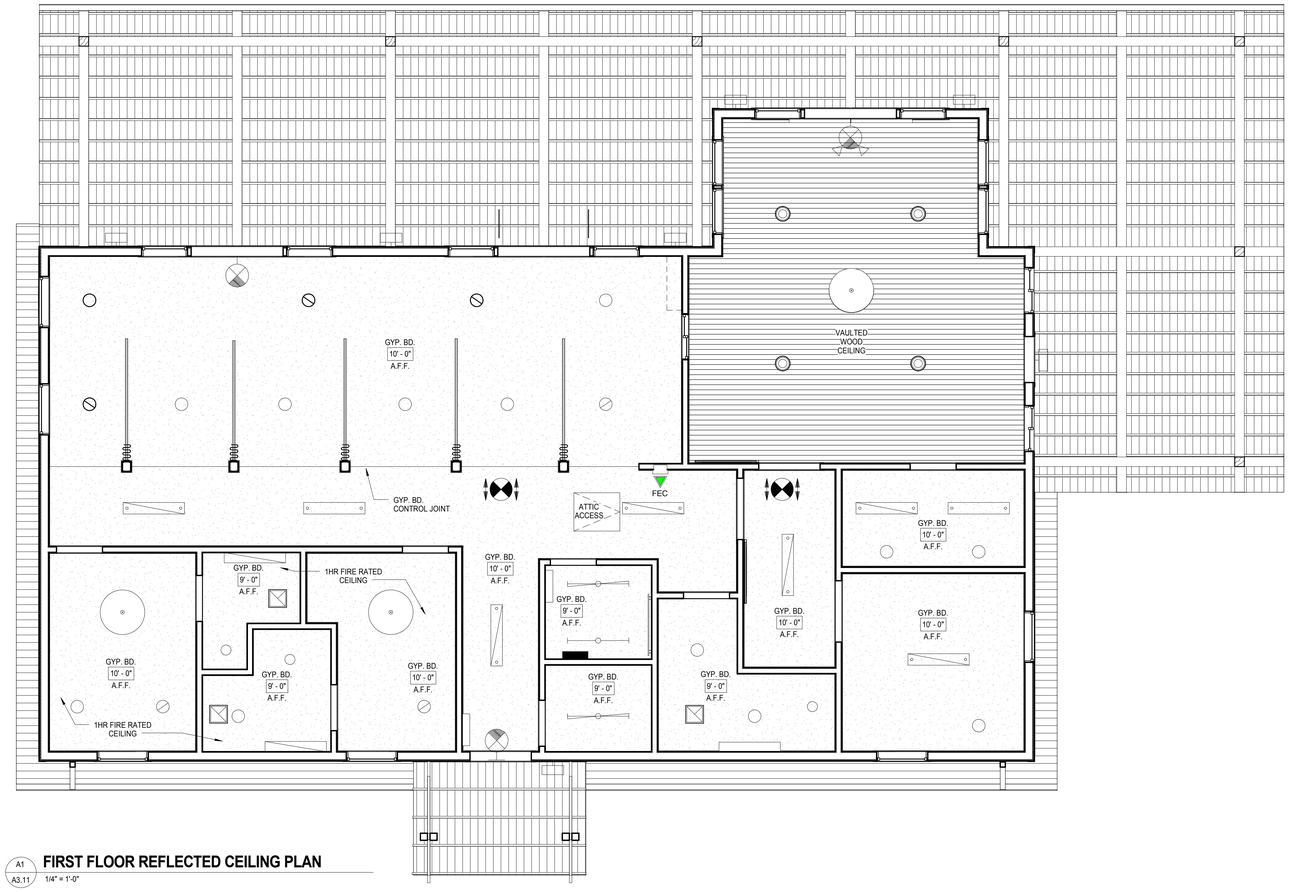

A1 / A3.11 **FIRST FLOOR REFLECTED CEILING PLAN**

1/4" = 1'-0"

GENERAL NOTE:

1. INSTALL 1 HOUR RATED ROOF / CEILING SEPARATION IN ROOMS 109, 110, 111 AND 112. COMPLY WITH UL# P522. 5/8" GYP. BD. ON 1/2" DEEP, 2 3/8" WIDE METAL FURRING CHANNELS SEE UL DESIGN FOR DETAILS ON INSTALLATION

INTERIOR WOOD CEILING

No. 1 GRADE 1x4 SOUTHERN YELLOW PINE TONGUE AND GROOVE

GYPSUM CEILING

CEILING TAG

2' x 2' ACT — CEILING SYSTEM (WHEN INDICATED)

10'-0" A.F.F. — CEILING HEIGHT

EXIT SIGN - WALL MOUNTED (DIRECTIONAL ARROWS WHERE INDICATED)

EXIT SIGN - CEILING MOUNTED (DIRECTIONAL ARROWS WHERE INDICATED)

CUBICAL CURTAIN TRACK - SEE SPECS FOR DETAILS

LINEAR SUPPLY DIFFUSER

EXHAUST FAN

LINEAR PENDANT, DIRECT / INDIRECT

LINEAR PENDANT, DIRECT / INDIRECT WITH EMERGENCY BATTERY BACKUP

SURFACE MOUNTED FLUORESCENT LIGHT

SURFACE MOUNTED FLUORESCENT LIGHT

SURFACE MOUNTED FLUORESCENT LIGHT WITH EMERGENCY BATTERY BACKUP

CEILING FAN WITH LIGHT

IC RATED RECESSED LED FIXTURE, SEE ELECTRICAL LIGHTING PLAN FOR WET LISTED LOCATIONS

IC RATED RECESSED LED FIXTURE WITH EMERGENCY BATTERY BACKUP

PENDANT DOWNLIGHT

WALL MOUNTED MINI-SCONCE, SEE ELECTRICAL LIGHTING PLAN FOR EMERGENCY BATTERY BACK LOCATIONS

RCP LEGEND

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GREENVILLE COUNTY

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SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

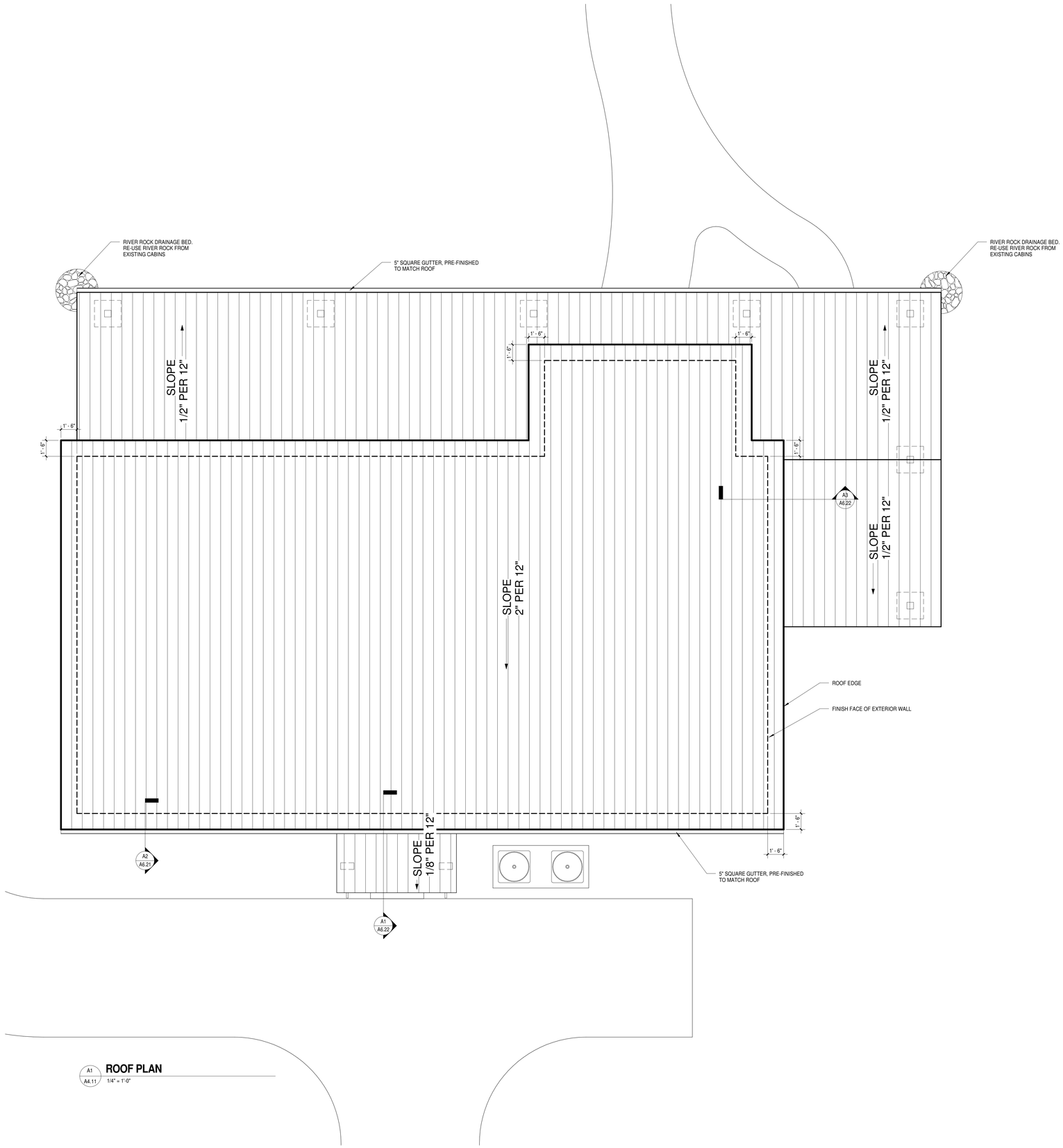
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
FIRST FLOOR REFLECTED CEILING PLAN

SHEET NO. A3.11

PROJ. NO. 015292.00



A1 A4.11 **ROOF PLAN**
1/4" = 1'-0"

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MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	KC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
ROOF PLAN

SHEET NO. A4.11

PROJ. NO. 015292.00

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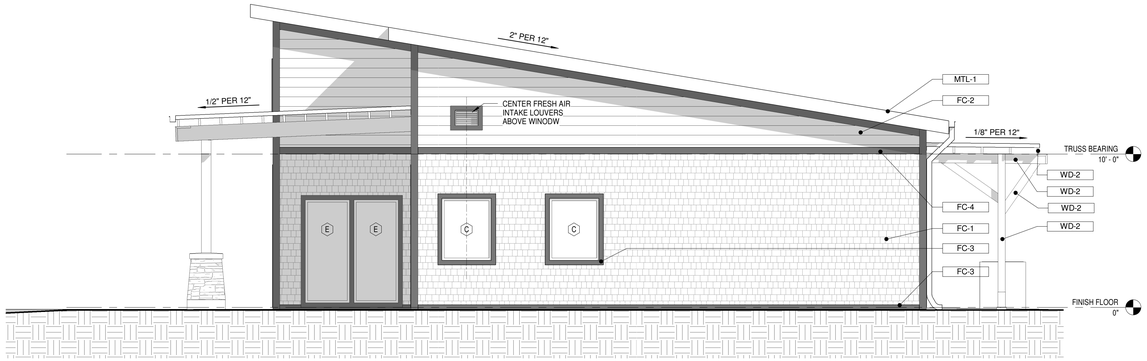
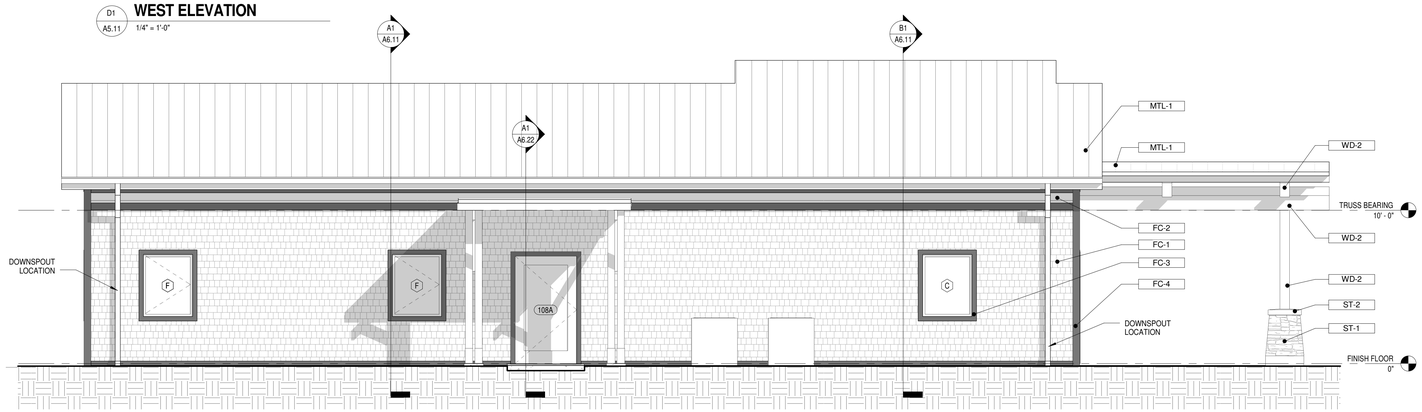
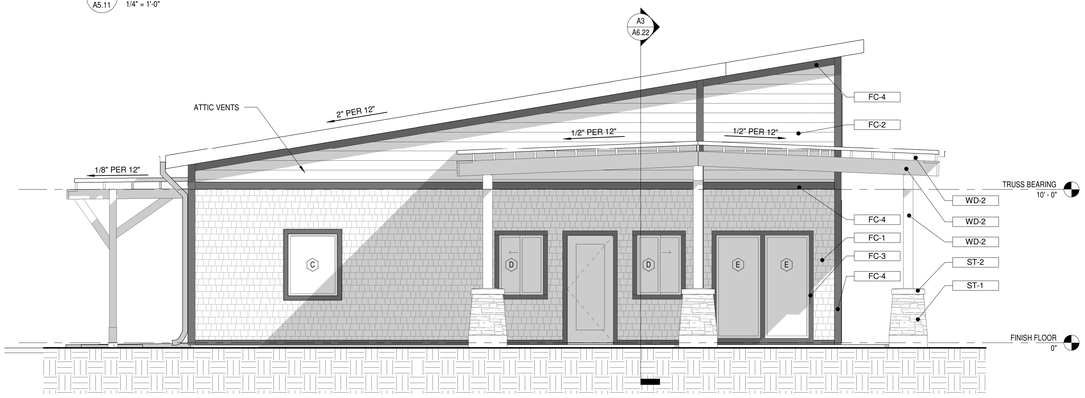


D1 A5.11 **WEST ELEVATION**
1/4" = 1'-0"



C1 A5.11 **SOUTH ELEVATION**
1/4" = 1'-0"



B1 A5.11 **EAST ELEVATION**
1/4" = 1'-0"

A1 A5.11 **NORTH ELEVATION**
1/4" = 1'-0"

EXTERIOR MATERIAL LEGEND	
Key Value	Keynote Text
FC-1	FIBER CEMENT - SHAKE PANEL, MATCH EXISTING CABINS
FC-2	FIBER CEMENT - HORIZONTAL LAP SIDING, MATCH EXISTING CABINS
FC-3	FIBER CEMENT - 5/4" X 4 TRIM, HARDIE OR MIRATEC, MATCH EXISTING CABINS
FC-4	FIBER CEMENT - 5/4" X 6 TRIM, HARDIE OR MIRATEC, MATCH EXISTING CABINS
MTL-1	STANDING SEAM METAL ROOF - MATCH EXISTING CABINS
ST-1	STONE VENEER - PROSTONE LEDGESTONE - GLACIER VALLEY, MATHX EXISTING CABINS
ST-2	CAST STONE - PRECAST STONE CAP - MATCH EXISTING CABINS
WD-1	WOOD CEILING - NO.1 GRADE 1x6 SOUTHERN YELLOW PINE TOUNGE AND GROOVE
WD-2	SOUTHERN YELLOW PINE, STAINED WITH SOLID COLOR PREMIUM ACRYLIC STAIN

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GREENVILLE COUNTY

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MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

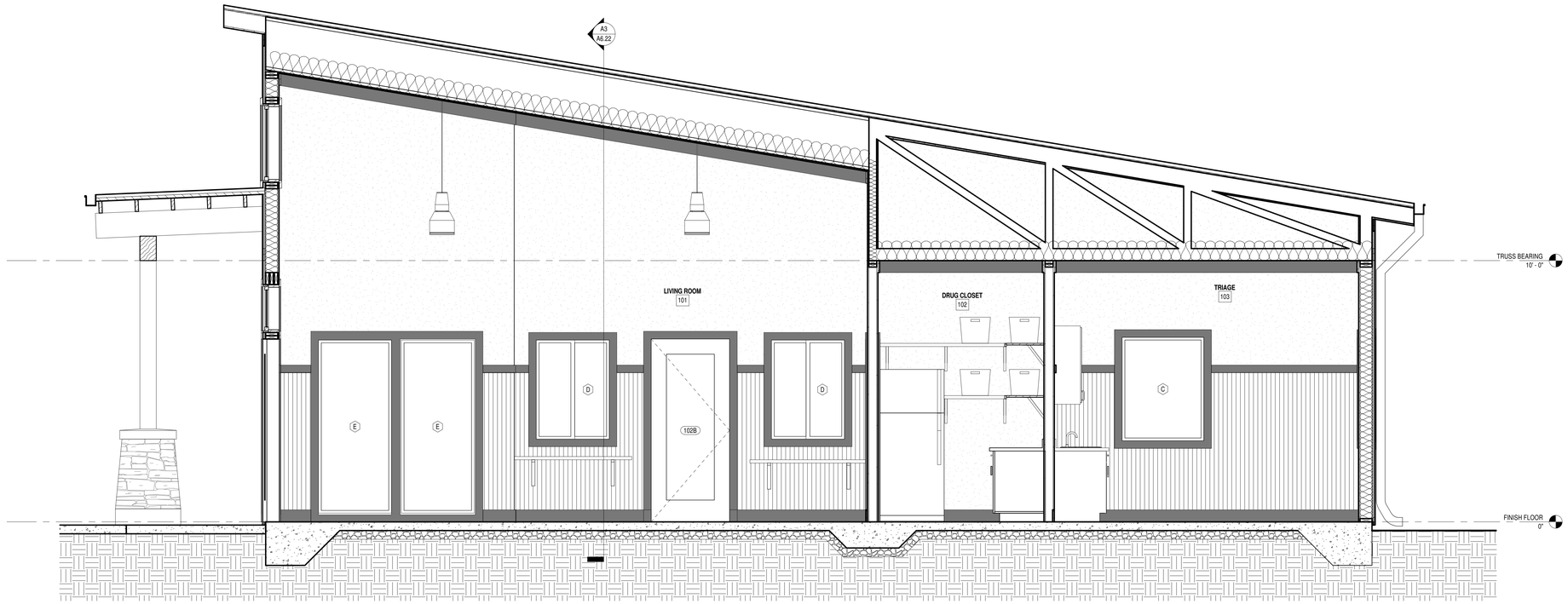
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

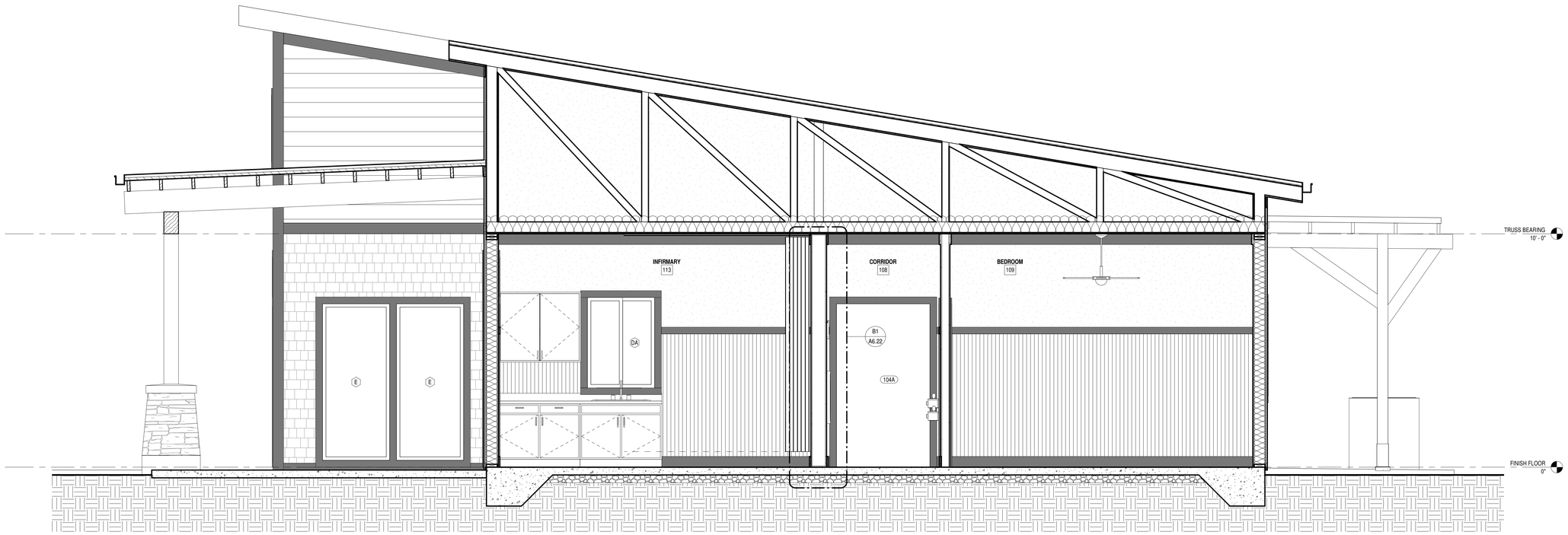
SHEET TITLE:
EXTERIOR ELEVATIONS

SHEET NO. A5.11

PROJ. NO. 015292.00



B1 A6.11 **NORTH / SOUTH SECTION 2**
1/2" = 1'-0"



A1 A6.11 **NORTH / SOUTH SECTION 1**
1/2" = 1'-0"

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GREENVILLE COUNTY

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MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
A	2015.10.23	DESIGN DEVELOPMENT	BC
1	2016.06.01	BID SET	BC

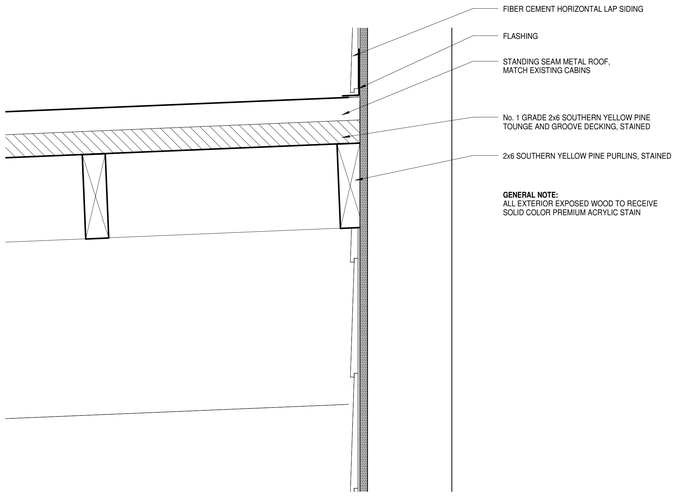
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

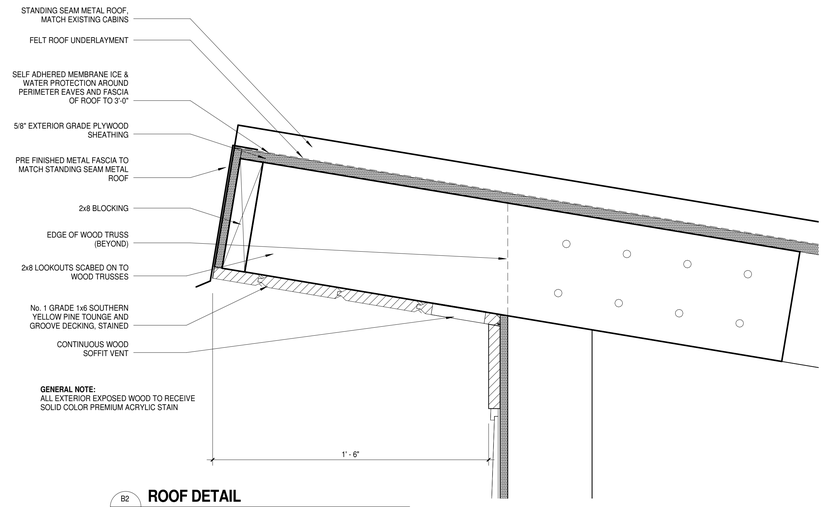
SHEET TITLE:
BUILDING SECTIONS

SHEET NO. A6.11

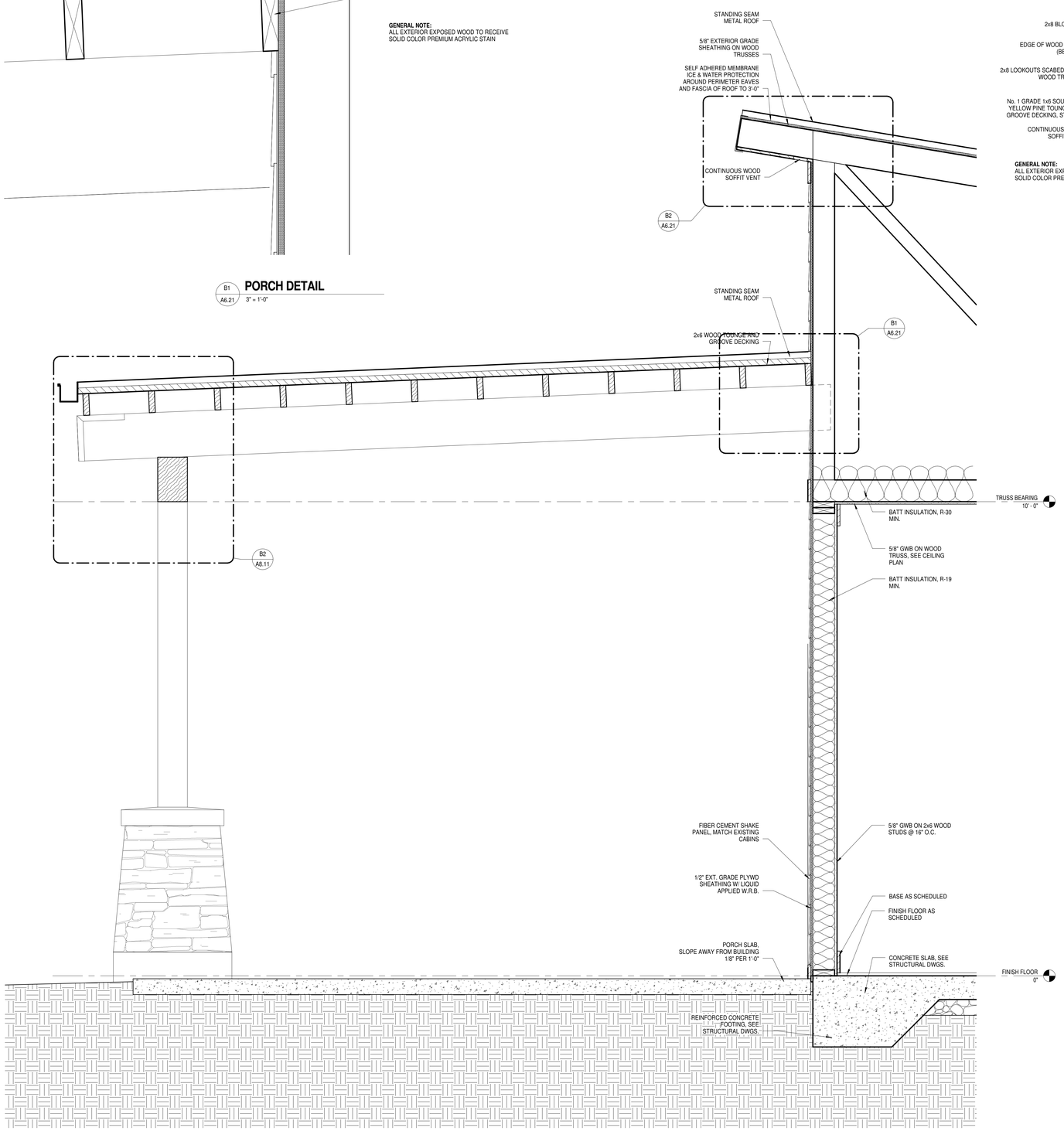
PROJ. NO. 015292.00



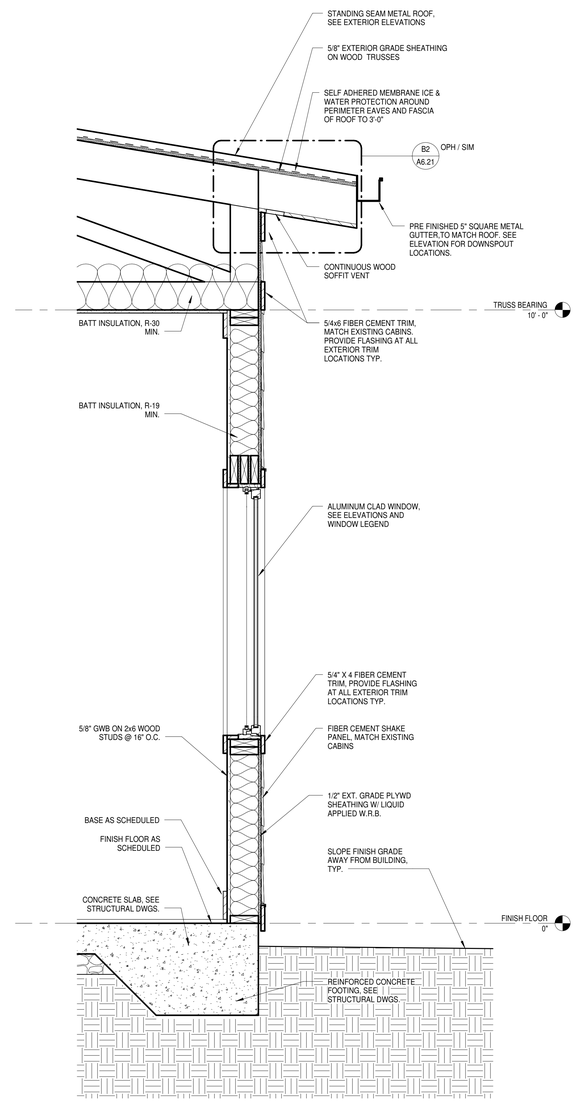
B1 A6.21 **PORCH DETAIL**
3" = 1'-0"



B2 A6.21 **ROOF DETAIL**
3" = 1'-0"



A1 A6.21 **INFIRMARY WALL SECTION**
1" = 1'-0"



A2 A6.21 **BEDROOM WALL SECTION**
1" = 1'-0"

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STATE OF SOUTH CAROLINA — McMILLAN PAZDAN SMITH, LLC — GREENVILLE, SC — 100573 — REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	KC

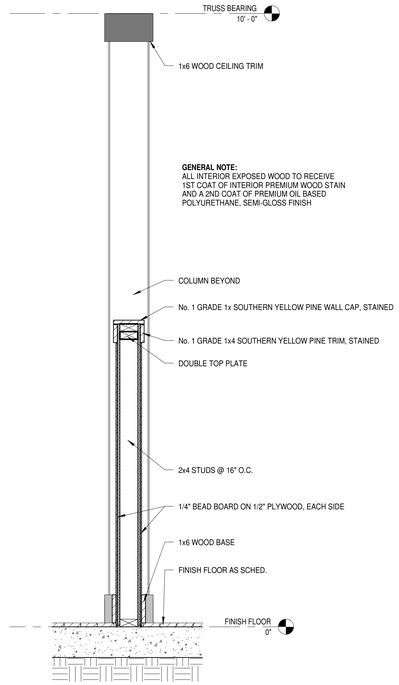
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

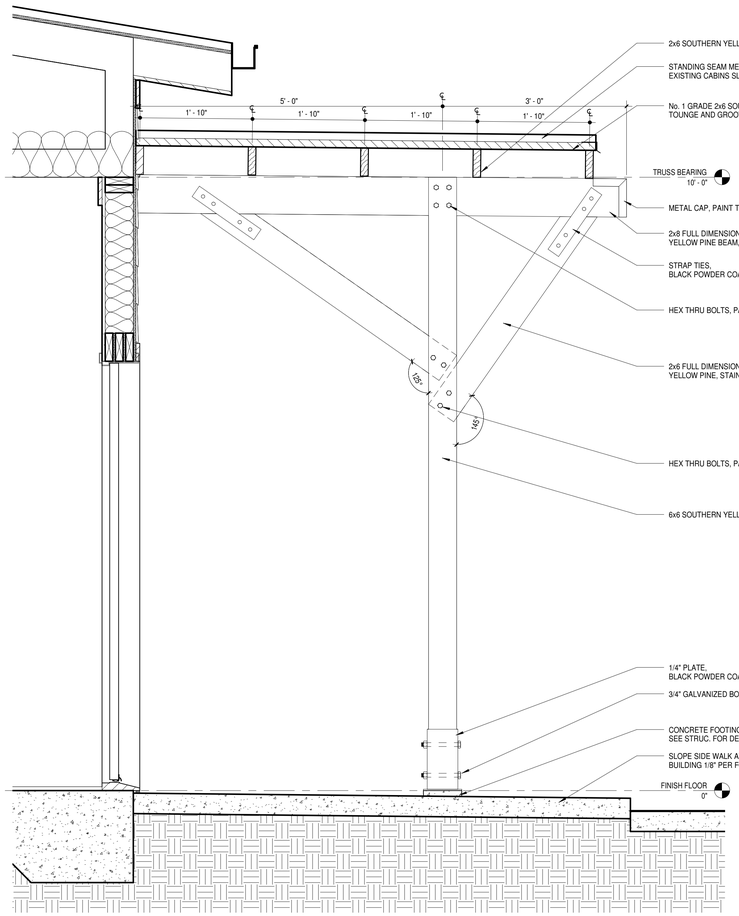
SHEET TITLE:
WALL SECTIONS

SHEET NO. A6.21

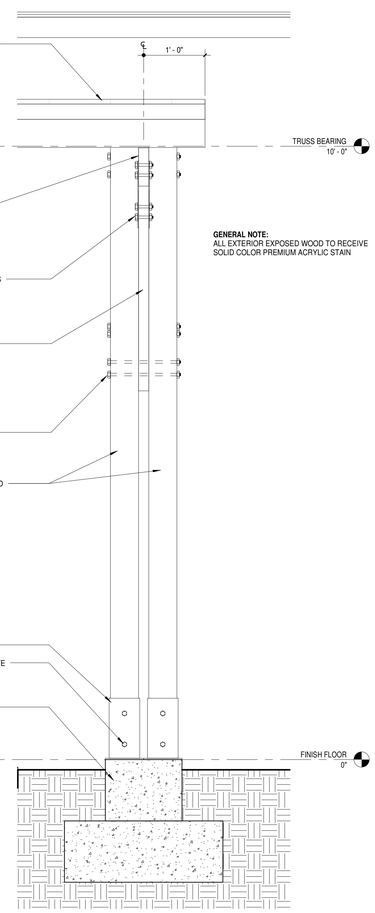
PROJ. NO. 015292.00



B1 / A6.22 **INFIRMARY LOW WALL SECTION**
1" = 1'-0"



A1 / A6.22 **CANOPY DETAIL**
1" = 1'-0"



A2 / A6.22 **CANOPY DETAIL**
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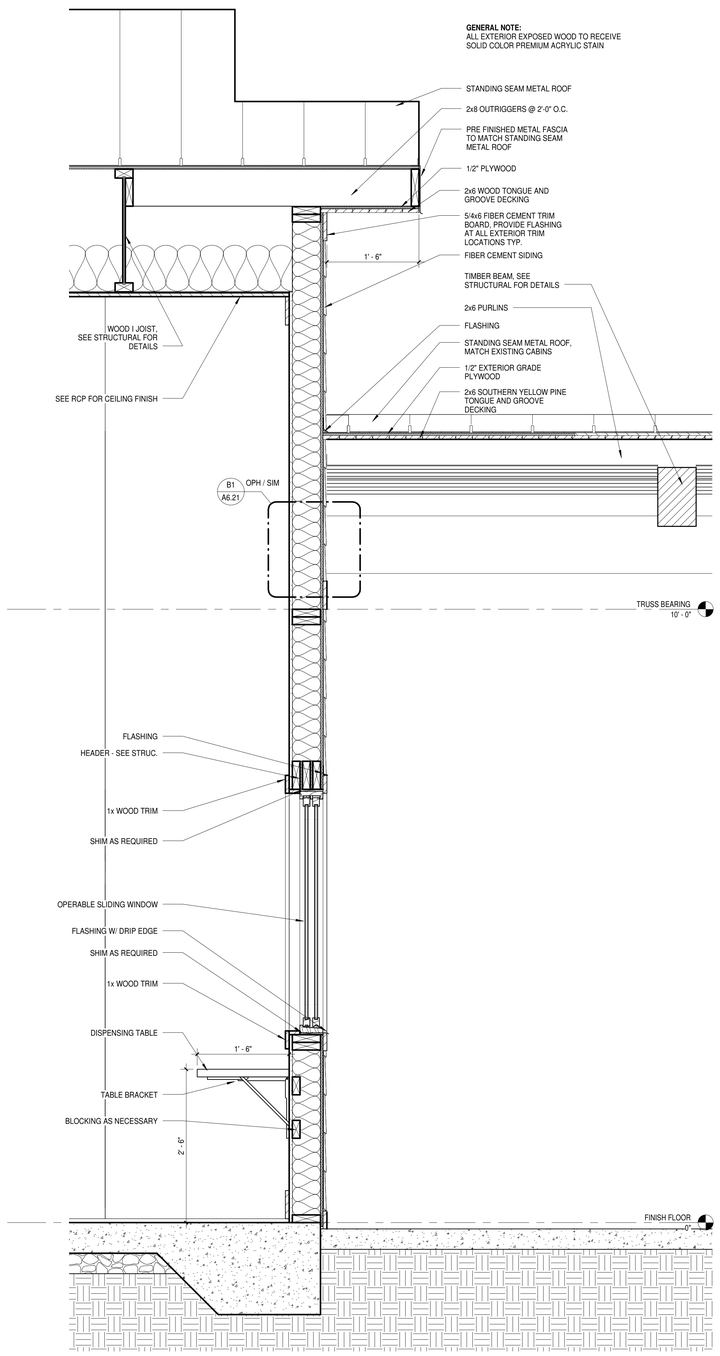

A3 / A6.22 **DISPENSING TABLE SECTION**
1" = 1'-0"

5/31/2016 1:05:01 PM C:\Revit Local Projects\mpsl-Revit2015-Greenville Central 001 V-Victor.rvt
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CONSULTANT LOGO

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1	2016.06.01	BID SET	BC

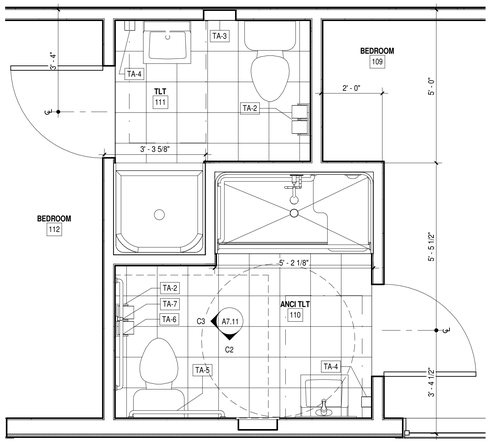
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

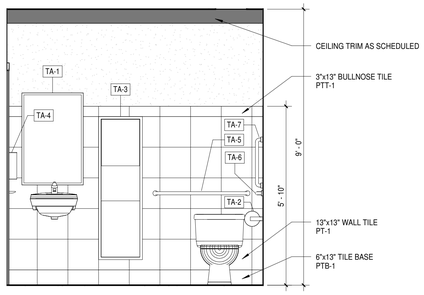
SHEET TITLE:
WALL SECTIONS

SHEET NO. A6.22

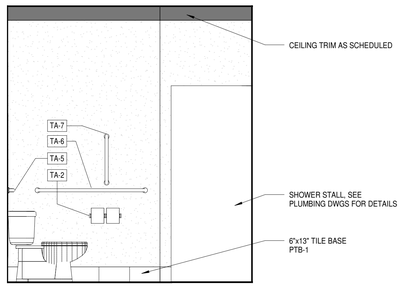
PROJ. NO. 015292.00



C1 A7.11 **STAFF BATHROOMS**
1/2" = 1'-0"



C2 A7.11 **TOILET ELEVATION**
1/2" = 1'-0"

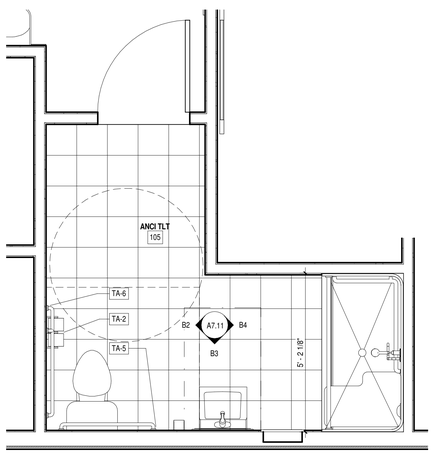


C3 A7.11 **TOILET ELEVATION**
1/2" = 1'-0"

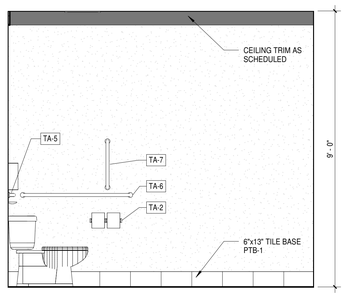
TOILET ACCESSORIES LEGEND

TA-1	MIRROR
TA-2	TOILET PAPER HOLDER
TA-3	PAPER TOWEL DISPENSER / WASTE RECEPTACLE
TA-4	WALL MOUNTED SOAP DISPENSER
TA-5	ADA GRAB BARS; 36" HORIZONTAL
TA-6	ADA GRAB BARS; 42" HORIZONTAL
TA-7	ADA GRAB BARS; 18" VERTICAL

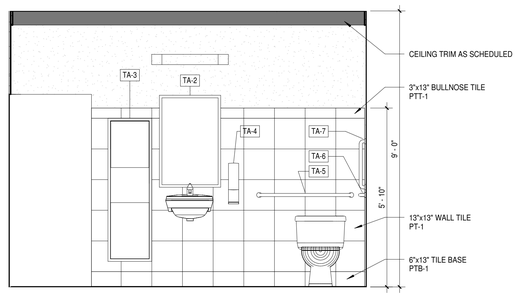
*SEE SPECIFICATIONS FOR MORE DETAILS



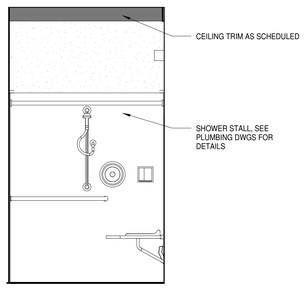
B1 A7.11 **ANCI TLT 105**
1/2" = 1'-0"



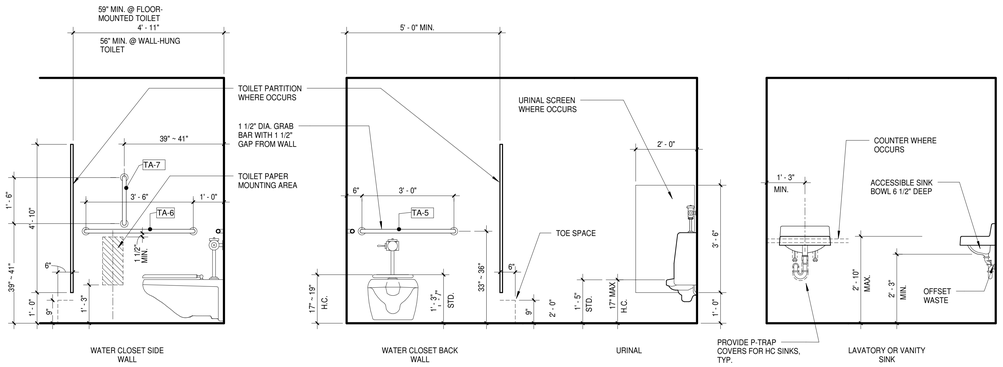
B2 A7.11 **ANCI TLT 105 - WEST WALL**
1/2" = 1'-0"



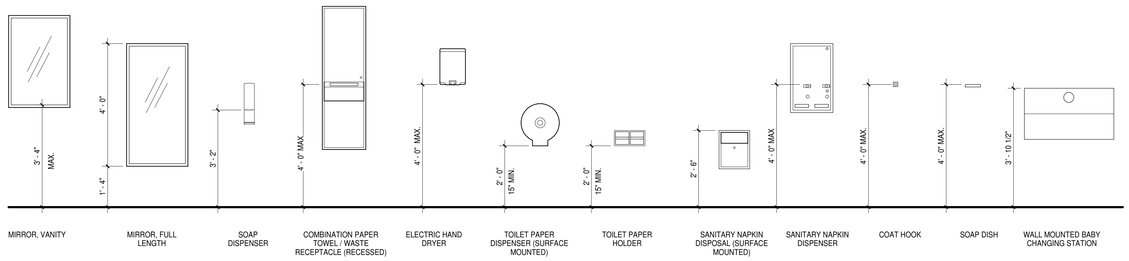
B3 A7.11 **ANCI TLT 105 - SOUTH WALL**
1/2" = 1'-0"



B4 A7.11 **ANCI TLT 105 - EAST WALL**
1/2" = 1'-0"



TYPICAL PLUMBING FIXTURES AND ACCESSORIES MOUNTING HEIGHTS



TYPICAL TOILET ACCESSORIES MOUNTING HEIGHTS

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	KC

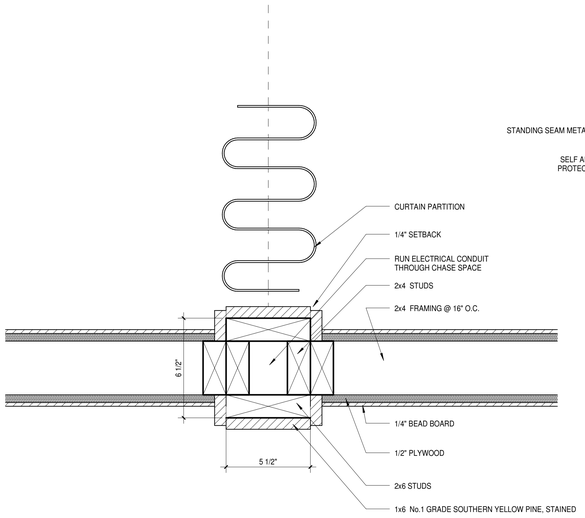
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

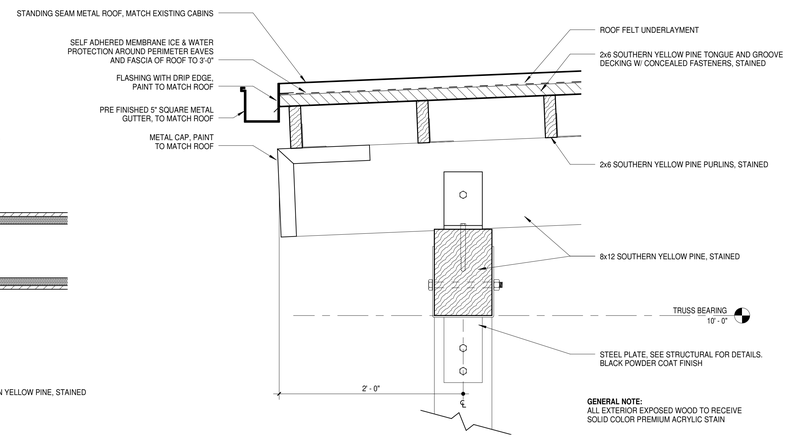
SHEET TITLE:
ENLARGED TOILET PLANS

SHEET NO. A7.11

PROJ. NO. 015292.00

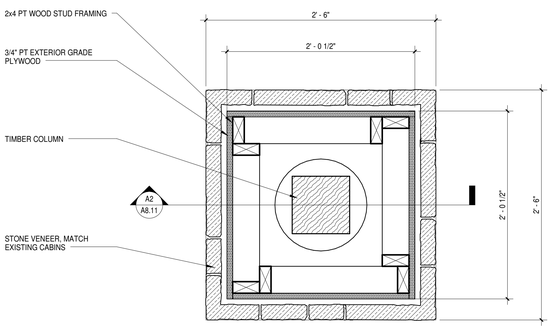


B1 / A8.11 **INFIRMARY COLUMN DETAIL**
3" = 1'-0"

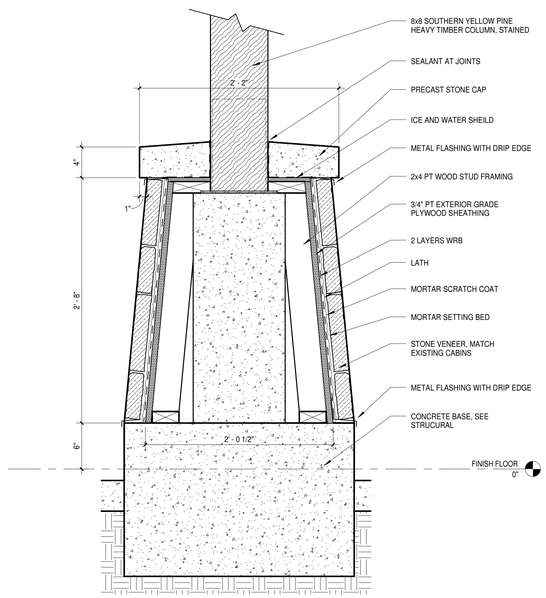


GENERAL NOTE:
ALL EXTERIOR EXPOSED WOOD TO RECEIVE SOLID COLOR PREMIUM ACRYLIC STAIN

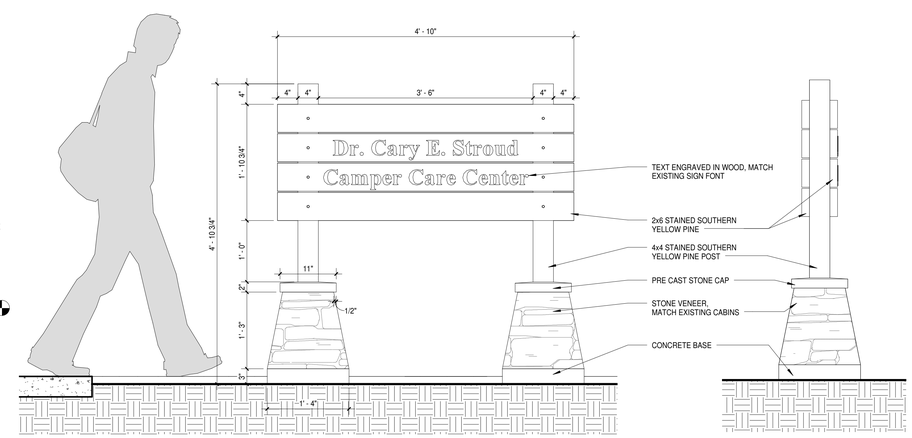
B2 / A8.11 **PORCH FRAMING DETAILS**
1 1/2" = 1'-0"



A1 / A8.11 **COLUMN PLAN DETAIL**
1 1/2" = 1'-0"



A2 / A8.11 **COLUMN SECTION**
1 1/2" = 1'-0"



A3 / A8.11 **DONOR SIGN**
1" = 1'-0"

5/17/2016 1:42:28 PM C:\Revit Local Temp\rvt-backup\015292-McMillan Pazdan Smith-Greenville County-Cary E. Stroud Camper Care Center_rvt
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BID SET 2016.06.01

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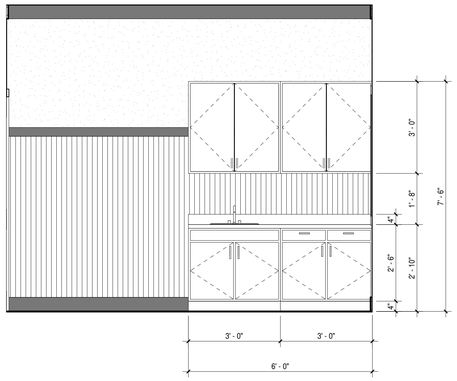
PROJECT ARCHITECT: EH
DRAWN BY: BC

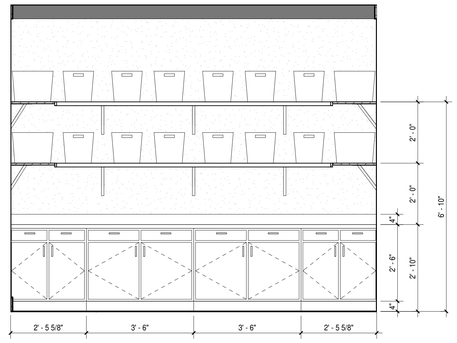
SHEET TITLE:
PLAN DETAILS

SHEET NO. A8.11

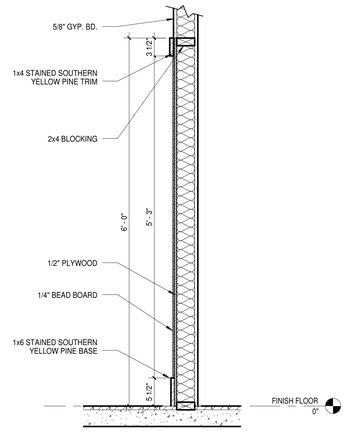
PROJ. NO. 015292.00



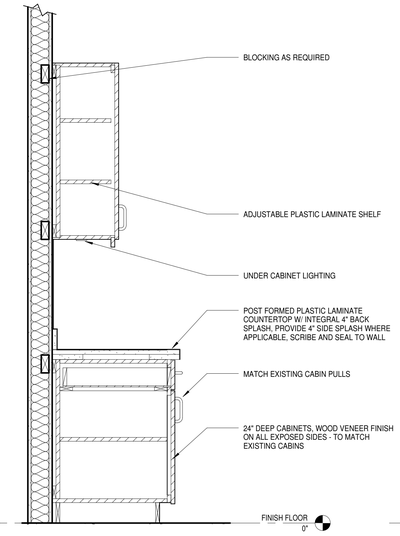
C1 A9.11 **TRIAGE CASEWORK**
1/2" = 1'-0"



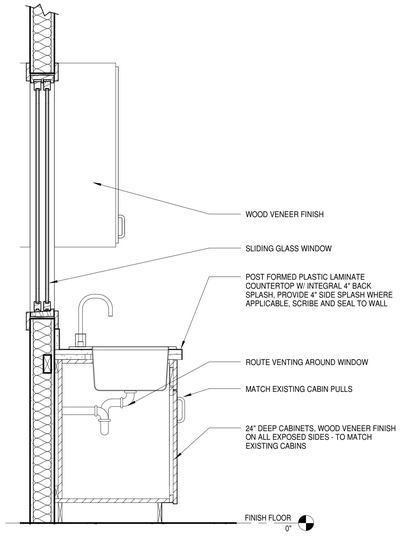
C2 A9.11 **DRUG CLOSET CASEWORK**
1/2" = 1'-0"



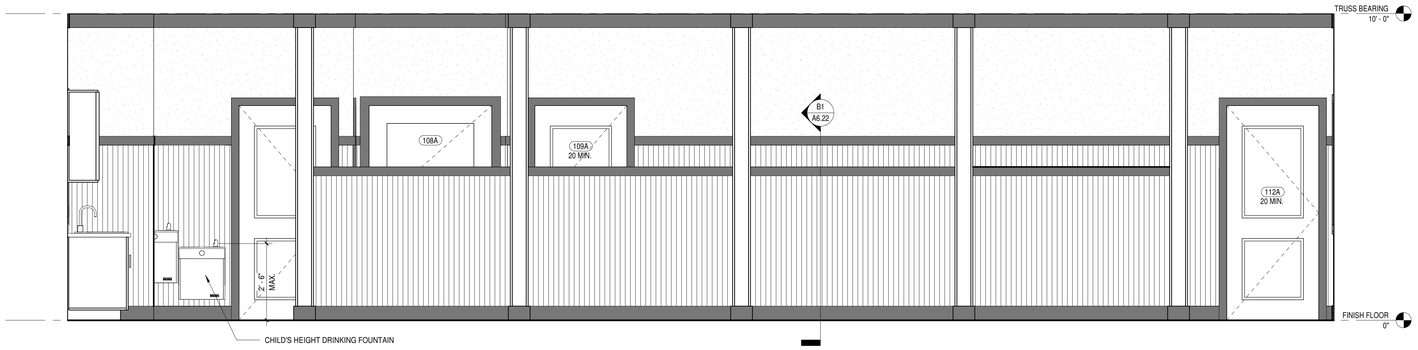
C3 A9.11 **WAINSCOT DETAIL**
1" = 1'-0"



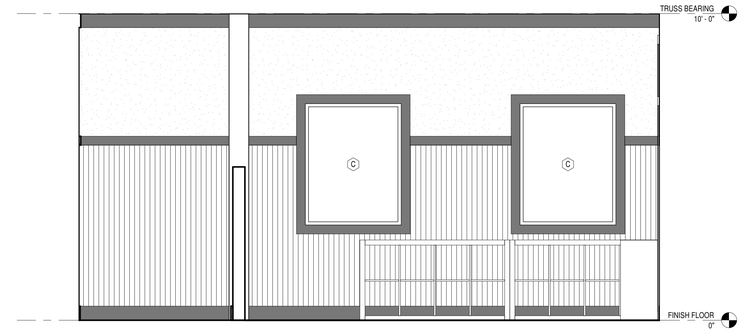
C4 A9.11 **MILLWORK SECTION**
1" = 1'-0"



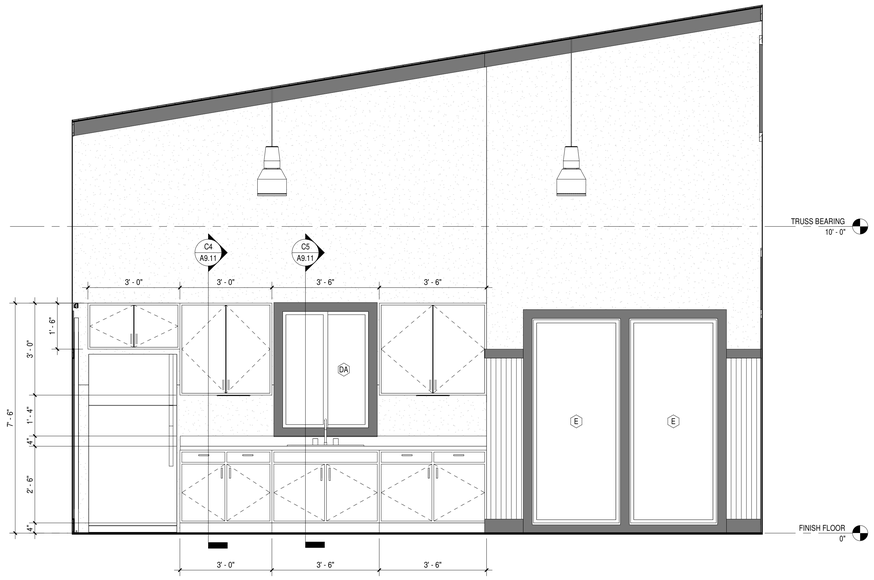
C5 A9.11 **MILLWORK SINK SECTION**
1" = 1'-0"



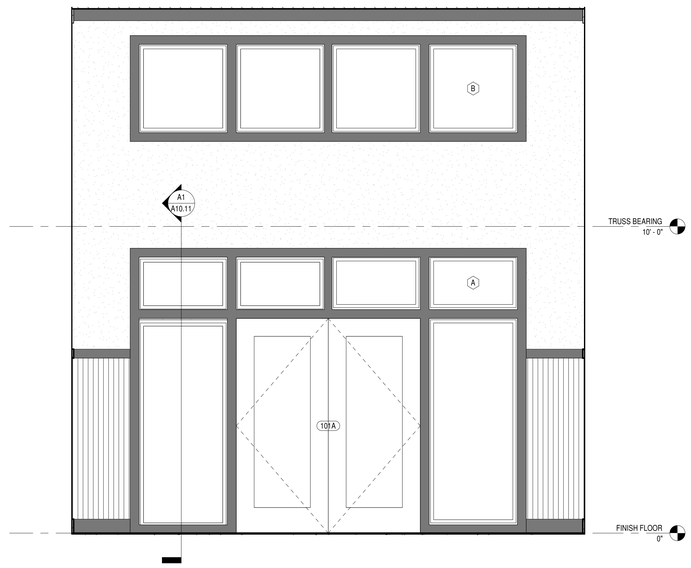
B1 A9.11 **INTERIOR ELEVATION - INFIRMARY**
1/2" = 1'-0"



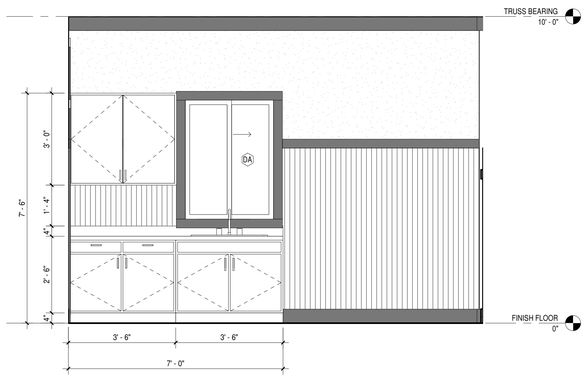
B2 A9.11 **INFIRMARY CUBBIES**
1/2" = 1'-0"



A1 A9.11 **INTERIOR ELEVATION - KITCHENETTE**
1/2" = 1'-0"



A2 A9.11 **INTERIOR ELEVATION - ENTRY**
1/2" = 1'-0"



A3 A9.11 **INFIRMARY SINK CASEWORK**
1/2" = 1'-0"

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1	2016.06.01	BID SET	BC

BID SET 2016.06.01

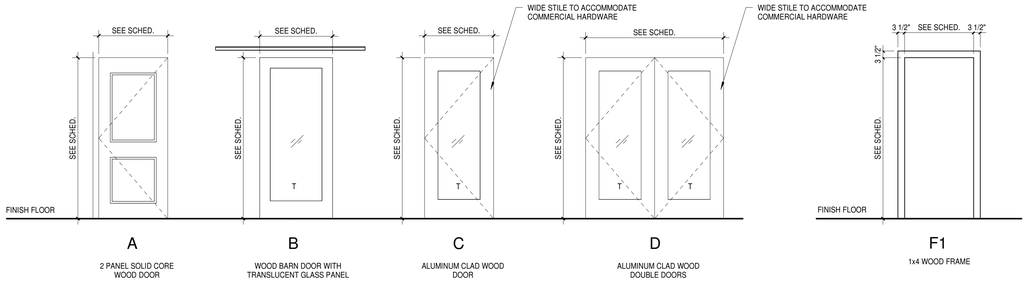
PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NO. A9.11

PROJ. NO. 015292.00

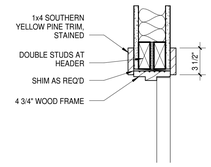
DOOR SCHEDULE													
		DOOR SIZE							FRAME				
DOOR NO.	ROOM NO.	WIDTH	HEIGHT	THK.	FIRE RATING	DOOR TYPE	HARDWARE TYPE	DOOR MATERIAL	FRAME TYPE	FRAME MTL	HEAD	JAMB	REMARKS
101A	101	6' - 0"	7' - 0"	1 3/4"		D		CLAD/GLASS	F1	WOOD			
102A	101	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
102B	101	3' - 0"	7' - 0"	1 3/4"		C		CLAD/GLASS	F1	WOOD			
103A	103	4' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
104A	104	4' - 0"	7' - 0"	1 3/4"		B		WOOD/GLASS	F1	WOOD			
104B	104	4' - 0"	7' - 0"	1 3/4"		B		WOOD/GLASS	F1	WOOD			
105A	105	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
106A	108	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
107A	107	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
108A	108	4' - 0"	7' - 0"	1 3/4"		C		CLAD/GLASS	F1	WOOD			
109A	109	3' - 0"	7' - 0"	1 3/4"	20 MIN.	A		WOOD	F1	WOOD			
110A	110	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
111A	111	3' - 0"	7' - 0"	1 3/4"		A		WOOD	F1	WOOD			
112A	112	3' - 0"	7' - 0"	1 3/4"	20 MIN.	A		WOOD	F1	WOOD			
113A	113	6' - 0"	7' - 0"	1 3/4"		D		CLAD/GLASS	F1	WOOD			
113B	113	6' - 0"	7' - 0"	1 3/4"		D		CLAD/GLASS	F1	WOOD			



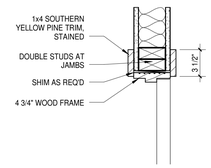
DOOR LEGEND

ALL GLASS TO BE TEMPERED GLASS

FRAME LEGEND

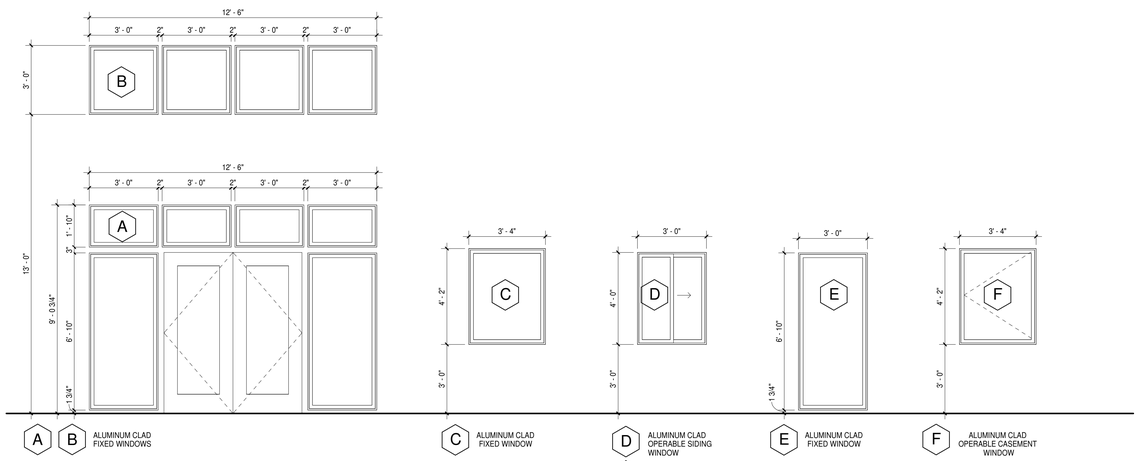


H-1



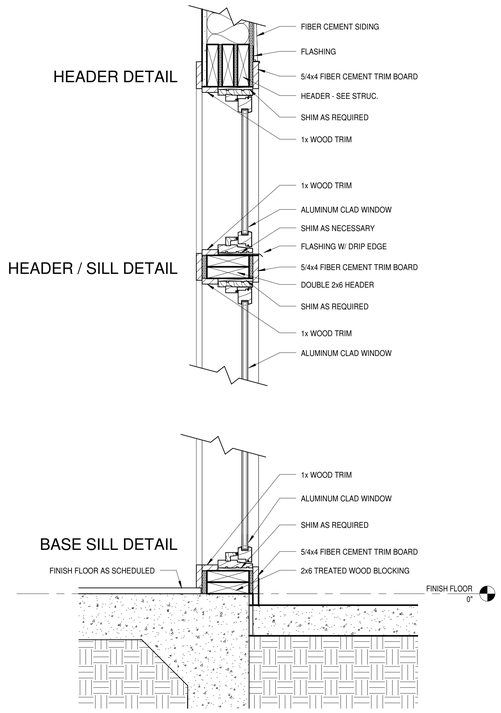
J-1

B1 / A10.11 **JAMB AND HEADER DETAIL**
1 1/2" = 1'-0"



WINDOW LEGEND

ALL GLASS TO BE TEMPERED GLASS



A1 / A10.11 **TYPICAL WINDOW DETAILS**
1 1/2" = 1'-0"

5/7/2016 4:08 PM E:\Revit Projects\015292 Greenville Camper Care Center_central_KJ.rvt
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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
DOOR AND WINDOW SCHEDULE, DOOR AND FRAME TYPES

SHEET NO. A10.11

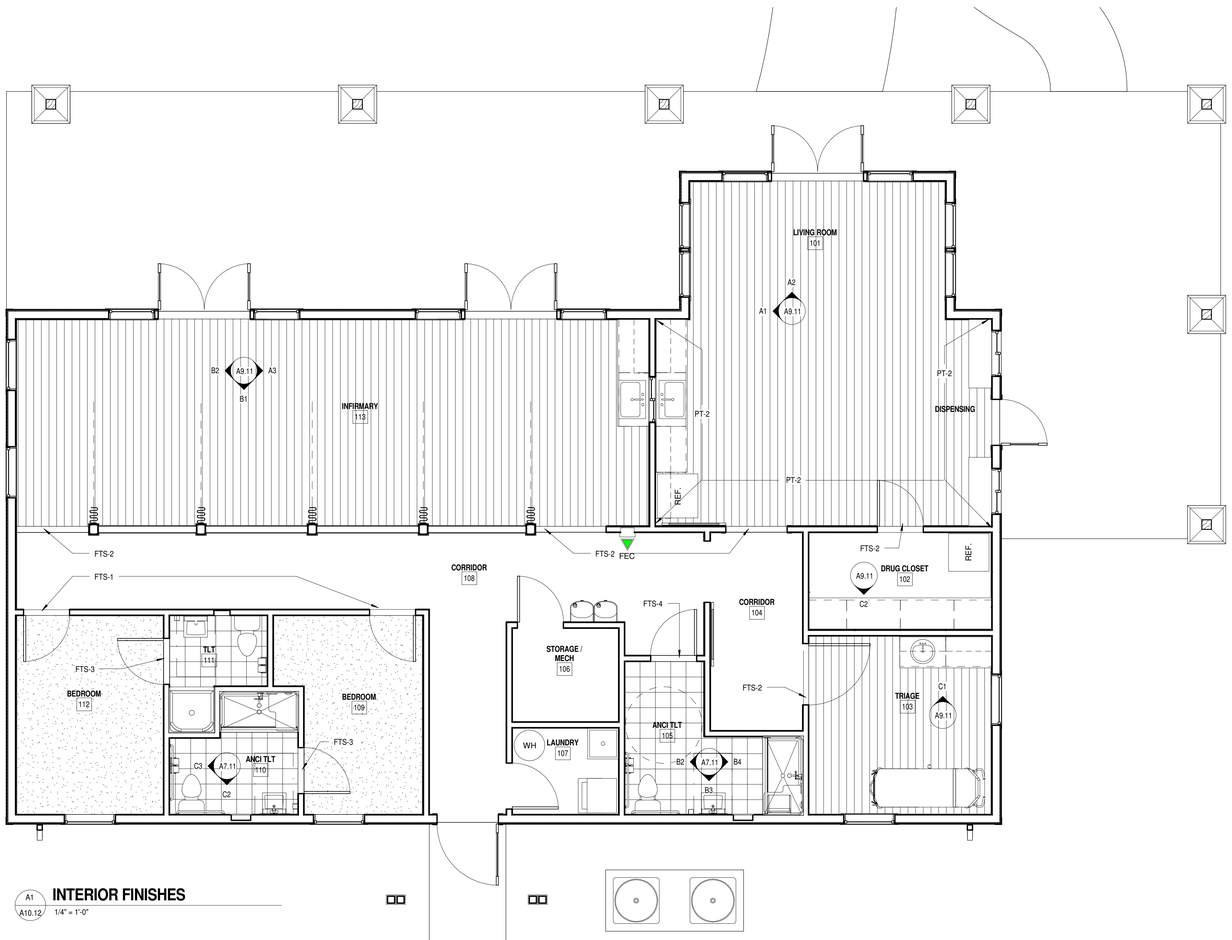
PROJ. NO. 015292.00

ROOM FINISH SCHEDULE

ROOM NO	ROOM NAME	FLOOR		WALL							CEILING				REMARKS
								WAINSCOT							
		FLOOR	BASE	NORTH	EAST	SOUTH	WEST	MATERIAL	FINISH	HEIGHT	HEIGHT	MATERIAL	FINISH	TRIM	
101	LIVING ROOM	LVT-1	WB-1	P-1	P-1,PT-2	PT-2	P-1,PT-2	WOOD	MATCH EXISTING	6' - 0"	VAULTED	WOOD	P-5	CT-1	
102	DRUG CLOSET	CONC-1	WB-1	P-1	P-1	P-1	P-1				10'-0"	GYP. BD.	P-5	CT-1	
103	TRIAGE	LVT-1	WB-1	P-3	P-3	P-3	P-3	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	
104	CORRIDOR	CONC-1	WB-1	P-1	P-1	PT-2	P-1	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	
105	ANCI TLT	PT-1	PTB-1	P-3	P-3	P-3	P-3	TILE		5'-10"	9'-0"	GYP. BD.	P-5	CT-1	
106	STORAGE / MECH	CONC-1	WB-1	P-1	P-1	P-1	P-1				9'-0"	GYP. BD.	P-5	CT-1	
107	LAUNDRY	CONC-1	WB-1	P-1	P-1	P-1	P-1				9'-0"	GYP. BD.	P-5	CT-1	
108	CORRIDOR	CONC-1	WB-1	P-1	P-1	P-1	P-1	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	
109	BEDROOM	CPT-1	WB-1	P-1	P-2	P-1	P-1	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	
110	ANCI TLT	TILE -1	PTB-1	P-4	P-4	P-4	P-4	TILE		5'-10"	9'-0"	GYP. BD.	P-5	CT-1	
111	TLT	PT-1	PTB-1	P-4	P-4	P-4	P-4	TILE		5'-10"	9'-0"	GYP. BD.	P-5	CT-1	
112	BEDROOM	CPT-1	WB-1	P-1	P-1	P-1	P-2	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	
113	INFIRMARY	LVT-1	WB-1	P-1	P-1	NA	P-1	WOOD	MATCH EXISTING	6' - 0"	10'-0"	GYP. BD.	P-5	CT-1	WOOD CEILING ALTERNATE

FINISH MATERIAL LEGEND

Material	KEY	MANUFACTURER	PATTERN / ITEM NO	COLOR	SIZE	FINISH	NOTES
CARPET							
CARPET	CPT-1	MILLIKEN	COLOR FIELD / COL114	SORREL	25CM X 1M		PLANKS
CEILING TRIM							
CEILING TRIM	CT-1		SOUTHERN YELLOW PINE	NO. 1 GRADE	1X6	STAINED	STAIN W/ 1ST COAT OF PREMIUM INTERIOR STAIN AND 2ND COAT OF PREMIUM OIL BASED POLYURETHANE SEMI GLOSS FINISH
CONCRETE							
CONCRETE	CONC-1		STAIN		-	CLEAR	
EXTERIOR PAINT							
EXTERIOR PAINT	EXP-1	SEE SPECS		TBD			TRIM
EXTERIOR PAINT	EXP-2	SEE SPECS		TBD			SIDING
FLOORING TRANSITION STRIP							
FLOORING TRANSITION STRIP	FTS-1	JOHNSONITE	CCA-XX-J	TBD			CARPET TO CONCRETE
FLOORING TRANSITION STRIP	FTS-2	JOHNSONITE	SSR-XX-B	TBD			LVT TO CONCRETE
FLOORING TRANSITION STRIP	FTS-3	SCHLUTER	SCHEINE	BRUSHED ALUM			TILE TO CARPET
FLOORING TRANSITION STRIP	FTS-4	SCHLUTER	RENO-RAMP	BRUSHED ALUM			TILE TO CONCRETE
LUXURY VINYL TILE							
LUXURY VINYL TILE	LVT-1	CENTIVA EVENT	WOOD PLANK	TBD	6" x 36"		PLANKS
PAINT							
PAINT	P-1	SHERWIN WILLIAMS	INTERIOR WATERBASED ACRYLIC-ALKYD ENAMEL	DOWNING SAND SW2822		SATIN	
PAINT	P-2	SHERWIN WILLIAMS	INTERIOR WATERBASED ACRYLIC-ALKYD ENAMEL	DOWNING EARTH SW2820		SATIN	
PAINT	P-3	SHERWIN WILLIAMS	INTERIOR WATERBASED ACRYLIC-ALKYD ENAMEL	DOWNING STONE SW2801		SATIN	
PAINT	P-4	SHERWIN WILLIAMS	INTERIOR WATERBASED ACRYLIC-ALKYD ENAMEL	DOWNING STONE SW2801		EGSHEL	TOILET ROOMS
PAINT	P-5	SHERWIN WILLIAMS	INTERIOR WATERBASED ACRYLIC-ALKYD ENAMEL	TBD		MATTE	CEILINGS
PLASTIC LAMINATE							
PLASTIC LAMINATE	PL-1	WILSONART	BURNISHED CHESTNUT	4796-60		MATTE FINISH	VERTICAL SURFACES
PLASTIC LAMINATE	PL-2	WILSONART	GREEN SOAPSTONE	4885-38		FINE VELVET	COUNTERTOPS
PORCELAIN TILE							
PORCELAIN TILE	PT-1	DALTILE	AYERS ROCK	RUSTIC REMNANT	13" x 13" x 3/8"		FLOOR & WALL; 3/16" GROUT JOINT;
PORCELAIN TILE BASE							
PORCELAIN TILE BASE	PTB-1	DALTILE	AYERS ROCK	RUSTIC REMNANT	6" X 13"		COVE BASE
PORCELAIN TILE TRIM							
PORCELAIN TILE TRIM	PTT-1	DALTILE	AYERS ROCK	RUSTIC REMNANT	3" X 13"		BULLNOSE
WAINSCOT							
WAINSCOT	WC-1		SOUTHERN YELLOW PINE BEAD BOARD	NO. 1 GRADE	1/4" THICKNESS	STAINED	STAIN W/ 1ST COAT OF PREMIUM INTERIOR STAIN AND 2ND COAT OF PREMIUM OIL BASED POLYURETHANE SEMI GLOSS FINISH
WOOD BASE							
WOOD BASE	WB-1	-	SOUTHERN YELLOW PINE	NO. 1 GRADE	1 x 6	STAINED	STAIN W/ 1ST COAT OF PREMIUM INTERIOR STAIN AND 2ND COAT OF PREMIUM OIL BASED POLYURETHANE SEMI GLOSS FINISH



A1 A10.12 **INTERIOR FINISHES**
1/4" = 1'-0"

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05029
REGISTERED ARCHITECT

STATE OF SOUTH CAROLINA
McMILLAN PAZDAN SMITH, LLC
GREENVILLE, SC
100573
REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
FINISH SCHEDULE

SHEET NO. A10.12

PROJ. NO. 015292.00

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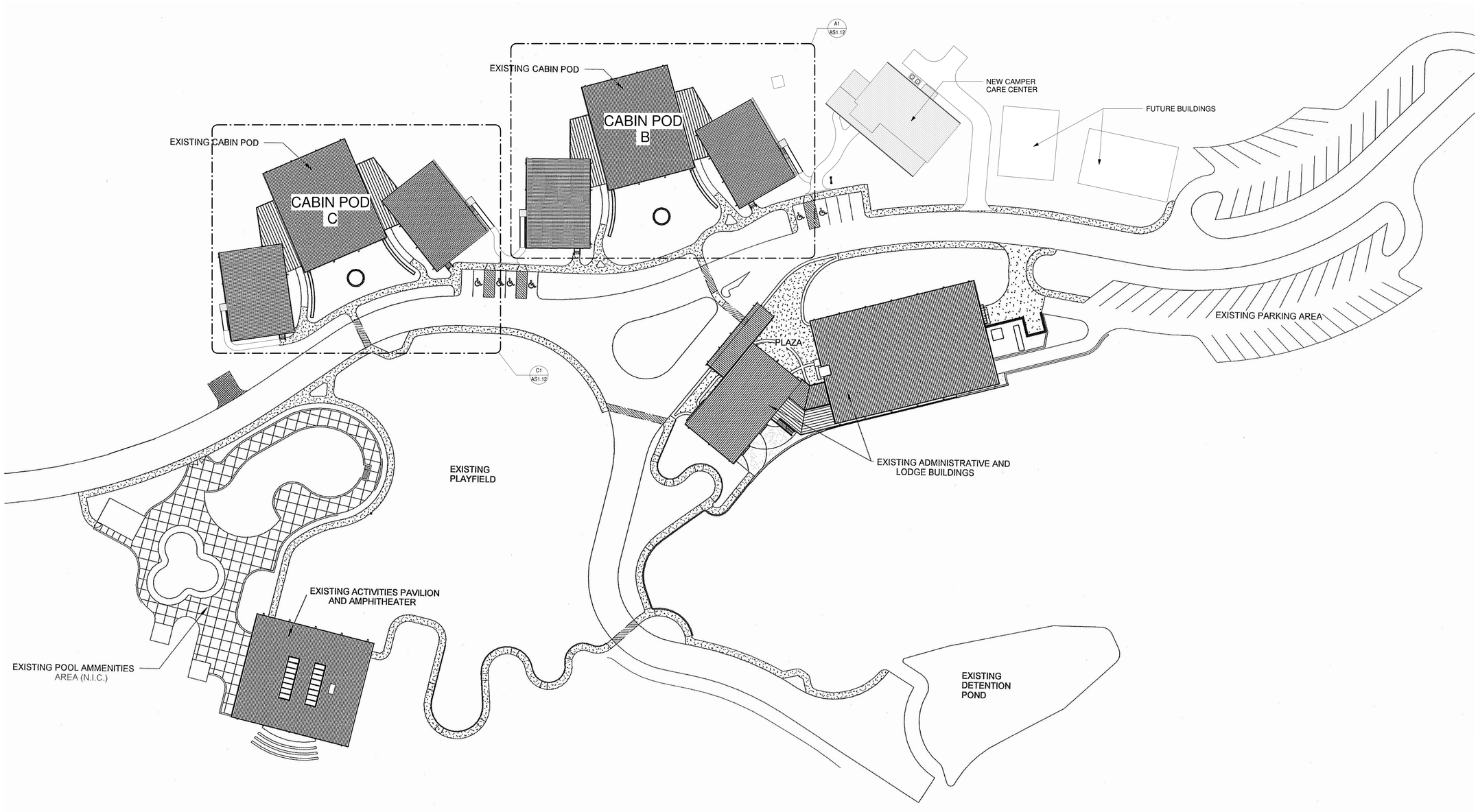

1 / AS1.11 **NEW ADA RAMP LOCATIONS**

1" = 30'-0"

5/11/2016 6:45:13 PM C:\Revit Local Projects\mpsi-15-005-GREENVILLE COUNTY CAMPER STROUD_CENTRAL_ARCHITECTURE.rvt

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STATE OF SOUTH CAROLINA — McMILLAN PAZDAN SMITH, LLC — GREENVILLE, SC — 100573 — REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

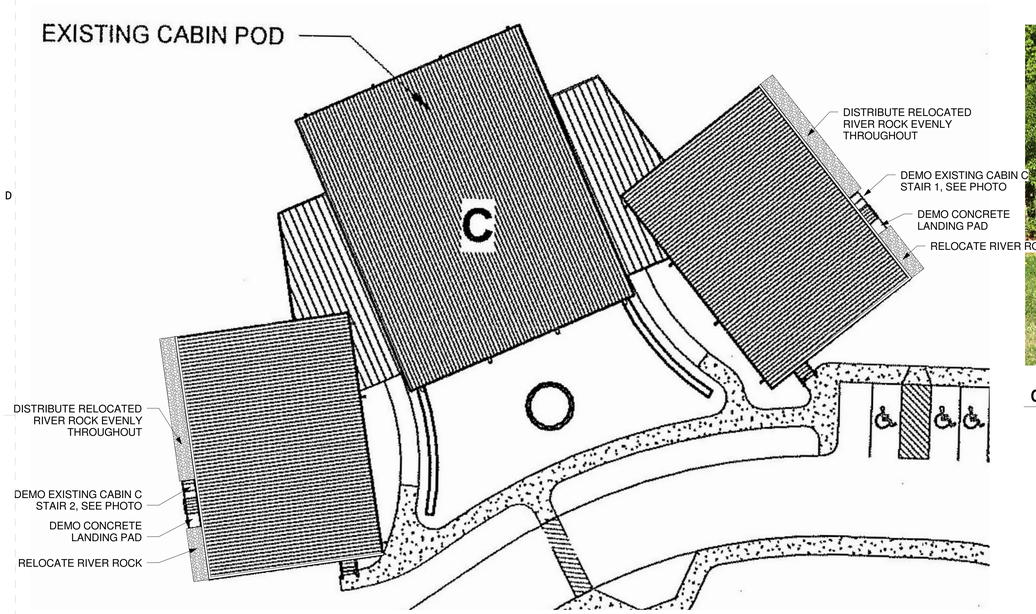
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
ADA RAMP LOCATION PLAN

SHEET NO. AS1.11

PROJ. NO. 015292.00



C1 / AS1.12 **CABIN C DEMO PLAN**
1/16" = 1'-0"

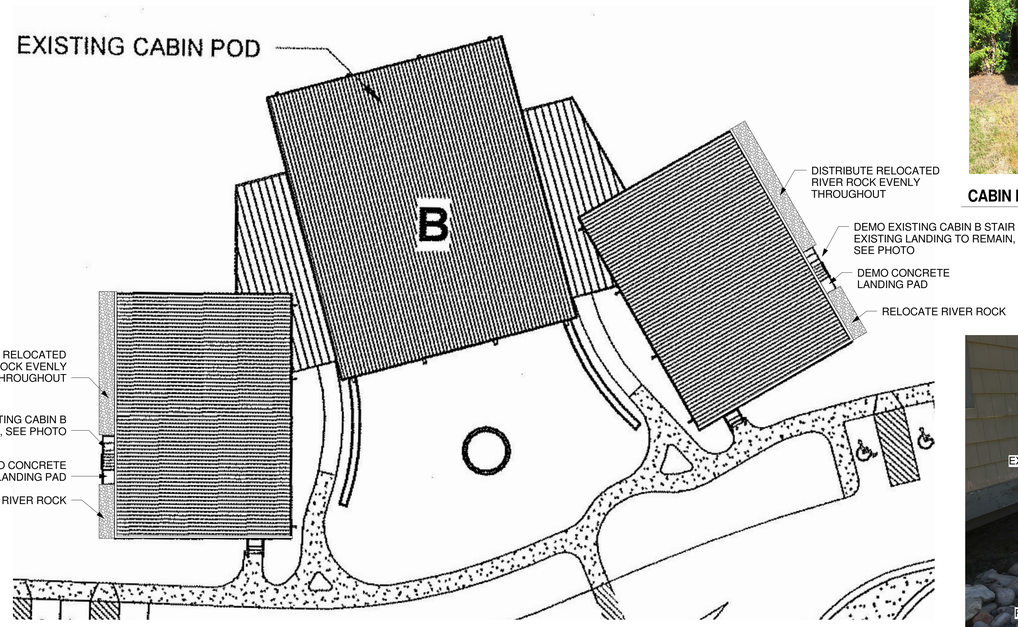
CABIN C STAIR 2 EXISTING PHOTOS

CABIN C STAIR 1 EXISTING PHOTOS

GENERAL DEMO NOTES:

DEMO EIXSTING STAIRS, RAILINGS AND CONCRETE PADS TYP.

RELOCATE RIVER ROCK TO NEW CAMPER CARE CENTER AS SHOWN ON A4.11. REMAINING RIVER ROCK TO BE DISTRUBUTED EVENLY THROUGHOUT EXISTING RIVER ROCK BEDS.



A1 / AS1.12 **CABIN B DEMO PLAN**
1/16" = 1'-0"

CABIN B STAIR 2 EXISTING PHOTOS

CABIN B STAIR 1 EXISTING PHOTOS

5/17/2016 4:01:18 PM E:\Mcm-Local Projects\015292.00 Greenville County Camper Care Ctr_Kjohnson.rvt
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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

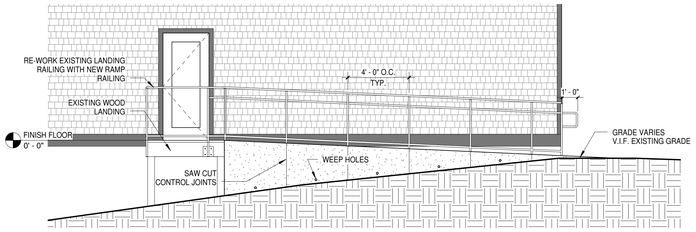
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

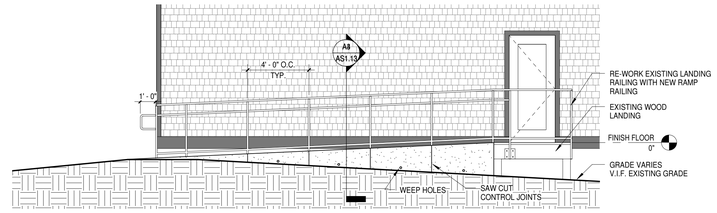
SHEET TITLE:
CABIN STAIR DEMO PLANS

SHEET NO. AS1.12

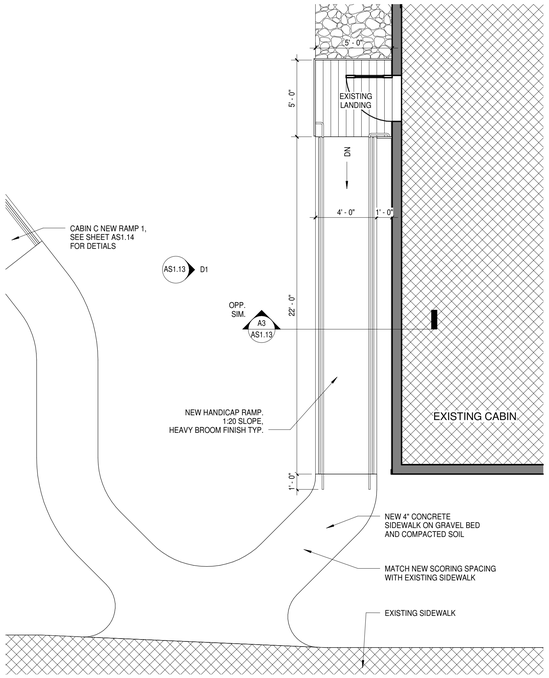
PROJ. NO. 015292.00



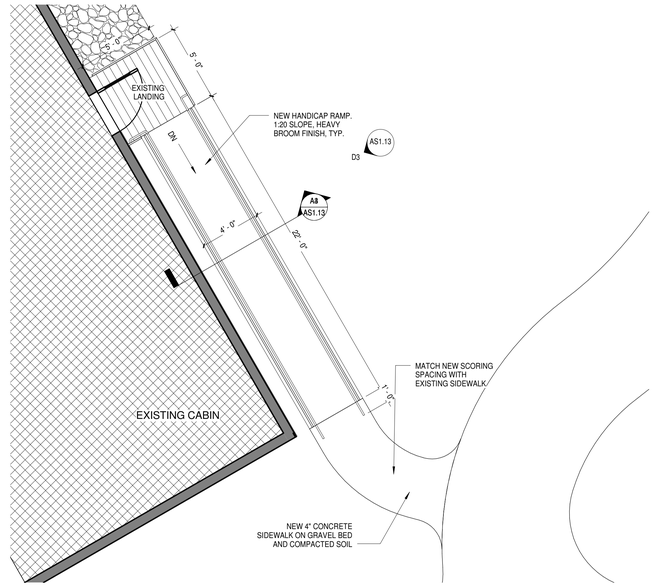
D1 / AS1.13 **CABIN B RAMP 2 ELEVATION**
1/4" = 1'-0"



D3 / AS1.13 **CABIN B RAMP 1 ELEVATION**
1/4" = 1'-0"

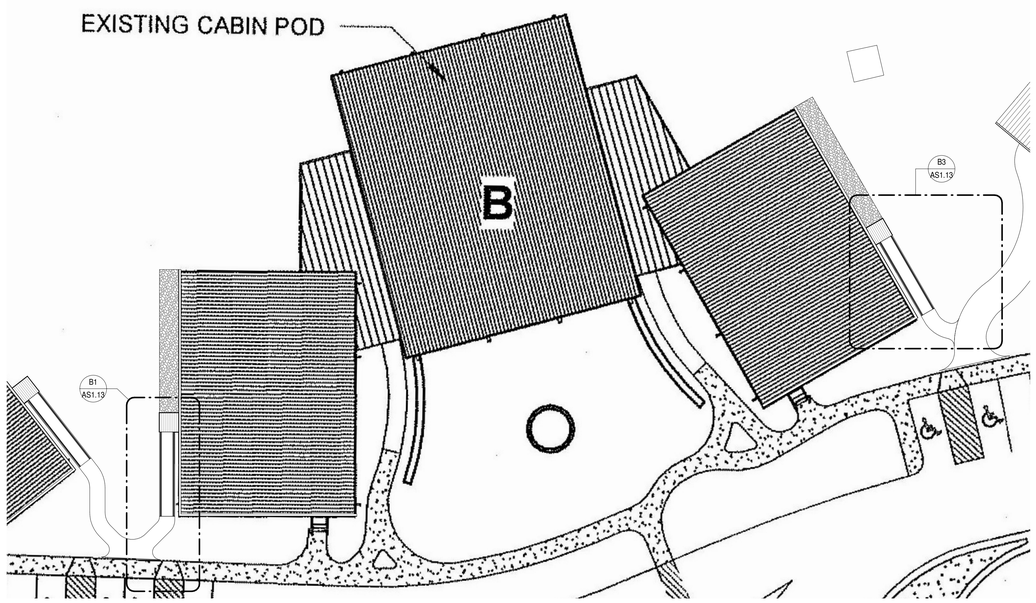


B1 / AS1.13 **CABIN B NEW RAMP 2**
1/4" = 1'-0"



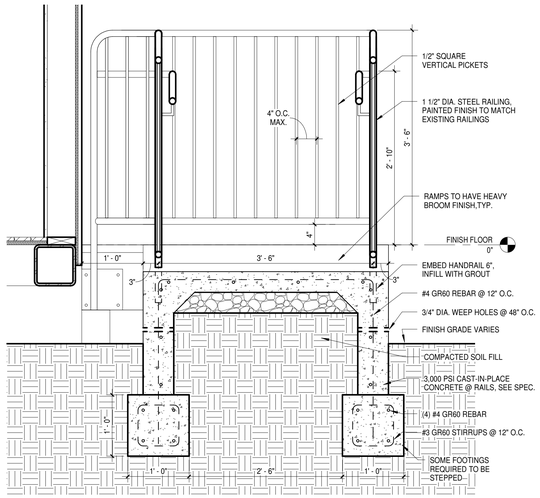
B3 / AS1.13 **CABIN B NEW RAMP 1**
1/4" = 1'-0"

B4 / AS1.13 **EXISTING RAILING DETAILS**
NOT TO SCALE

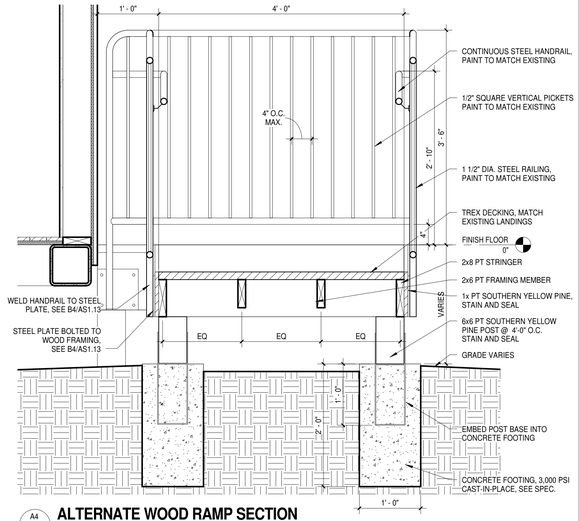


A1 / AS1.13 **CABIN B NEW PLAN**
1/16" = 1'-0"

* NOTE: VERTICAL PICKETS REQUIRED IN RAILING DESIGN. NOT SHOWN IN ELEVATIONS FOR CLARITY.



A3 / AS1.13 **TYPICAL RAMP SECTION**
1" = 1'-0"



A4 / AS1.13 **ALTERNATE WOOD RAMP SECTION**
1" = 1'-0"

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	KC

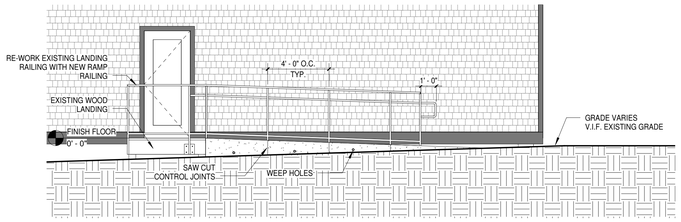
BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

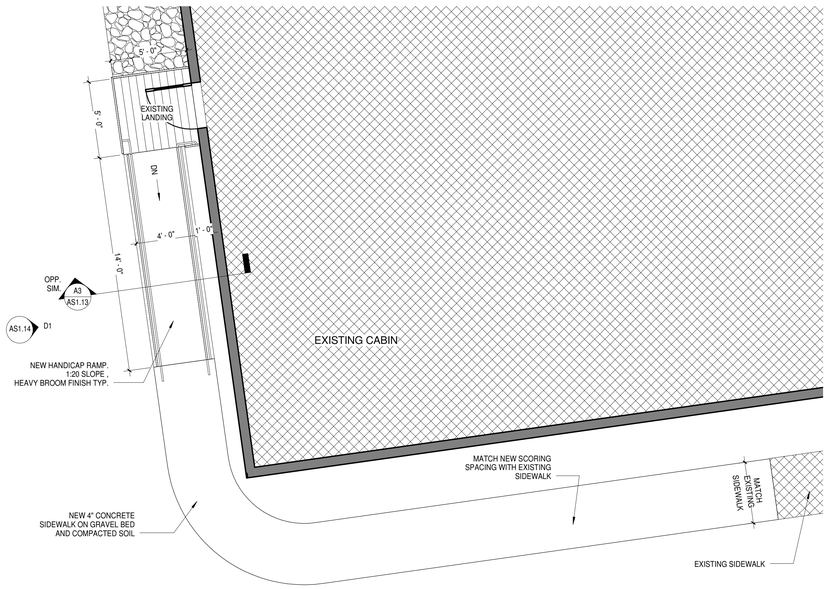
SHEET TITLE:
CABIN B RAMP PLANS AND DETAILS

SHEET NO. AS1.13

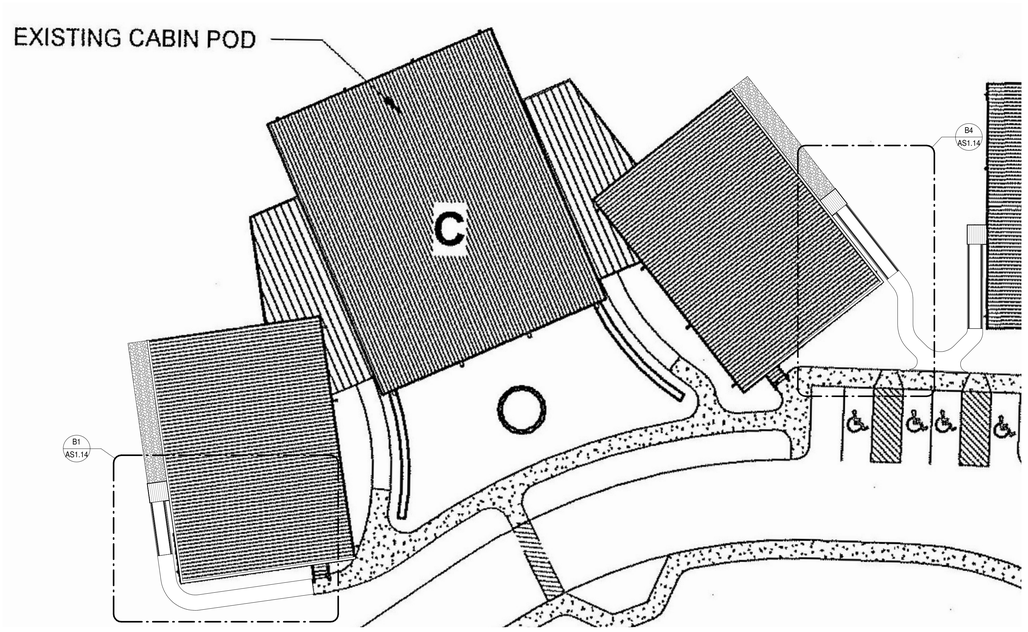
PROJ. NO. 015292.00



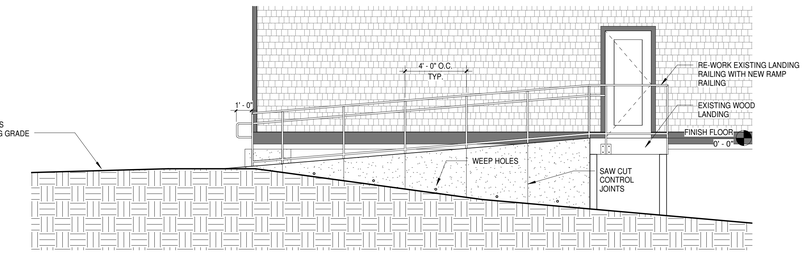
D1 / AS1.14 **CABIN C RAMP 2 ELEVATION**
1/4" = 1'-0"



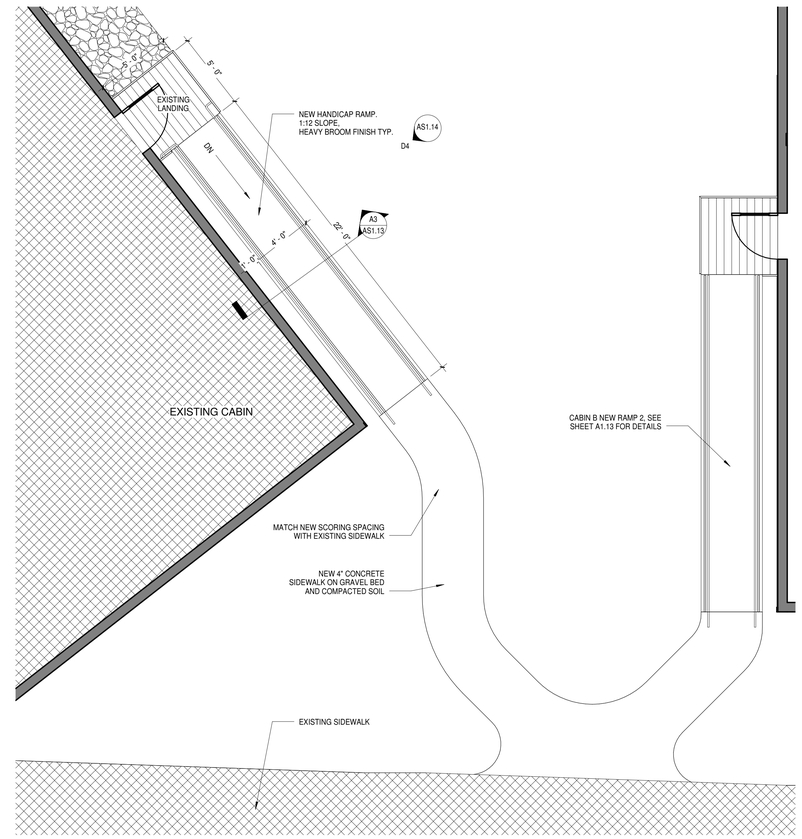
B1 / AS1.14 **CABIN C NEW RAMP 2**
1/4" = 1'-0"



A1 / AS1.14 **CABIN C NEW PLAN**
1/16" = 1'-0"



D4 / AS1.14 **CABIN C RAMP 1 ELEVATION**
1/4" = 1'-0"



B4 / AS1.14 **CABIN C NEW RAMP 1**
1/4" = 1'-0"

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STATE OF SOUTH CAROLINA — McMILLAN PAZDAN SMITH, LLC — GREENVILLE, SC — 100573 — REGISTERED ARCHITECTS

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
1	2016.06.01	BID SET	BC

BID SET 2016.06.01

PRINCIPAL IN CHARGE: KJ
PROJECT ARCHITECT: EH
DRAWN BY: BC

SHEET TITLE:
CABIN C RAMP PLANS AND DETAILS

SHEET NO. AS1.14

PROJ. NO. 015292.00

01000 GENERAL

1. The structure reflected on the drawings is structurally sound in its completed condition only. The design of any and all temporary shoring and bracing prior to the completed condition shall be the contractor's responsibility. The Structural Engineer of Record (EOR) shall not be responsible for the means, methods, techniques, sequences, procedures nor safety programs which are empolyed by the contractor to build the completed structure. Any deviations from the completed structure represented in the drawings must be submitted to the EOR for approval in writing.
2. The Contractor shall verify all conditions including exsisting structures (above and below grade) and shall notify of the EOR of any discrepancies. The Contractor shall perform all required field measurements.
3. The Sections and Details shown shall be considered to be typical for all similar conditions. The Contractor shall submit written Requests for Information for areas in question.
4. The Contractor shall submit shop drawings for each of the structural components shown on the drawings. Four copies of the shop drawings shall be submitted to the Architect for distribution.

03000 FOUNDATIONS:

1. The Contractor shall notify the Structural Engineer of Record (EOR) of any below grade structure which may affect the foundation performance.
2. Foundations shall bear on residual soils or engineered fill capable of supporting an allowable pressure of 3,000 psf. Soils shall be stable, and any expansive, compressible, or shifting material shall be removed to ensure a stable moisture content. Slabs on grade are designed for a modulus of subgrade reaction of 125 pci using a K = 30. Geotechnical Dated October 19, 2015 for fill placement and compaction requirements required to obtain these design parameters.

03300 CAST-IN-PLACE CONCRETE:

1. All concrete work and materials shall be in accordance with ACI 318 2002 and ACI 301.
2. Minimum Material Specifications:
   a. Portland Cement: ASTM C150, Type 1
   b. Fly Ash: ASTM C 618, Type F (limit to 20% of cementitious content)
   c. Maximum water/cementitious material ratio: 0.5.
   d. No water may be added at the site without consent of the engineer.
3. Foundations:
   a. Foundations shall have a 28 day compressive strength of 3000 psi.
4. Slabs-on-grade:
   a. Interior slabs-on-grade shall have a 28 day compressive strength of 3000 psi and shall be reinforced with Welded Wire Fabric, Located within 1 1/2" of the Top Surface.
   b. Slab edges to be permanently exposed to view shall be rubbed, patching all honeycombing and voids.
   c. Interior slabs to receive a hard steel trowel finish with overall Ff =35 and FL=25, and minimum local values of Ff = 24 and Fl = 17.
   d. Exterior slabs (under roof or floor) shall have air entraining admixture to provide 6% entrained air. Chamfer all exposed slab edge corners (3/4”). Ligth Broom Finish in direction of slope.
   e. Slabs shall be wet cured for a period of seven days. Maintain moisture by ponding, fogging, spraying or other means.
   f. Vapor barrier under slab shall meet permeability requirements of the floor finishes. As a minimum, a 15 mil vapor barrier is required, lapping and sealing all seams.
   g. Provide sawcut control joints or construction joints as shown on the drawings. Cut 1” joints as soon as possible after finishing (within 8 hours of placement).
   h. Provide isolation joints at column boxouts, walls, and penetrations.
   i. Reinforce at all re-entrant corners with no control joints with (2) #3 x 4’-0” long centered on the corner, located in the top of the slab. Reinforce around all pipe or box penetrations greater than 3” with (4) #3 in diamond pattern.
   j. Specification of exterior concrete paving or sidewalks is by the Civil Engineer.
   k. Concrete splatter on walls or adjacent slabs shall be removed.
7. Reinforcing Steel:
   a. All detailing, fabrication, and placing shall be in accordance with ACI 315.
   b. Reinforcing steel shall be new billet bars conforming to ASTM A615, grade 60.
   c. Provide 3” concrete cover for all concrete cast against earth.
8. Post-Installed Anchors
   a. Epoxy or chemical adhesive shall be Ramset Epcon A7 or C6; Hilti HY 150; or Simpson SET Epoxy-TIE.
   b. Anchors labeled as LDT anchors are to be hot-dip galvanized anchors with cutting threads such as Ramset/Redhead LDT; Simpson Titen HD; or Powers Wedge.

06100 ROUGH CARPENTRY

1. Structural framing lumber shall conform to the minimum material properties listed in the National Design Specification for Wood Construction (2008) for the sizes, species, and grades listed below:
   a. Exterior Stud Walls: SPF #2. Minimum Bending Stress = 875 psi.
   b. Interior Stud Walls: SPF #2.
   c. For multi-stud columns or double stud conditions, attach stud-to-stud with 16d nails at 12” o.c vertically.
   d. Headers in exterior walls: Yellow Pine #2 or better.
   e. Headers in interior walls: Yellow Pine #2 or better.
2. Laminated Veneer Lumber (LVL) shall meet or exceed the following properties:
   a. Modulus of Elasticity, E: 2,000,000 psi
   b. Bending Stress, Fb; 2,900 psi
   c. Horizontal Shear, Fv: 285 psi
   d. Compression Parallel, Fc: 2,750 psi.
   e. Multi-member headers shall be connected together with (4) 16d nails at 12” o.c.
3. Bolts shall conform to ASTM A307. Steel connection plates shall conform to ASTM A36.
4. Nail shank sizes and lengths are as specified for the penny weights on the drawings:
   a. 6d 0.113” diameter, 2” long
   b. 8d 0.131” diameter, 2.5” long
   c. 10d 0.148” diameter, 3” long
   d. 16d 0162” diameter, 3.5” long
5. CONNECTORS FOR TREATED LUMBER
   a. Any connectors (hangers, straps, nails, bolts, etc) in contact with treated lumber must be hot-dip galvanized (G90).
6. BEARING WALL CONSTRUCTION
   a. Sill plates shall be treated with Copper Azole (CA), Alkaline Copper Quat (ACQ), or Sodium Borate (SBX). Treatment to be per preservative manufacturer’s recommendation. At a minimum, sill plates for exterior walls and bearing walls to be bolted to foundation with hot-dip galvanized 1/2” diameter, 8” embedment “j” bolt at 4’-0” o.c. and at wall ends. ITW Buildex Ramset/Readhead LDT anchors or Simpson Titen HD anchors with 5 1/2" Embeddment can be substituted for hooked anchor rods.
   b. Sheath walls with ½” rated sheathing (7/16" OSB is acceptable), nailing to studs, sills, and headers at 6” o.c. at panel edges and 12” o.c. elsewhere.
      Nails to be 10d ring shank nails. Nail to sill plate and top plates at 4” o.c. Block all edges.
   c. Balloon Frame gable end walls. Review with engineer prior to construction.
7. ROOF CONSTRUCTION
   a. Roof to be sheathed with 3/4” Nominal 24/48 rated sheathing, grade C-D, Exposure 1 nailed to rafters or trusses with 10d ring shank nails at 6” o.c. at panel
      edges and 12” o.c. elsewhere. Provide plywood clips at each rafter or truss space.
   b. Rafters to be SYP#2 or better.
   c. Provide blocking between rafters or between trusses at all valleys and ridges. Nail sheathing to blocking at 6” o.c.
   d. At hipped ends where trusses are dropped 1-9/16” for 2x4 purlins, the purlins must be attached to the top chord of the dropped trusses with Simpson H2.5 anchors.
   e. Attachment of Piggy back trusses to base trusses must be clearly shown on truss erection drawings.
   f. Metal Plate Connected Wood Trusses
      i. Design by fabricator shall be in accordance with the applicable provisions of the latest edition of the American Forest & Paper Association's (AF&PA’s) *National Design Specification® (NDS®) for Wood Construction*, ANSI/TPI 1, and all applicable legal requirements. Truss Manufacturer shall furnish Truss Design Drawings and a Truss Placement Plan. See the roof framing plan and design criteria for design loads. Deflection criteria of L/360 (LL) and L/240 (total) shall be calculated with pin/roller support conditions and one end moving laterally 1” max.
      ii. If needed, trusses shall be supplied with bearing enhancing hardware to distribute support reactions to supporting wall plates such that bearing pressure does not exceed 425 psi.
      iii. The design and placement drawings shall include as a minimum:
         1. Slope, span, and spacing
         2. Location of joints
         3. Required bearing widths
         4. Design loads (top and bottom chord live and dead loads, wind uplift forces at bearing)
         5. End Reactions and directions
         6. Lumber grades, sizes, and species
         7. Truss to truss girder, truss ply to ply, and field assembly connections (manufacturer to design and supply)
         8. Deflections (horizontal and vertical)
         9. Size, connections, and anchorage of the permanent continuous lateral bracing required for axial force buckling resistance.
      iv. Lumber shall be Yellow Pine #2 or better for chords and webs. Lumber shall have moisture content of no less than 7% at time of manufacturing. Adjustment factors shall be in accordance with NDS
      v. Metal connector plates shall be manufactured by a Wood Truss Council of America (“WTCA”) member plate manufacturer and shall not be less than 0.036 inches in thickness (20 gauge) and shall meet or exceed ASTM A653/A653M grade 33, and galvanized coating shall meet or exceed ASTM A924/924M, coating designation G60. Working stresses in steel are to be applied to effectiveness ratios for plates as determined by test and in accordance with ANSI/TPI 1.
      vi. Trusses shall be handled during manufacturing, delivery and by the Contractor at the job site so as not to be subjected to excessive bending. Unload trusses in a manner to minimize lateral strain.
      vii. Contractor shall be responsible for the handling, installation, and temporary bracing of the Trusses in a good workmanlike manner and in accordance with the recommendations set forth in WTCA/TPI’s *Building Component Safety Information BCSI 1-03: Guide to Good Practice For Handling, Installing & Bracing of Metal Plate Connected Wood Trusses*.
         1. Bracing/Shoring plans if required by the Building Official shall be submitted by the contractor, prepared by a Professional Engineer.
      viii. Cutting and altering of Trusses is not permitted. If any Truss should become broken, damaged, or altered, written concurrence and approval by a licensed design professional is required.
      ix. Trusses shall be permanently braced in a manner consistent with good building practices and in accordance with sections in the drawings. Trusses shall furthermore be anchored or restrained to prevent out-of-plane movement so as to keep all Truss members from simultaneously buckling together in the same direction. Such permanent lateral bracing shall be accomplished by: (a) anchorage to solid end walls; (b) permanent diagonal bracing in the plane of the web members; or (c) other suitable means. Materials for temporary and permanent bracing shall be by the contractor.
      x. Full depth blocking or x-bridging is required over all exterior walls where heel height exceed 10”. Nail blocking to top plates and top chord of truss.
      xi. All specified uplift connection hardware capacities shall be reviewed by the contractor using the final truss shop drawings and calculations. The uplift capacity shall exceed the uplift given on the shop drawings.

061323 HEAVY TIMBER CONSTRUCTION

a. Timber Standard: Comply with AITC 108, "Standard for Heavy Timber Construction".
b. Forest Certification: Provide wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".
c. Timbers, and connections shall withstand the effects of the structural loading from the stick framing bearing on the timbers..
   i. The Supplier shall provide details for beam-to-beam, beam-to-wall, and post-to-beam connections.
   ii. Minimum truss member sizes are shown on the drawings.
d. Material Specifications
   i. Timber Species and Grade: Douglas fir-larch or Southern Pine #1 or better and as required by design.
   ii. Timber shall comply with DOC PS 20 and with grading rules of lumber grading agencies certified by ALSC's Board of Review.
      a. Apply grade stamped that will not be exposed to view.
   iii. Timber shall have a moisture content of 19% or less at time of dressing.

e. Fabrication
   i. Dress exposed surfaces (S4S)
   ii. End Cut Sealing: Immediately after end cutting each member to final length, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.
   iii. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit.
f. Installation
   i. General: Erect structural timber true and plumb, and with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.
      1. Lift with padded slings and protect corners with wood blocking.
      2. Install timber connectors in the factory to insure a good fit. Number each connector, and the corresponding side of the wood member for re-assembly in the field. Place keyed number marks in a place that will not be exposed to view in the final installation.
   ii. Fit structural timber by cutting and restoring exposed surfaces to match specified surfacing and finishing.
      1. Predrill for fasteners using timber connectors as templates.
      2. Dress exposed surfaces as needed to remove planing and surfacing marks.
      3. Coat cross cuts with end sealer.
   iii. Cutting: Avoid cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.
   iv. Adjusting
      1. Repair damaged surfaces and finishes after completing erection. Replace damaged structural timber if repairs are not approved by Architect.
   v. Protection
      1. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose including protection from weather, sunlight, soiling, and damage from work of other trades.
         a. Slit underside of wrapping to prevent accumulation of moisture inside the wrapping.

g. Shop Drawings
   i. Shop drawings shall include layout, connections, material specifications, and handling requirements.

Building Code
2012 International Building Code

Building Use
Business

Risk Category II

Vertical Loads

Dead Loads at Roof	
Composite Shingles	3 psf
5/8" Wood Decking, Insulation	3 psf
Framing	4 psf
Collateral	8 psf
Live Loads at Roof	
Occupancy (Reducible of Area, Slope)	20 psf
Live Loads at Floor	
Office	50 psf
Stairs	100 psf
Snow Loads	
Ground Snow Load	10 psf
Importance Factor	1.0
Rain on Snow Surcharge	5 psf
Design Snow Load (No surcharge)	7.2 psf

LATERAL LOADS

Wind Loads	
Velocity (Strength Level Speed)	115 mph
Velocity (ASD Method)	89 mph
Exposure	B
Enclosed Building	
Internal Pressure Coefficient	+/-0.18

Components and Cladding (ASD LEVELS)
Wall Interior Zones (ht, areas, pressures)
30', 10 sf, 18 psf, -19 psf
30', 100 sf, 15 psf, -17 psf

Wall Corner Zones (7'-0" from exterior corners)
30', 10 sf, 18 psf, -24 psf
30', 100 sf, 15 psf, -18 psf

Roof Components Loads (6'-0" band)
30', 10 sf, -19 psf (Zone 1), - 33 psf (Zone2),
-47 psf (Zone 3)

Seismic Loads	
Risk Category	II
Ss, Short Term Spectral Response	0.28
S1, 1 second Spectral Response	0.11
Site Class (Confirmed)	D
Response Modification Coefficient (Light Framed Walls of Wood)	6.5
Spectral Response, Sds	0.28
Spectral Response, Sd1	0.17
Design Category	C
Analysis Type	ELF

Arrowood & Arrowood, PC
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A&A PROJECT: 15-MPS-99

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CONSULTANT LOGO
arrowood + arrowood

SEALS
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20477 ANTHONY JOHN ARROWOOD 11-25-15
SOUTH CAROLINA ARROWOOD & ARROWOOD, PC No. C03036 CERTIFICATE OF AUTHORIZATION

GREENVILLE COUNTY
DR. CARY E. STROUD CAMPER CARE CENTER
MARIETTA, S.C.

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
O	11/25/2105	PERMIT	AJA

PERMIT 11/25/2105

PRINCIPAL IN CHARGE:	AJA
PROJECT ARCHITECT:	AJA
DRAWN BY:	AP/WB

SHEET TITLE:
GENERAL NOTES & DESIGN CRITERIA

SHEET NO. S1.0
PROJ. NO. 015292.00

11/25/2015 8:32:44 AM Z:\AA\Projects\MPS- McMillan Pazdan Smith\15-MPS-99_Greenville County Healthhut\15-MPS-99 HEALTH HUT STRUCTR15.rvt
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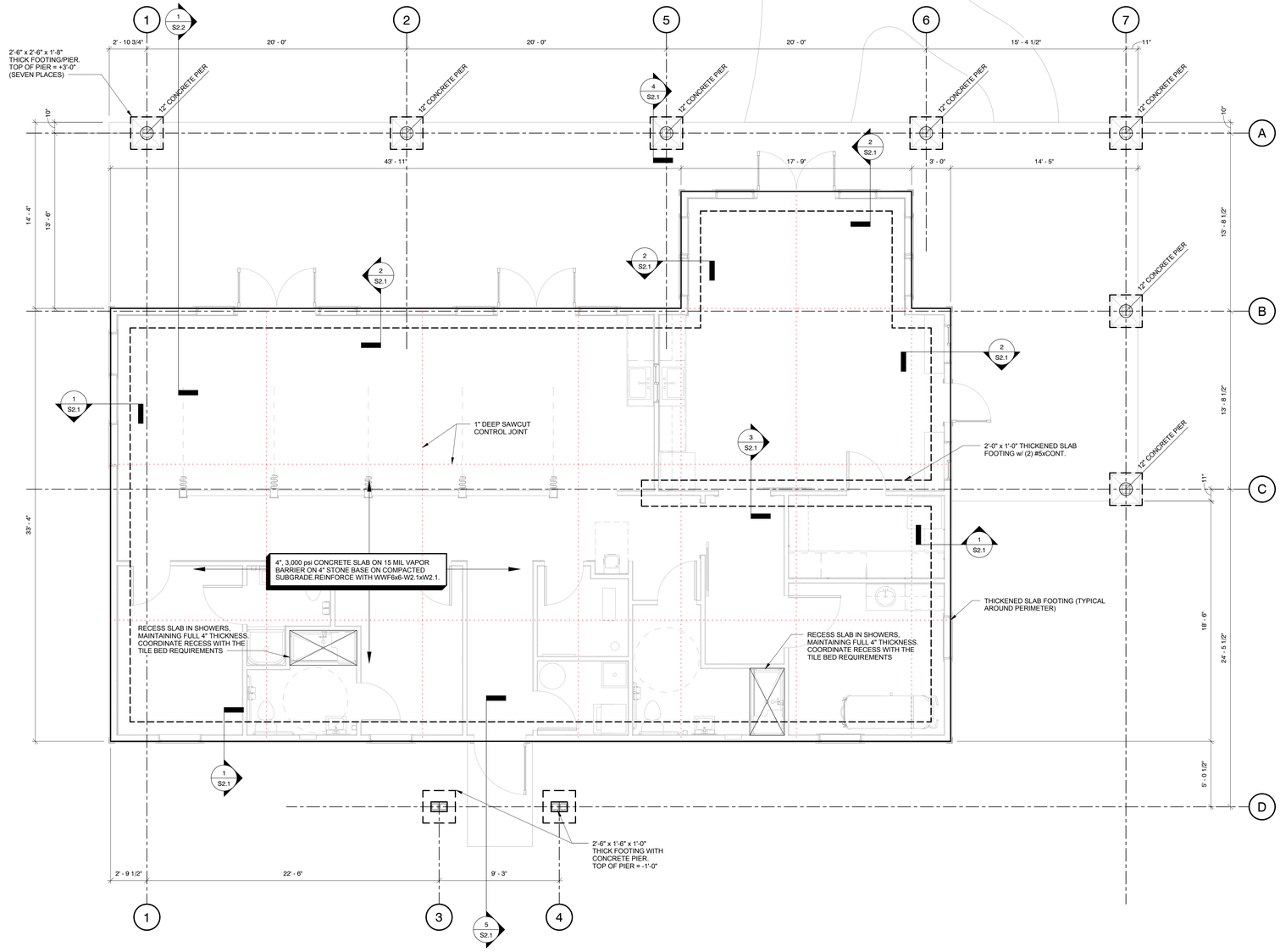

1 S1.1 FOUNDATION / SLAB PLAN

1/4" = 1'-0"

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SOUTH CAROLINA PROFESSIONAL ENGINEER No. 20477 11-25-15 AUTHENTICATION

SOUTH CAROLINA ARROWOOD & ARROWOOD, PC No. C03036 CERTIFICATE OF AUTHORITY

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, S.C.

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY

PRINCIPAL IN CHARGE: AJA
PROJECT ARCHITECT: AJA
DRAWN BY: AP/WB

SHEET TITLE:

FOUNDATION / SLAB PLAN

SHEET NO. S1.1

PROJ. NO. 015292.00

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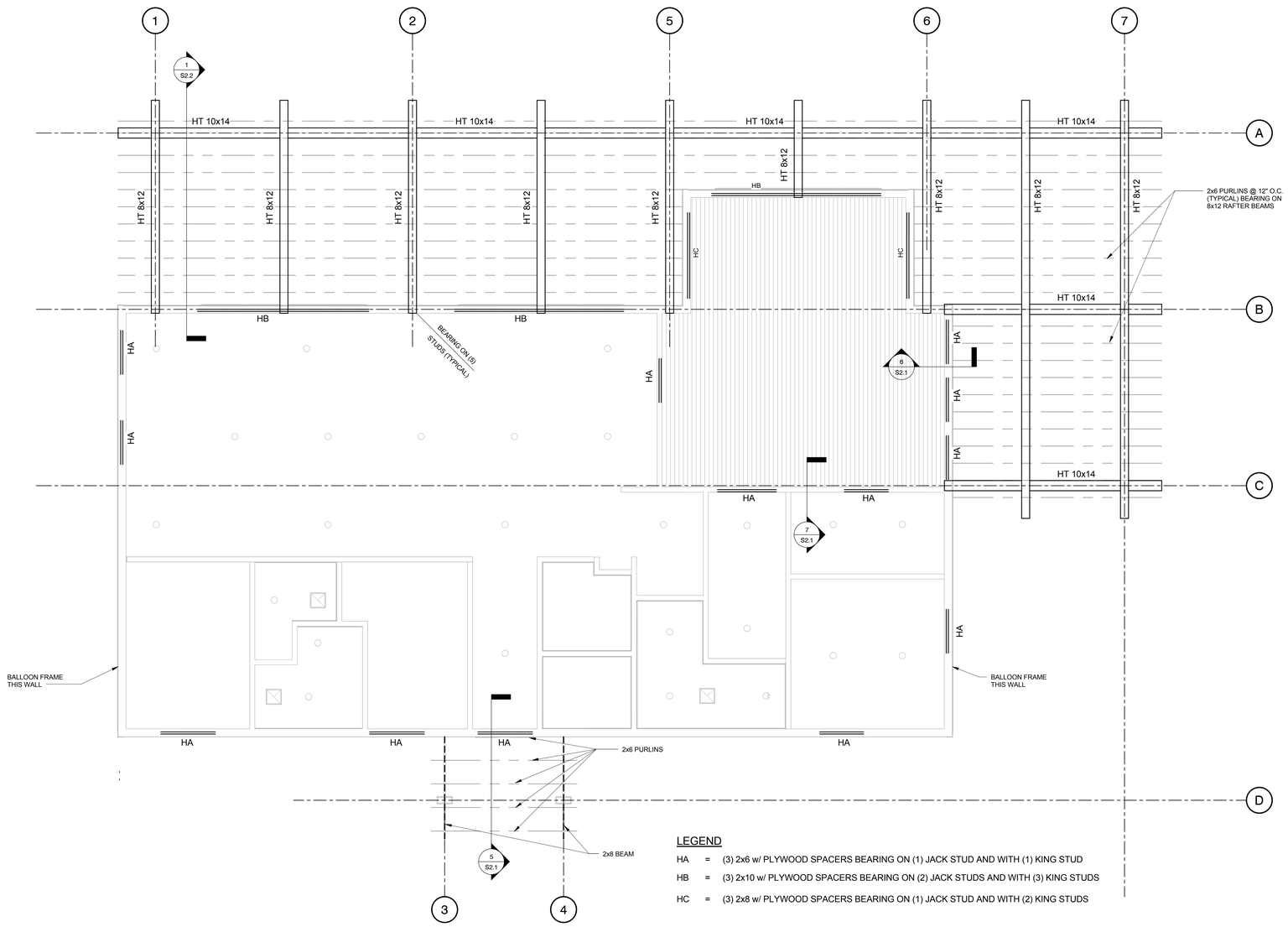

LEGEND

HA = (3) 2x6 w/ PLYWOOD SPACERS BEARING ON (1) JACK STUD AND WITH (1) KING STUD

HB = (3) 2x10 w/ PLYWOOD SPACERS BEARING ON (2) JACK STUDS AND WITH (3) KING STUDS

HC = (3) 2x8 w/ PLYWOOD SPACERS BEARING ON (1) JACK STUD AND WITH (2) KING STUDS

1 / S1.2 ROOF FRAMING PLAN (PORCHES AND HEADERS)

1/4" = 1'-0"

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CONSULTANT LOGO

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SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20477 11-25-15 AJA ARROWOOD & ARROWOOD, PC. No. C03036 CERTIFICATE OF AUTHORIZATION

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, S.C.

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY

PRINCIPAL IN CHARGE: AJA
PROJECT ARCHITECT: AJA
DRAWN BY: AP/WB

SHEET TITLE:

PORCH AND HEADER FRAMING PLAN

SHEET NO. S1.2

PROJ. NO. 015292.00

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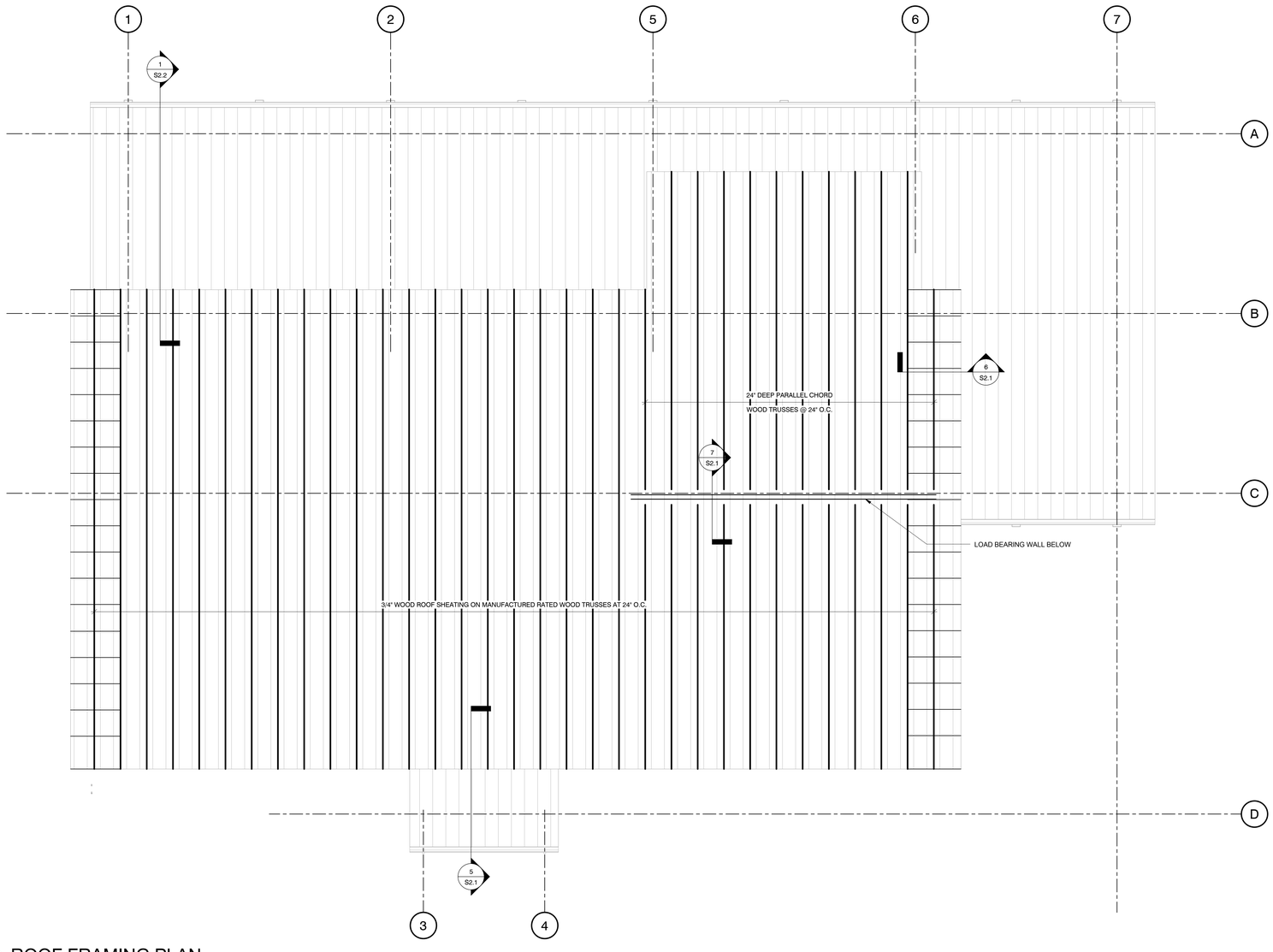

1 S1.3 ROOF FRAMING PLAN

1/4" = 1'-0"

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No. 20477
11-25-15
ANTHONY JOHN ARROWOOD

SOUTH CAROLINA
ARROWOOD & ARROWOOD, PC
No. C03036
CERTIFICATE OF AUTHORIZATION

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, S.C.

SHEET ISSUE:

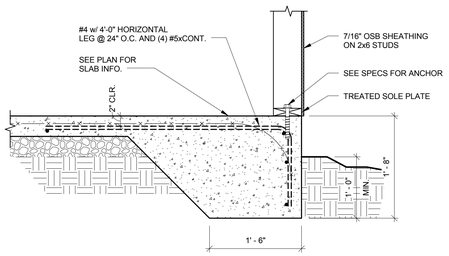
NO.	DATE	DESCRIPTION	BY

PRINCIPAL IN CHARGE: AJA
PROJECT ARCHITECT: AJA
DRAWN BY: AP/WB

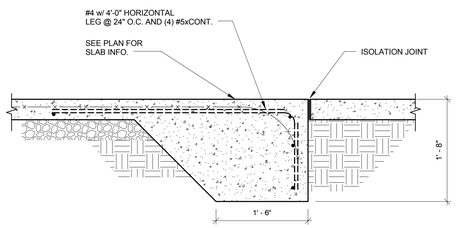
SHEET TITLE:
ROOF FRAMING PLAN

SHEET NO. S1.3

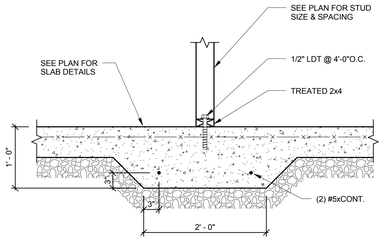
PROJ. NO. 015292.00



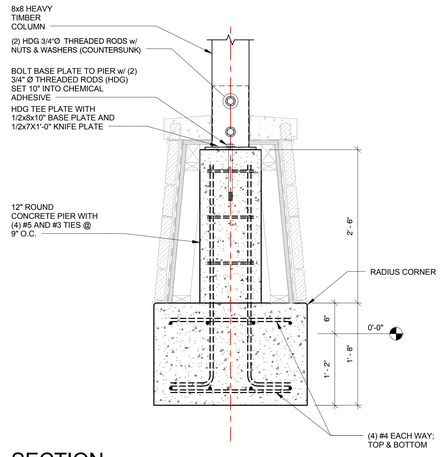
1 S2.1 THICKENED EDGE SLAB
1" = 1'-0"



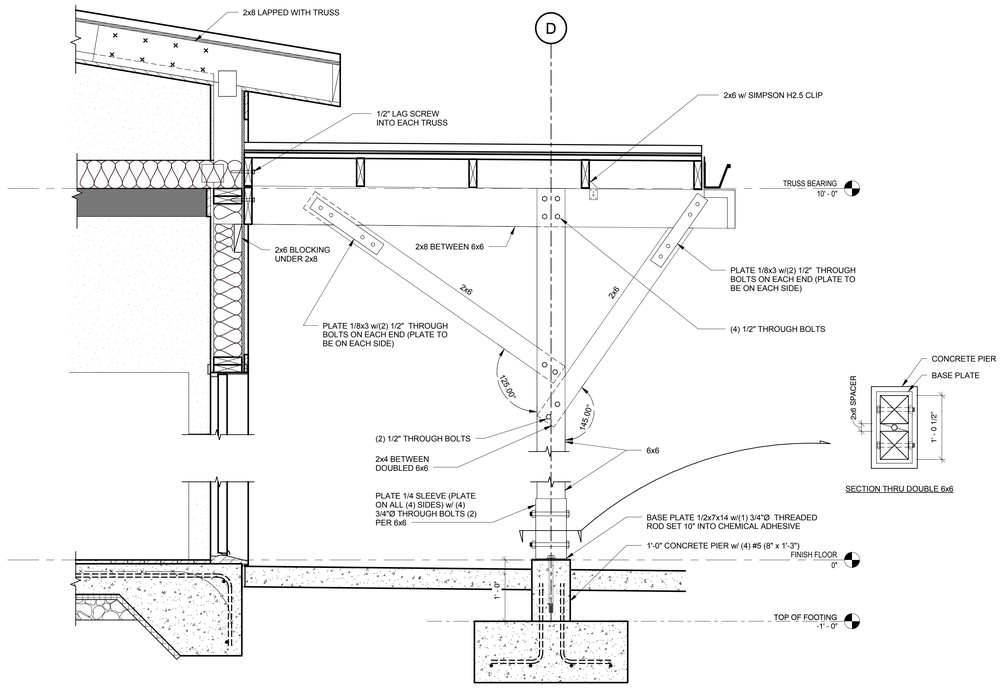
2 S2.1 THICKENED EDGE SLAB AT COVERED PORCH
1" = 1'-0"



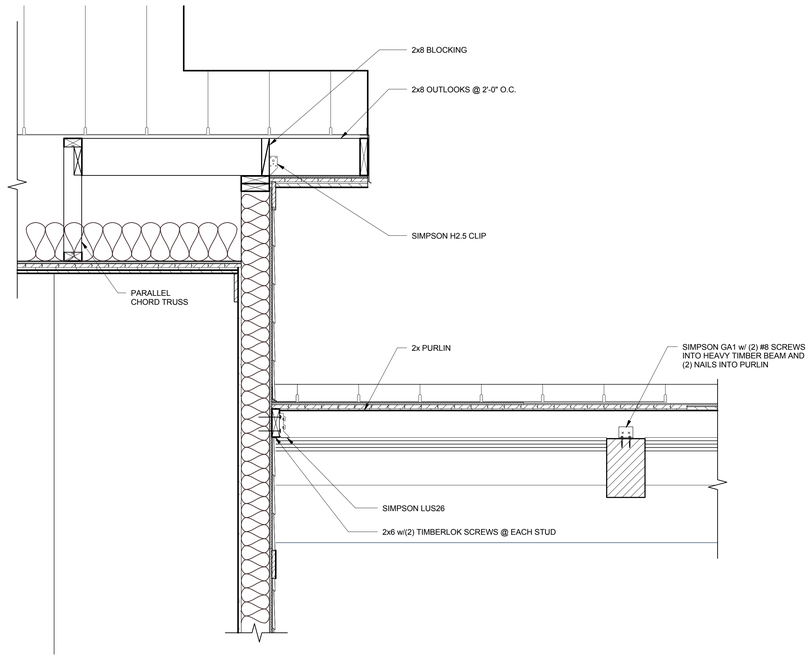
3 S2.1 THICKENED SLAB SECTION
1" = 1'-0"



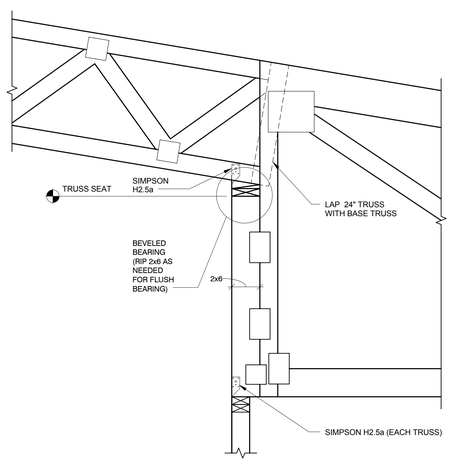
4 S2.1 SECTION
1" = 1'-0"



5 S2.1 SECTON AT CANOPY
1" = 1'-0"



6 S2.1 END WALL SECTION
1" = 1'-0"



7 S2.1 SECTION AT TRUSS SEAT
1" = 1'-0"

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SOUTH CAROLINA ARROWOOD & ARROWOOD, PC No. C03036 CERTIFICATE OF AUTHORIZATION

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, S.C.

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY

PRINCIPAL IN CHARGE: AJA
PROJECT ARCHITECT: AJA
DRAWN BY: AP/WB

SHEET TITLE:
SECTIONS & DETAILS

SHEET NO. S2.1

PROJ. NO. 015292.00

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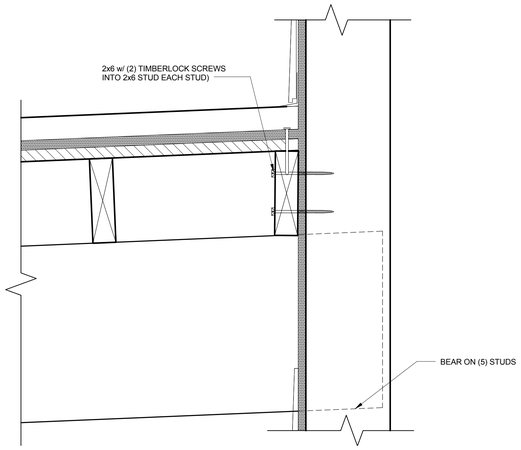
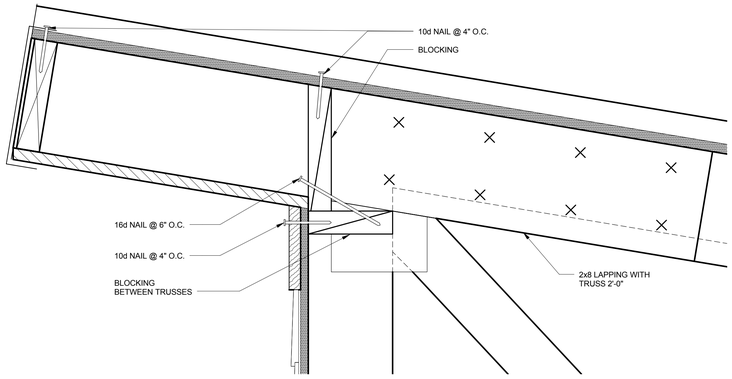
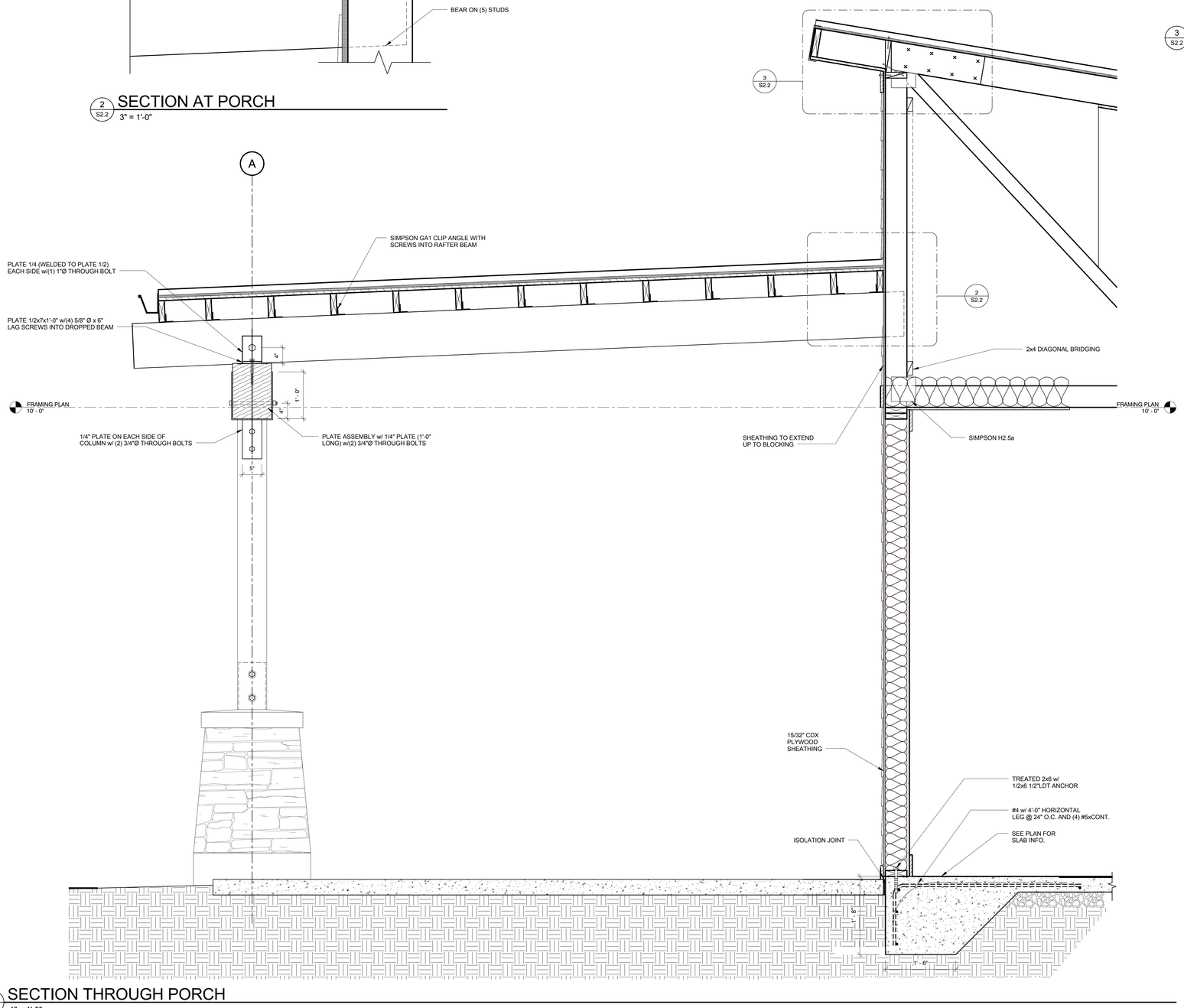


2 S2.2 SECTION AT PORCH
3" = 1'-0"



3 S2.2 SECTION AT ROOF
3" = 1'-0"



1 S2.2 SECTION THROUGH PORCH
1" = 1'-0"

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, S.C.

SHEET ISSUE:

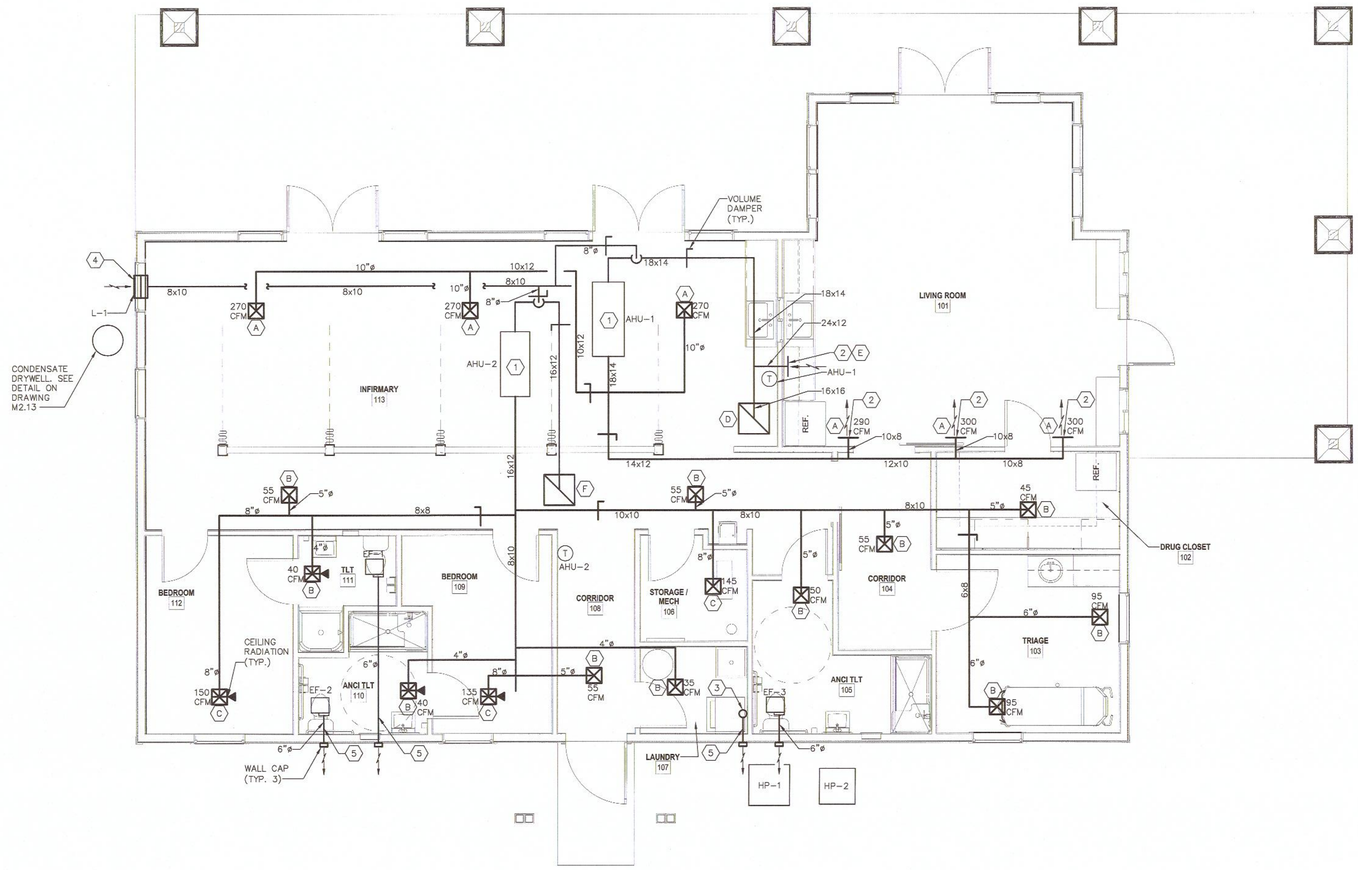
NO.	DATE	DESCRIPTION	BY

PRINCIPAL IN CHARGE: AJA
PROJECT ARCHITECT: AJA
DRAWN BY: AP

SHEET TITLE:
SECTIONS & DETAILS

SHEET NO. S2.2

PROJ. NO. 015292.00



1 HVAC PLAN
M2.11 SCALE: 1/4"=1'-0"

KEY NOTES (THIS SHEET ONLY)

1. AIR HANDLING UNIT (AHU) LOCATED IN ATTIC.
2. SUPPLY/RETURN GRILLE LOCATED ON LIVING ROOM SIDEWALL. LOCATE AS LOW AS POSSIBLE.
3. DRYER VENT THRU SIDEWALL. ROUTE PER CODE REQUIREMENTS.
4. OUTSIDE AIR INTAKE LOUVER CENTERED ABOVE WINDOW.
5. DUCTWORK TO BE NOT LESS THAN 26 GAUGE GALVANIZED STEEL SHEET.

CONDENSATE DRAINAGE NOTE:
ROUTE CONDENSATE DRAINAGE FROM AHU-1 AND AHU-2 TO CONDENSATE DRYWELL PER CODE REQUIREMENTS. SEE PLAN FOR LOCATION OF DRYWELL.

OUTSIDE AIR INTAKE NOTE:
LOCATE ALL OUTSIDE AIR INTAKES AT LEAST 10 FT. AWAY FROM EXHAUST AIR DISCHARGE.

GENERAL NOTE:
SEAL ALL PENETRATIONS THRU FIRE RATED WALLS AND CEILINGS PER CODE REQUIREMENTS.

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LEBLANC WELCH CONSULTING ENGINEERS NO.C00908
CERTIFICATE OF AUTHORIZATION
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL NO. 14869
11/24/15

CAMP COURAGE
DR. CARY E. STROUD CAMPER CARE CENTER
GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
A	2015.10.23	DESIGN DEVELOPMENT	DCB
B	2015.11.25	ISSUE FOR PERMIT	DCB

ISSUE FOR PERMIT 2015.11.25

PRINCIPAL IN CHARGE: JCL
PROJECT ENGINEER: DCB
DRAWN BY: DB

SHEET TITLE:
FIRST LEVEL
HVAC PLAN

SHEET NO. M2.11
PROJ. NO. 015292.00

10/21/2015 11:05:00 AM
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SPLIT SYSTEM HEAT PUMP SCHEDULE

UNIT NO.	SUPPLY AIR CFM	OUTSIDE AIR CFM	E.S.P. IN W.G.	INDOOR FAN H.P.	INDOOR UNIT ELECTRICAL	INDOOR UNIT MCA	INDOOR UNIT MOCP	SYSTEM COOLING					SYSTEM HEATING					AHU MODEL		OUTDOOR UNIT MODEL		OUTDOOR UNIT ELECTRICAL	OUTDOOR UNIT MCA	OUTDOOR UNIT MOCP	NOMINAL TONS	SEER	EER	REMARKS
								E.D.B. °F	E.W.B. °F	COND. °F	SENSIBLE MBH	TOTAL MBH	E.D.B. °F	OUTDOOR AMBIENT	MBH	HEATER KW	STAGES	LENNOX	NO. CIRCUITS	LENNOX	QUANTITY							
AHU-1/HP-1	1700	170	0.6	1	208/1/60	46	50	80	67	95	–	49.5	65.9	11	27.0	8.0	1	CBX27UH-048	1	14HPX048	1	208/1/60	29.0	50	4.0	15	–	1,2,3
AHU-2/HP-2	1050	110	0.8	0.5	208/1/60	32	35	80	67	95	–	30.0	65.5	11	14.8	6.0	1	CBX27UH-030	1	14HPX030	1	208/1/60	17.1	25	2.5	15	–	1,2,3

REMARKS:
1. PROVIDE SINGLE POINT CONNECTION.
2. FACTORY PROGRAMMABLE THERMOSTAT WITH CLEAR LOCKING COVER.
3. FACTORY INSTALLED THERMOSTATIC EXPANSION VALVE.

NOTE:
SIZE REFRIGERENT PIPING PER MANUFACTUER'S RECOMMENDATIONS. SIZES SHALL BE BASED ON INSTALLED PIPING DISTANCES FROM CONDENSING UNIT TO AIR HANDLING UNIT. PROVIDE ALL NECESSARY ACCESSORIES PER MANUFACTURER'S RECOMMENDATIONS.

NOTE:
ROOFTOP A/C UNIT SCHEDULE IS BASED ON UNITS AS MANUFCTURED BY LENNOX. ACCEPTABLE ALTERNATE MANUFACTURERS ARE YORK, RUUD TRANE, AND CARRIER OR AS APPROVED BY OWNER.

FOR ACCEPTABLE ALTERNATE MANUFACTURERS, CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.

OPERATING NOTES:
1. SUPPLY AIR FANS SHALL RUN CONTINUOUSLY DURING NORMALLY OCCUPIED HOURS.

GRILLE AND DIFFUSER SCHEDULE

SYMBOL	DUTY	CFM	MFR.	MODEL NO.	DIFFUSER NECK SIZE	GRILLE FACE SIZE	DISCHARGE PATTERN	SLOT LENGTH (FT.)	REMARKS
A	SUPPLY	SEE PLAN	PRICE	520D	10X8	–	–	–	1,2
B	SUPPLY	SEE PLAN	PRICE	520D	6x6	–	–	–	1,2
C	SUPPLY	SEE PLAN	PRICE	520D	8X6	–	–	–	1,2
D	RETURN	SEE PLAN	PRICE	530	16X16	–	–	–	2
E	RETURN	SEE PLAN	PRICE	530	24X12	–	–	–	2
F	RETURN	SEE PLAN	PRICE	530	24X14	–	–	–	2

NOTES:
1. PROVIDE WITH OPPOSED BLADE DAMPER.
2. COORDINATE COLOR WITH ARCHITECT.

LOUVER SCHEDULE

MARK	SERVES	MANUFACTURER	MODEL NO.	AIRFLOW CFM	PRESS. DROP IN. W.C.	LOUVER SIZE WXH	FREE AREA SQ. FT.	COMMENTS
L-1	AHU-1/AHU-2	RUSKIN	ELF6375DX	280	0.1	18"x12"	0.49	1

COMMENTS:
1. BIRDSCREEN, BACKDRAFT DAMPER.

EXHAUST FAN SCHEDULE

MARK	LOCATION	SERVICE	MANUFACTURER	MODEL NO.	CAPACITY CFM	CAPACITY ESP	HP (WATTS)	ELECTRICAL	REMARKS	OPERATING NOTES	COMMENTS
EF-1	CEILING	EXHAUST	GREENHECK	SP-B150	120	0.25	(129)	120/1/60	1	1	–
EF-2	CEILING	EXHAUST	GREENHECK	SP-B150	120	0.25	(129)	120/1/60	1	1	–
EF-3	CEILING	EXHAUST	GREENHECK	SP-B150	120	0.25	(129)	120/1/60	1	1	–

REMARKS:
1. PROVIDE WALL CAP, BACKDRADFT DAMPER, SPEED CONTROLLER AND DISCONNECT SWITCH.

OPERATING NOTES:
1. INTERLOCK WITH LIGHTS.

VENTILATION CALCULATION

AREA	SQ. FT.	NET OCCUPIABLE AREA (SQ. FT.)	OCCUPANTS	CFM PER SQ.FT.	CFM PER OCC.	REQ'D O.A. (CFM) (OCCUPANCY)	REQ'D O.A. (CFM) (AREA)	REQ'D O.A. TOTAL -VBZ (CFM) (OCCUPANCY + AREA)	ACTUAL DESIGN O.A. (CFM)	UNITS SERVED BY
INFIRMARY 113	565	339	5	–	25	125	–	125	–	AHU-1
LIVING ROOM 101	447	268	5	0.06	5	25	16	41	–	AHU-1
								TOTAL AHU-1 - 166	TOTAL AHU-1 - 170	
BEDROOMS, CORRIDOR, LAUNDRY	670	408	5	0.06	5	25	24	49	–	AHU-2
STORAGE/DRUG CLOSET	126	80	–	0.12	–	–	10	10	–	AHU-2
TRIAGE 103	140	90	2	–	25	50	–	50	–	AHU-2
								TOTAL AHU-2 - 109	TOTAL AHU-2 - 110	

MECHANICAL CODE ANALYSIS:

PROVIDE TWO SPLIT SYSTEM HEAT PUMPS. PROVIDE THREE CEILING MOUNTED EXHAUST FANS.

PERMIT DATA:

HEATING:
POWER BOILER, INCINERATORS &/OR FURNACES: NEW

OF UNITS UP TO 200,000 BTU/HR 0
OF UNITS 200,000 BTU/HR AND UP 0

HEAT PUMP OR PACKAGED UNITS UP TO 5 TON: 2
ADDITIONAL TONS FOR ALL SYSTEMS OVER 5 TONS: 0

OF GAS WATER HEATERS 0

OF UNIT, SPACE, WALL, DUCT HEATERS, OR VAV UNITS 0

OF GAS LOGS, THRU WALL UNITS, PREFAB FIREPLACE 0

REFRIGERATION – # WALK IN COOLER, FREEZERS 0

AIR CONDITIONER OR CHILLER:

UNITS UP TO 5 TONS 0

ADDITIONAL TONS FOR ALL SYSTEMS OVER 5 TONS 0

OF RANGE HOOD, EXHAUST SYSTEMS, DRYERS 3

PIPING:
INSTALLATION OF GAS PIPING: NO

REQUIRED OUTDOOR MECHANICAL VENTILATION AIR PER 2012 IMC: 275 CFM
TOTAL CFM OF OUTDOOR VENTILATION AIR PROVIDED: 280 CFM

MECHANICAL SPECIFICATIONS:

GENERAL: CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND MANAGEMENT NECESSARY OR REASONABLY INCIDENTAL TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND/OR DESCRIBED IN THE SPECIFICATIONS.

CODES AND ORDINANCES: ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE STANDARD MECHANICAL CODE OF IMC, NFPA, STATE AND LOCAL LAWS AND CODES, AND ALL LAWS, RULES AND REGULATIONS OF PUBLIC BODIES HAVING JURISDICTION.

INTERFERENCES: CONTRACTOR SHALL VISIT THE SITE AND INSPECT THE AREA WHERE THE WORK IS TO BE PERFORMED. CONTRACTOR SHALL BE RESPONSIBLE FOR ACCOMMODATING ALL INTERFERENCES WITH THE WORK, OFFSETTING, MODIFYING, AND OTHERWISE FITTING THE EQUIPMENT TO THE SPACE AVAILABLE, AND COORDINATING WITH OTHER DRAWINGS FOR CONSTRUCTION DETAILS, DIMENSIONS, INTERFERENCES, ETC.

GUARANTEE: ALL MATERIALS AND WORKMANSHIP PROVIDED SHALL BE WARRANTED AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK.

CLEAN-UP: ALL DEBRIS, RUBBISH, SCRAPS, ETC. SHALL BE CLEANED UP AT THE END OF EACH WORK DAY. AT THE COMPLETION OF THE WORK, ALL NEW CONSTRUCTION WORK AND MATERIALS SHALL BE CLEANED UP OF MARKINGS, DIRT, ETC. AND LEFT IN A CLEAN AND SIGHTLY CONDITION, READY FOR USE BY THE OWNER.

REFRIGERANT PIPING: REFRIGERANT PIPING SHALL BE HARD-DRAWN TYPE K SEAMLESS COPPER TUBING, ASTM B88-74. FITTINGS SHALL BE WROUGHT, ANSI B16-22-63, COPPER WITH A WORKING PRESSURE OF NOT LESS THAN 300 PSIG. REFRIGERANT PIPING SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION FORM EQUIPMENT MANUFACTURER AS TO THE CORRECTNESS OF THE LINE SIZES. INSULATE ALL SUCTION LINES AND FITTINGS WITH PRE-FORMED ARMAFLEX AP INSULATION, 1" THICK. USE ARMAFLEX 520 ADHESIVE ON ALL JOINTS. ALL INSULATION MATERIALS SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS, SMOKE DEVELOPED RATING OF 50 OR LESS WHEN TESTED PER ASTM E 84 & THERMAL CONDUCTIVITY OF NO GREATER THAN 0.27 (BTU*IN)/(HR*FT^2*°F) PER ASTM C. PROVIDE PIPE SLEEVES FOR REFRIGERANT AND CONDENSATE LINES PENETRATIMG EXTERIOR WALLS. SEAL VOIDS WATER-TIGHT AROUND PIPING WITH A WEATHER TIGHT PERMANENT NON-SHRINKING SEALANT. REFRIGERANT LINE SETS TO BE RUN CONTINUOUSLY BETWEEN FLOORS AND EXIT OUT OF BUILDING THROUGH EXTERIOR WALL.

CONDENSATE DRAIN PIPING: ENSURE PROPER CONDENSATE REMOVAL FROM ALL AIR HANDLING UNIT DRAINS. CONDENSATE DRAIN PIPING AND FITTING REQUIRED SHALL BE TYPE PVC. INSTALL WITHOUT ANY SAGGING TO ENSURE COMPLETE DRAINAGE. PROVIDE A P-TRAP ON CONDENSATE DRAINS AT EACH UNIT. THE CONDENSATE DRAIN SHALL BE THE SAME SIZE AS THE UNIT DRAIN CONNECTION BUT SHALL NOT BE LESS THAN ¾" DIAMETER PIPE. SLOPE CONDENSATE DRAIN PIPING MIN. ⅛" PER FOOT TOWARD DRAIN. PROVIDE MIN 1½" SECONDARY DRAIN PANS UNDER EACH AIR HANDLING UNIT. PROVIDE A FLOAT SWITCH THAT WILL SHUT-DOWN UNIT IF CONDENSATE REACHES MAXIMMUM LEVEL OF PAN.

DUCTWORK: DUCTWORK SHALL BE CONSTRUCTED OF LOCK-FORMING GALVANIZED STEEL SHEET. DUCTWORK SHALL BE CONSTRUCTED AND REINFORCED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE "HVAC DUCT CONSTRUCTION STANDARD – METAL AND FLEXIBLE" AS PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA). DUCTWORK SHALL BE CONSTRUCTED AND REINFORCED ACCORDING TO THE TABLE FOR 1" W.G. DUCT DESIGN PRESSURE. DUCT SHALL BE SUPPORTED BY STRAP HANGERS PROPERLY SECURED TO THE BUILDING STRUCTURE. ALL ELBOWS SHALL BE PROVIDED WITH APPROVED TURNING VANES.

PROVIDE MANUAL BALANCING DAMPERS FOR ALL DUCT RUN-OUTS WITH MORE THAN ONE DIFFUSER IMMEDIATELY AFTER DUCT TAKE-OFF.

MITER ELBOWS SHALL HAVE DOUBLE THICKNESS METAL TURNING VANES. FURNISH AND INSTALL SPLITTER DAMPERS, AND VOLUME DAMPERS AS REQUIRED FOR CONTROL OF AIR DISTRIBUTION AND FOR BALANCING.

DUCT INSULATION: CONCEALED SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED WITH 2" FOIL INSULATION MEETING UL-181 AND NFPA 90A SPECIFICATIONS. ALL INSULATION SHALL BE VAPOR SEALED PER MANUFACTURER'S RECOMMENDATIONS.

FLEXIBLE DUCTWORK: **MAXIMUM 6 FT.** FLEX DUCT SHALL BE ALLOWED TO CONNECT TO DIFFUSERS WHERE CONCEALED ABOVE CEILINGS. FLEXIBLE ROUND DUCT SHALL BE EQUAL TO FLEXMASTER TYPE 5, THERMAL CONDUCTANCE .23, WITH TRILAMINATE LINER BONDED TO GALVANIZED HELIX AND FIRE RETARDANT POLYETHYLENE OUTER LINER.

DUCT ROUTING: WHERE CLEARANCE ABOVE CEILING OR INTERFERENCES PREVENT DIFFUSER CONNECTIONS EXACTLY AS SHOWN ON DRAWINGS, RELOCATE DUCTS OR DIFFUSERS NOT MORE THAN 2 FEET TO FACILITATE INSTALLATION. SHOW CHANGES ON SHOP DRAWING SUBMITTALS FOR APPROVAL.

HVAC SYSTEM CONTROL WIRING SHALL BE PROVIDED BY THE HVAC CONTRACTOR AND SHALL MEET IMC AND NEC REQUIREMENTS. HVAC CONTROL SYSTEMS SHALL PROVIDE A COMPLETE AND OPERABLE SYSTEM OF TEMPERATURE CONTROL.

CONTRACTOR SHALL ARRANGE ROOFTOP A/C UNITS TO PROVIDE EFFICIENT CONNECTION OF S.A. AND R.A. DUCTS. ANY CHANGE IN SIZE, WEIGHT, LOCATION, OR ARRANGEMENT OF HVAC EQUIPMENT SHALL BE EVALUATED BY THE HVAC CONTRACTOR FOR BUILDING LOADING, STRUCTURAL INTEGRITY OF THE SUPPORT SYSTEM, DUCT CONNECTIONS, AND GAS AND ELECTRICAL SERVICES, AND HE SHALL SUBMIT REVISED DRAWINGS AND DETAILS TO ACCOMMODATE THE CHANGES.

TESTING AND BALANCING: TESTING AND BALANCING SHALL BE PERFORMED BY AN EXPERIENCED TESTING AND BALANCING FIRM. ALL TESTING AND BALANCING SHALL BE IN ACCORDANCE WITH SMACNA "HVAC TESTING, ADJUSTING AND BALANCING MANUAL; 1993 EDITION." TESTS SHALL BE MADE TO DETERMINE THAT THE COMPLETE AIR CONDITIONING SYSTEM IS OF SPECIFIED CAPACITY AND THAT ALL CONTROLS WILL OPERATE IN SEQUENCE. TEST RESULTS SHALL BE SIGNED AND CERTIFIED BY THE TESTING FIRM AND SUBMITTED TO THE OWNER. THE TESTING AND BALANCING CONTRACTOR (ALONG WITH THE CONTROLS CONTRACTOR) SHALL COME BACK DURING THE SUMMER AND MAKE SURE EVERYTHING IS FINCTIONING PROPERLY.

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11/4/15

CAMP COURAGE
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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
A	2015.10.23	DESIGN DEVELOPMENT	DCB
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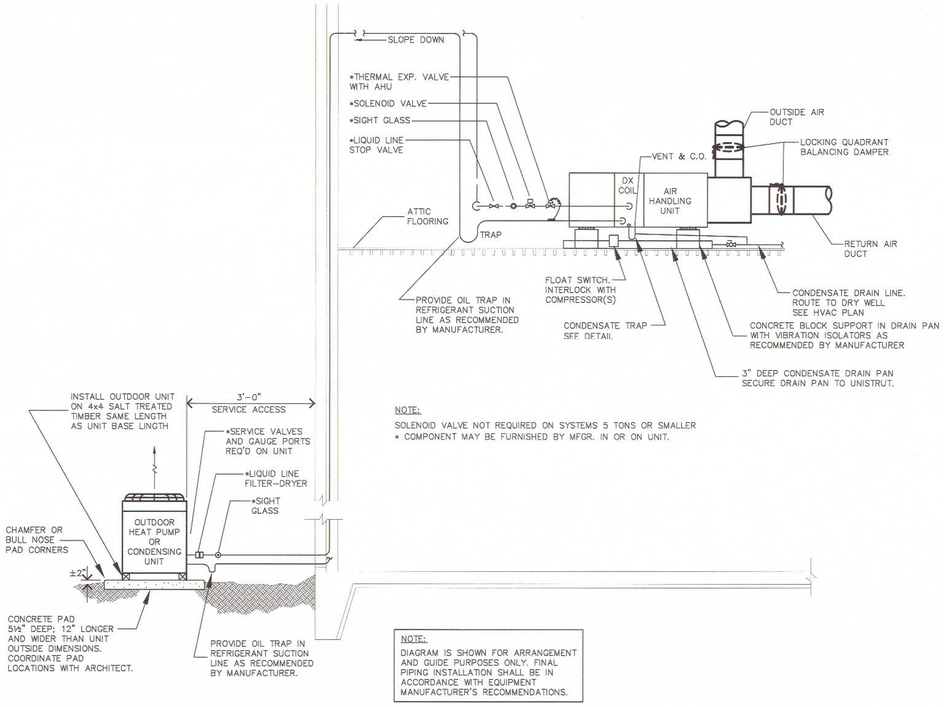
ISSUE FOR PERMIT 2015.11.25

PRINCIPAL IN CHARGE: JCL
PROJECT ENGINEER: DCB
DRAWN BY: DB

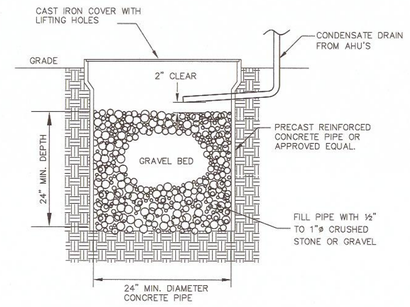
SHEET TITLE:
HVAC SCHEDULES & SPECIFICATIONS

SHEET NO. M2.12
PROJ. NO. 015292.00



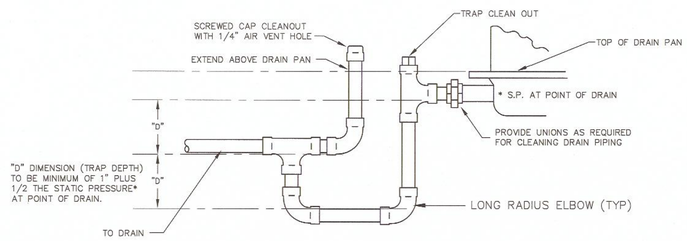
TYPICAL SPLIT SYSTEM REFRIGERANT PIPING DIAGRAM

SCALE : NONE



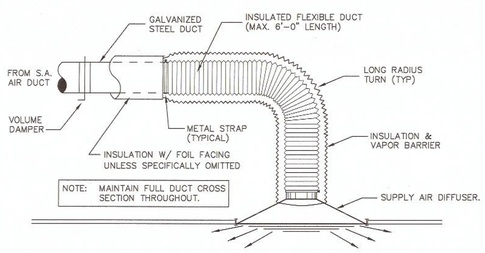
CONDENSATE DRYWELL DETAIL

SCALE: NONE



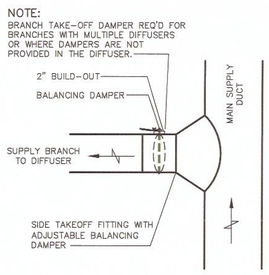
CONDENSATE DRAIN TRAP FOR DRAW-THRU COILS

SCALE: NONE



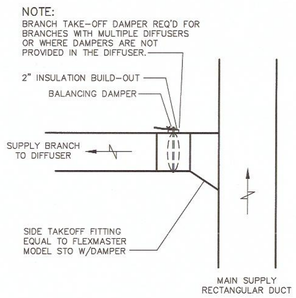
FLEXIBLE DUCT TO DIFFUSER DETAIL

SCALE: NONE



ROUND TO ROUND DIFFUSER BRANCH TAKEOFF DETAIL

SCALE: NONE



SQUARE TO ROUND DIFFUSER BRANCH TAKEOFF DETAIL

SCALE: NONE

HVAC LEGEND

- CEILING MTD SUPPLY DIFFUSER
- CEILING MTD RETURN OR EXHAUST DIFFUSER
- SIDEWALL MOUNTED SUPPLY GRILLE
- SIDEWALL MOUNTED RETURN GRILLE
- (T) THERMOSTAT
- FIRE DAMPER
- VOLUME DAMPER
- SUPPLY, RETURN, EXHAUST, OR OUTSIDE AIR DUCT
- —— C —— CONDENSATE DRAIN LINE
- AHU AIR HANDLING UNIT
- HP HEAT PUMP
- EF EXHAUST FAN
- OAH OUTSIDE AIR INTAKE HOOD
- L LOUVER

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NO.14380 — NORTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — DAVID COLTON BOND

David C. Bond

11/24/15

CAMP COURAGE

DR. CARY E. STROUD CAMPER CARE CENTER

GREENVILLE, SC

SHEET ISSUE:

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HVAC DETAILS

SHEET NO. M2.13

PROJ. NO. 015292.00

10/29/2015 11:49:09 AM
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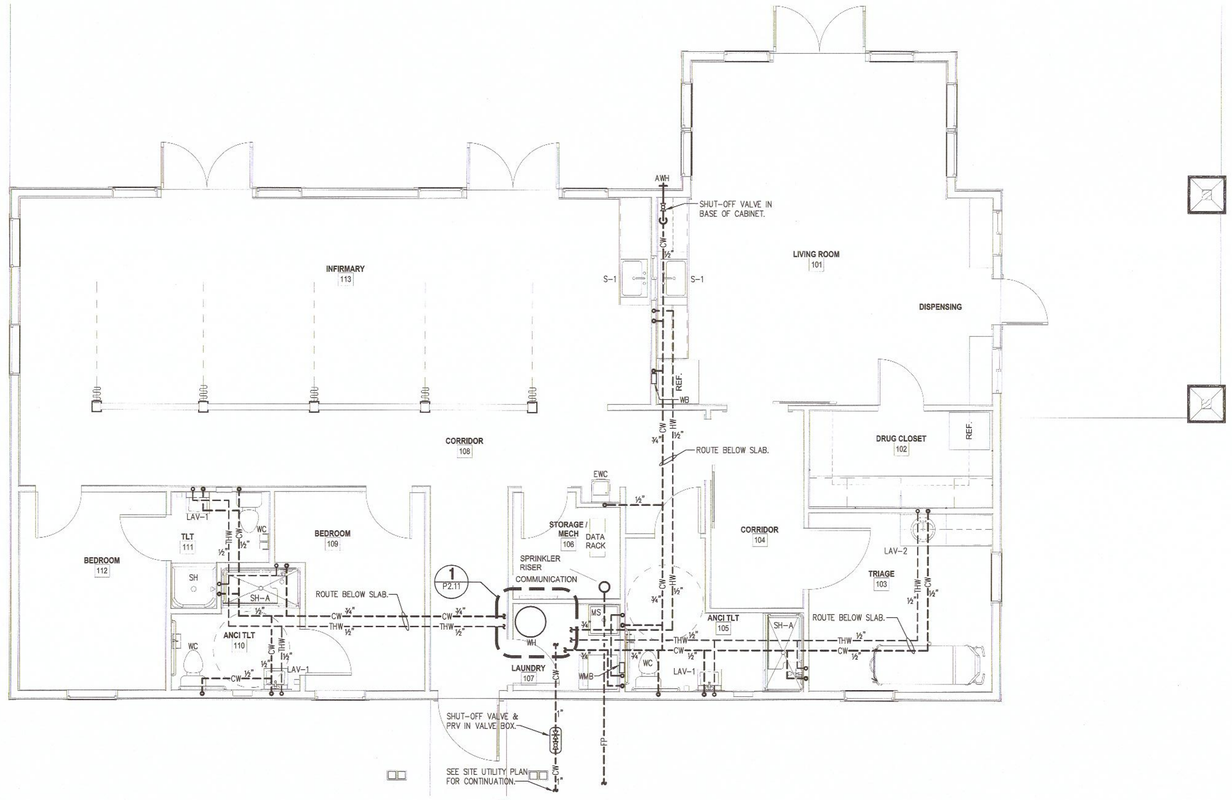
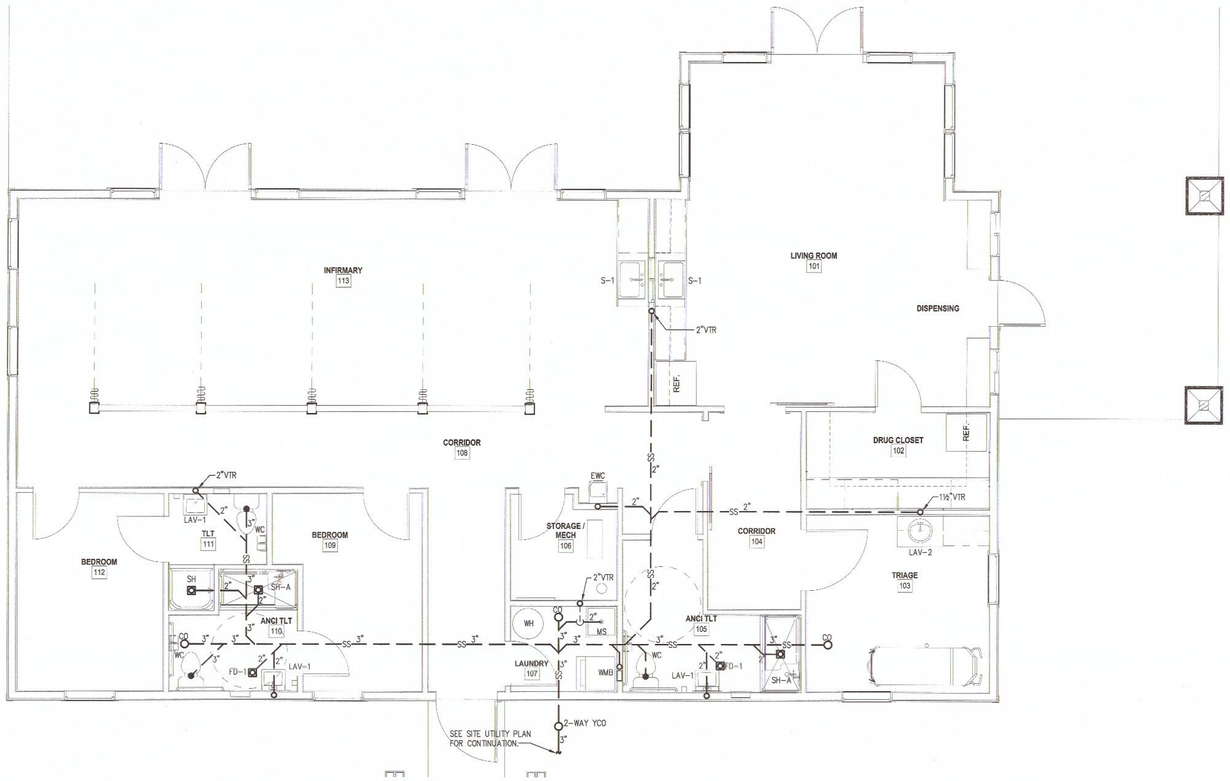


1 PLUMBING SUPPLY PLAN
P2.11 SCALE: 1/4"=1'-0"



2 PLUMBING WASTE PLAN
P2.11 SCALE: 1/4"=1'-0"

PLUMBING CODE ANALYSIS

SCOPE OF WORK:
PERMIT DATA:
OF FIXTURES: 15
(COUNT ALL THAT HAVE A SUPPLY AND A DRAIN)
SEPTIC: NEW EXISTING
SEWER: NEW EXISTING
OF LF OF DRAIN/WASTE: NA
(PERMITTING UNDERGROUND ONLY, OR REPAIRS)
OF LF STORM DRAIN LINES: NA
(INCLUDES LEADERS/DOWNSPOUTS)

PLUMBING FIXTURE DATA:
OF WATER CLOSETS: M: ___ F: ___ UNISEX: 3
OF URINALS: M: 0 F: 0 UNISEX: 0
OF LAVATORIES: M: ___ F: ___ UNISEX: 3
OF BATHTUB/SHOWERS: 3
OF DRINKING FOUNTAINS: 1
(MINIMUM OF ONE HIGH/LOW ACCESSIBLE UNIT)
OF SERVICE SINKS: 1
OF WATER HEATERS: 1
OF GREASE TRAP: 0
OF FLOOR DRAINS WITH PRIMERS: 0
OF WASHING MACHINES: 1
OF KITCHEN SINKS: 0
OF LAB SINKS: 0
OF MISCELLANEOUS: 2
TOTAL DRAINAGE FIXTURE UNITS IPC TABLE 709.1: 25
(SUM OF ALL FIXTURES)

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PROJECT ENGINEER: DCB
DRAWN BY: NSC

SHEET TITLE:
FIRST LEVEL PLUMBING PLAN

SHEET NO. P2.11
PROJ. NO. 015292.00

10/26/2015 11:05:05 AM
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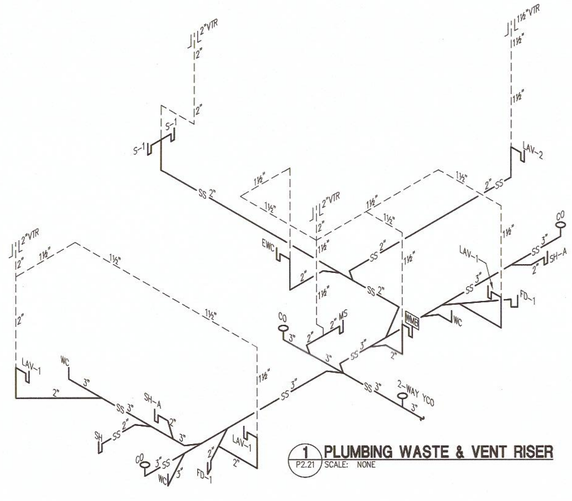
PLUMBING FIXTURE SCHEDULE

EQUIPMENT ID	MANUFACTURER	MODEL NO.	DESCRIPTION
AWH	JOSAM	71050	ANTI-FREEZE WALL HYDRANT: NON-FREEZE TYPE WITH 3/4" H.P.T. OUTLET, VACUUM/BACKFLOW PREVENTER AND PRESSURE RELIEF VALVE, LENGTH TO SUIT WALL THICKNESS MOUNTED 18" ABOVE GRADE.
CO	SIOUX CHIEF	FINISH LINE SERIES 834	FLOOR CLEANOUT: PROVIDE ACCESSORIES AS REQUIRED TO MATCH FLOOR FINISH.
EWC	ELKAY	EZSTL8C	ADA SPLIT-LEVEL WATER COOLER: FURNISH 1¼" P-TRAP & MCGUIRE STANDARD SERIES SUPPLY AND STOP WITH BRASS STEM.
FD-1	MIFAB	F1000	GENERAL FLOOR DRAIN: ADJUSTABLE ON-GRADE, ROUND PATTERN 6" STAINLESS STEEL STRAINER.
	SURE SEAL	SS SERIES	PREASSEMBLED INLINE FLOOR DRAIN TRAP SEALER. SIZE TO MATCH DRAIN OUTLET SIZE.
LAV-1 (ADA)	KOHLER	K-2005 "KINGSTON"	WALL-MOUNT LAVATORY: 21"x18", FAUCET HOLES ON 4" CENTERS, COLOR WHITE.
	T&S BRASS	B-2711-F05	LAVATORY FAUCET: SINGLE LEVER HANDLE, 0.5 GPM AERATOR.
	MCGUIRE		STANDARD SERIES LAVATORY SUPPLY KIT WITH BRASS STEMS.
	JOSAM		CONCEALED ARM LAVATORY SUPPORT SYSTEM.
	TRUEBRO	LAV GUARD 2	UNDER SINK PROTECTION: FOR ALL EXPOSED DRAIN PIPING, HOT/COLD STOPS AND SUPPLIES, INSULATION SHALL HAVE INTERNAL, E-Z TEAR-TO-FIT TRIM, E-Z GRIP FASTENERS.
LAV-2 (ADA)	KOHLER	K-2196-4 "PENNINGTON"	COUNTERTOP LAVATORY: SELF-RIMMING, FAUCET HOLES ON 4" CENTERS, COLOR WHITE.
	T&S BRASS	B-2711-F05	LAVATORY FAUCET: SINGLE LEVER HANDLE, 0.5 GPM AERATOR.
	MCGUIRE		STANDARD SERIES LAVATORY SUPPLY KIT WITH BRASS STEMS.
	TRUEBRO	LAV GUARD 2	UNDER SINK PROTECTION: FOR ALL EXPOSED DRAIN PIPING, HOT/COLD STOPS AND SUPPLIES, INSULATION SHALL HAVE INTERNAL, E-Z TEAR-TO-FIT TRIM, E-Z GRIP FASTENERS.
MS	FLORESTONE	MSR-2424	MOP BASIN: INCLUDE MR-370 HOSE & CLAMP; MR-372 MOP HANGER; MR-373 STAINLESS STEEL RIM GUARD; AND MR-377 WALLGUARD PANELS.
	T & S BRASS	B-0665-BSTP	MOP SINK FAUCET: WITH VACUUM BREAKER, BUILT-IN STOPS, LEVER HANDLES, HOSE OUTLET, AND BUCKET HOOK WITH BRACE.
PRV	WATTS	25AUB-Z3	PRESSURE REDUCING VALVE. PROVIDE SIZE PER MANUFACTURER'S SIZING GUIDE.
S-1	ELKAY	LR3122	SINGLE BOWL TOP MOUNT GRIP-RIM BAR SINK: 31x22 18-GAUGE 304 STAINLESS STEEL, TWO HOLE FAUCET PUNCHING, UNDERCOATING.
	T&S BRASS	B-0326	SINK FAUCET: DECK MOUNT, 4" CENTERS, RIGID GOOSENECK SPOUT, LEVER HANDLES.
	MCGUIRE		CRUMB CUP STRAINER: STAINLESS STEEL WITH REMOVABLE BASKET AND 1½"x4" TAILPIECE.
	MCGUIRE		STANDARD SERIES STOPS WITH BRASS STEMS, 1½" P-TRAP.
SH	AQUATIC	1363CNT	36"x36"x78" GELCOAT SHOWER MODULE: WITH BRASS DRAIN, 6" SKIRT HEIGHT, FACTORY INSTALLED GRAB BARS, CURTAIN ROD, BUILT-IN SOAP SHELVES, SLIP RESISTANT BOTTOM.
SHV	SYMMONS	C-96-1-X	SHOWER PRESSURE-BALANCING MIXING VALVE: WITH INTEGRAL SERVICE STOPS, ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN, 2.5 GPM SHOWER HEAD WITH BRASS BALL JOINT ADJUSTABLE SPRAY. PROVIDE REVERSE CORE OPTION AS NEEDED FOR BACK TO BACK INSTALLATIONS.
SH-A (ADA)	AQUATIC	1623BFSTD	60"x30"x75" GELCOAT ADA SHOWER MODULE: WITH BRASS DRAIN, BARRIER-FREE DESIGN, L-SHAPED FOLD-UP SEAT, POWDER-COATED WHITE GRAB BARS, CURTAIN ROD, SOAP DISH, SLIP RESISTANT BOTTOM. COORDINATE LEFT OR RIGHT FIXTURE WALL WITH ARCHITECTURAL PLANS.
SHV-A (ADA)	SYMMONS	C-96-500-B30-V-X	SHOWER PRESSURE-BALANCING MIXING VALVE: WITH LEVER HANDLE, INTEGRAL SERVICE STOPS, ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN, LEVERTROL DIVERTER WITH INTEGRAL VOLUME CONTROL, CAST BRASS ADJUSTABLE SPRAY SHOWER HEAD WITH ARM AND FLANGE. WALL/HAND SHOWER WITH FLEXIBLE METAL HOSE, IN-LINE VACUUM BREAKER, WALL CONNECTION AND FLANGE. 30" SLIDE BAR FOR HAND SHOWER MOUNTING. PROVIDE REVERSE CORE OPTION AS NEEDED FOR BACK TO BACK INSTALLATIONS.
TMV	LEONARD	270-LF	THERMOSTATIC MIXING VALVE: 10 PSI LOSS AT 5.5 GPM. 0.25 GPM MINIMUM FLOW. SET TEMPERED WATER AT 115°F. MOUNT ABOVE CEILING.
WB	SIOUX CHIEF	OX BOX SERIES 696-1010	WATER SUPPLY WALL BOX WITH MINI-RESTER WATER HAMMER ARRESTER.
WC (ADA)	KOHLER	K-3979 "HIGHLINE"	WATER CLOSET: 1.6 GPF, UNIVERSAL HEIGHT, FLOOR MOUNTED, ELONGATED BOWL, TANK & FITTINGS, WHITE VITREOUS CHINA.
	BEMIS	1955SSCT	OPEN FRONT SEAT WITH CHECK HINGE AND STAINLESS STEEL POSTS.
	MCGUIRE		STANDARD SERIES CLOSET SUPPLY KIT WITH BRASS STEM.
WCO	JOSAM	58600	WALL CLEANOUT WITH COVER PLATE, SCREW AND THREADED BRONZE PLATE.
WH	A.O. SMITH	DEN-80	ELECTRIC WATER HEATER: 80 GALLON TANK, 6500 WATT ELEMENT, 208V/1ø/60. FURNISH WITH WATTS VACUUM RELIEF VALVE ON COLD WATER RISER, SAFETY DRAIN PAN AND DRAIN LINE.
	AMTROL	"THERM-X-TROL" ST-12	EXPANSION TANK. 4.4 GALLONS TOTAL VOLUME.
WMB	SIOUX CHIEF	OX BOX SERIES 696-2313	WASHING MACHINE WALL BOX WITH MINI-RESTER WATER HAMMER ARRESTERS. PROVIDE COLD WATER, HOT WATER, AND WASTE CONNECTION TO BOX.
YCO	JOSAM	58900	YARD CLEANOUT.

NOTE: ALTERNATE EQUAL MANUFACTURERS ARE ACCEPTABLE.

PLUMBING ROUGH-IN SCHEDULE

EQUIPMENT ID	SERVICE	FIXTURE	CW	THW	HW	WASTE	VENT	COMMENTS
AWH	EXTERIOR	WALL HYDRANT	1/2"		–	–	–	
CO		FLOOR CLEANOUT				VARIES		INSTALL FLUSH WITH FINISHED FLOOR.
EWC	GENERAL	WATER COOLER	1/2"			1 1/4"	1 1/4"	
LAV-1	RESTROOM	ADA LAVATORY	1/2"	1/2"		1 1/4"	1 1/4"	
LAV-2	RESTROOM	ADA LAVATORY	1/2"	1/2"		1 1/4"	1 1/4"	
MS	JANITOR	JANITOR SINK	1/2"		1/2"	2"	1 1/2"	
S-1	GENERAL	PANTRY SINK	1/2"		1/2"	1 1/2"	1 1/2"	
SH	TLT 111	SHOWER	1/2"	1/2"		2"	1 1/4"	
SH-A	TLT 105, 110	ADA SHOWER	1/2"	1/2"		2"	1 1/4"	
WB	GENERAL	WATER SUPPLY BOX	1/2"					
WC	RESTROOMS	ADA WATER CLOSET	1/2"			3"	1 1/2"	
WH	MECH	WATER HEATER	3/4"		3/4"	–	–	
WMB	LAUNDRY	WALL BOX	1/2"		1/2"	2"	1 1/2"	



1 P2.21 PLUMBING WASTE & VENT RISER
SCALE: NONE

PLUMBING SPECIFICATIONS:

GENERAL:

CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND MANAGEMENT NECESSARY OR REASONABLY INCIDENTAL TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND/OR DESCRIBED IN THE SPECIFICATIONS.

CODES AND ORDINANCES:

ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE OWNER'S INSURANCE CARRIER, NFPA CODES, STATE AND LOCAL LAWS AND CODES, AND ALL LAWS, RULES AND REGULATIONS OF PUBLIC BODIES HAVING JURISDICTION.

INTERFERENCES:

PRIOR TO RUNNING ANY PIPING THE PLUMBING CONTRACTOR SHALL VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS IN THE FIELD. PLUMBING DESIGN IS SCHEMATIC IN NATURE, REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND FOR EXACT LOCATIONS OF FIXTURES/EQUIPMENT. CONTRACTOR SHALL VISIT THE SITE AND INSPECT THE AREA WHERE THE WORK IS TO BE PERFORMED. CONTRACTOR SHALL BE RESPONSIBLE FOR ACCOMMODATING ALL INTERFERENCES WITH THE WORK, OFFSETTING, MODIFYING, AND OTHERWISE FITTING THE NEW EQUIPMENT TO THE SPACE AVAILABLE

GUARANTEE:

ALL MATERIALS AND WORKMANSHIP PROVIDED SHALL BE WARRANTED AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK.

CLEAN-UP:

ALL DEBRIS, RUBBISH, SCRAPS, ETC. SHALL BE CLEANED UP AT THE END OF EACH WORK DAY. AT THE COMPLETION OF THE WORK, ALL NEW CONSTRUCTION WORK AND MATERIALS SHALL BE CLEANED UP OF MARKINGS, DIRT, ETC. AND LEFT IN A CLEAN AND SIGHTLY CONDITION, READY FOR USE BY THE OWNER.

PIPING MATERIALS:

POTABLE WATER:
COPPER PIPE: SHALL BE ASTM B 88 HARD DRAWN TEMPER COPPER, TYPE L OR K. FITTINGS SHALL BE ANSI B 16.22, WROUGHT COPPER, SOLDER JOINT OR PRESS-CONNECT FITTINGS WITH EPDM SEALING ELEMENT AND SMART CONNECT (SC) FEATURE. FOR SOLDER JOINTS, JOINTS SHALL BE MADE USING NON-CORROSIVE FLUX AND SOLDER COMPOUND MEETING NSF REQUIREMENTS FOR USE ON POTABLE WATER PIPING. PIPE ENDS SHALL BE CUT SQUARE AND CLEANED TO A BRIGHT METAL FINISH BEFORE SOLDERING. FOR UNDERGROUND APPLICATIONS, ASTM B 88 SOFT ANNEALED TEMPER COPPER, TYPE L OR K IS ACCEPTABLE.

PIPE INSULATION:
ALL PRESSURE TESTING SHALL BE COMPLETED BEFORE PIPING CAN BE INSULATED. ALL COLD AND HOT WATER PIPING ABOVE AND BELOW THE FLOOR SLABS, ENCLOSED IN WALLS, AND ROUTED ABOVE CEILING SHALL BE INSULATED. COLD WATER SHALL BE 1/2" THICK, HOT WATER AND CIRCULATED HOT WATER SHALL BE 1" THICK ARMAFLEX INSULATION AS MANUFACTURED BY ARMACELL LLC. ALL JOINTS AND SEAMS SHALL BE COMPLETELY SEALED WITH THE MANUFACTURER'S RECOMMENDED ADHESIVE TO PREVENT HEAT TRANSFER AND CONDENSATION. FLAME SPREAD AND SMOKE-DEVELOPED INDEXES SHALL NOT EXCEED 25/50.

ALL CAST IRON PIPE AND FITTINGS:

HUB AND SPIGOT: SHALL BE SERVICE WEIGHT CAST IRON SOIL PIPE AND FITTINGS MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND LISTED BY NSF INTERNATIONAL.

HUBLESS: SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888, AND CISPI STANDARD 301. ALL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND LISTED BY NSF INTERNATIONAL.

SANITARY SEWER WASTE AND VENT ABOVE GROUND:

HUB AND SPIGOT CAST IRON: JOINTS SHALL BE MADE USING A COMPRESSION GASKET MANUFACTURED FROM AN ELASTOMER MEETING THE REQUIREMENTS OF ASTM C 564.

HUBLESS CAST IRON: JOINTS SHALL BE MADE USING STANDARD DUTY, SHIELDED, STAINLESS-STEEL COUPLINGS CONFORMING TO CISPI-310 AND BE MARKED NSF; WITH STAINLESS-STEEL CORRUGATED SHIELD OF NOT LESS THAN .010" THICKNESS, STAINLESS-STEEL BANDS HAVING 4 SEALING CLAMPS FOR PIPE SIZES 1-1/2" THRU 4" AND 6 SEALING CLAMPS FOR PIPE SIZES 5" THRU 10" INSTALLED WITH A PRE-SET TORQUE WRENCH CALIBRATED AT 80 INCH POUNDS, AND ASTM C-564, RUBBER SLEEVE.

SCHEDULE 40 PVC DRAIN, WASTE AND VENT (DWV) PIPE AND FITTINGS: ASTM D-2665 WITH SOLVENT CEMENT JOINTS INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. (PVC SHALL NOT BE USED IN PLENUM SPACES WITHOUT APPROPRIATE PLENUM WRAP.)

SANITARY SEWER WASTE AND VENT BELOW GROUND:

HUB AND SPIGOT CAST IRON: JOINTS SHALL BE MADE USING A COMPRESSION GASKET MANUFACTURED FROM AN ELASTOMER MEETING THE REQUIREMENTS OF ASTM C 564.

HUBLESS CAST IRON: JOINTS SHALL BE HEAVY DUTY CONFORMING TO ASTM C-1540, WITH HEAVY DUTY TYPE 304 STAINLESS STEEL SHIELDED COUPLINGS WITH CORRUGATED STAINLESS STEEL SHIELD OF NOT LESS THAN .016" THICKNESS, STAINLESS STEEL BANDS HAVING 4 SEALING CLAMPS FOR PIPE SIZES 1-1/2" THRU 4" AND 6 SEALING CLAMPS FOR PIPE SIZES 5" THRU 10" INSTALLED WITH A PRE-SET TORQUE WRENCH CALIBRATED AT 80 INCH POUNDS, AND ASTM C-564, RUBBER SLEEVE.

SCHEDULE 40 PVC DRAIN, WASTE AND VENT (DWV) PIPE AND FITTINGS, ASTM D-2665 WITH SOLVENT CEMENT JOINTS INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. BURIED PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D 2321 AND ASTM F 1668.

PIPE PAINTING:

ALL UN-INSULATED STEEL PIPING SHALL BE THOROUGHLY CLEANED, PRIMED AND PAINTED. PIPE CLEANING SOLVENT SHALL BE A NON-OILY SOLVENT EQUAL TO STOODARD SOLVENT OR HI-FLASH COAL TAR NAPHTHA. PRIME COATING MATERIAL SHALL BE ALKYD ZINC CHROMATE. FINISH MATERIAL SHALL BE ALUMINUM ALKYD PAINT. SURFACE PREPARATION AND PAINT APPLICATION SHALL BE IN STRICT ACCORDANCE WITH PAINTING MANUFACTURER'S RECOMMENDATIONS.

PIPE GRADING:

ALL SANITARY DRAIN PIPING SHALL BE RUN AT A UNIFORM SLOPE OF APPROXIMATELY 1/4" PER FOOT FOR 3" AND SMALLER AND 1/8" PER FOOT FOR 4" AND LARGER INSIDE THE BUILDING. INVERTS SHALL BE CHECKED AT ALL STARTING POINTS AND POINTS LEAVING THE BUILDING PRIOR TO STARTING WORK.

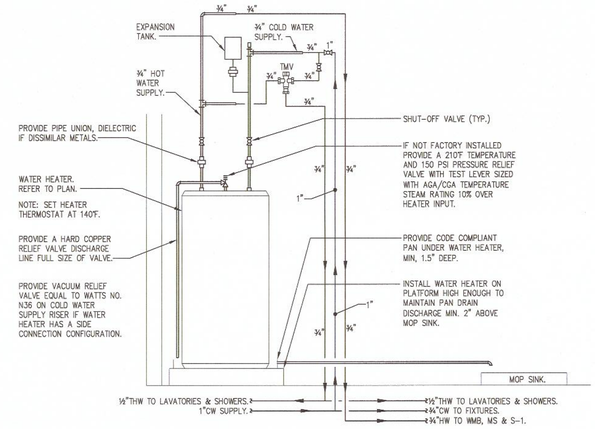
PIPE TESTING:

POTABLE WATER: ALL WATER PIPING SHALL BE TESTED BEFORE COVERING. PIPING SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC TEST AT 150 PSI AND SHALL REMAIN TIGHT FOR A PERIOD OF AT LEAST TWO (2) HOURS. TESTS SHALL COMPLY TO AWWA STANDARD C-60-77, SECTION 4.1.

SANITARY SEWER: SANITARY SEWER PIPING SHALL BE TESTED BEFORE COVERING. ALL OPENINGS, EXCEPT HIGHEST VENT SHALL BE PLUGGED AND THE SYSTEM FILLED WITH WATER TO 10'-0" ABOVE HIGHEST FIXTURE CONNECTED. SYSTEM SHALL STAND WITHOUT LEAK OR LOSS OF WATER FOR A PERIOD OF NOT LESS THAN FOUR (4) HOURS.

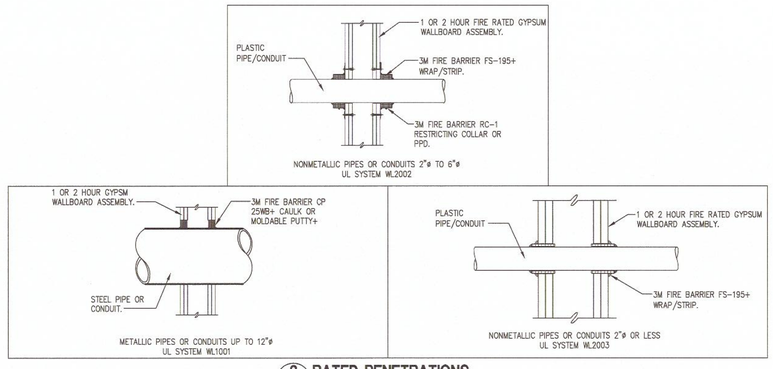
DISINFECTION & STERILIZATION:

THE COMPLETE WATER SUPPLY PIPING SYSTEM SHALL BE PURGED AND DISINFECTED, BEGINNING AT THE METER CONNECTION, IN ACCORDANCE WITH THE APPLICABLE PARAGRAPHS OF AWWA C651 OR C652, "STANDARD PROCEDURE FOR DISINFECTION OF WATER LINES" OR SECTION 610 IN THE 2012 NORTH CAROLINA PLUMBING CODE WHICHEVER IS MORE STRINGENT. THE SYSTEM SHALL BE COMPLETELY FLUSHED OUT WITH CLEAN, POTABLE WATER FOLLOWING PURGING AND DISINFECTION. THE REGIONAL HEALTH DEPARTMENT OR WATER COMPANY SHALL BE NOTIFIED WHEN THE SYSTEM IS TO BE DISINFECTED. THE TESTS SHALL BE OPEN TO INSPECTION FOR ALL AGENCIES TO WITNESS. LAB TEST SAMPLES SHALL BE TAKEN AND A CERTIFICATE OF APPROVAL OBTAINED BEFORE THE SYSTEM CAN BE PLACED IN SERVICE.



2 P2.21 WATER HEATER (WH) & TMV DETAIL
SCALE: NONE

PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT CONDITIONS.



3 P2.21 RATED PENETRATIONS
SCALE: NONE

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AWH	ANTI-FREEZE WALL HYDRANT
BFF	BELOW FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CD	CONDENSATE DRAIN
CI	CAST IRON
CO	FLOOR CLEANOUT
CW	DOMESTIC COLD WATER
DN	DOWN
ED	EQUIPMENT DRAIN
EL.	ELEVATION
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
HB	HOSE BIBB
HD	HUB DRAIN
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
I.E.	INVERT ELEVATION
NG	NATURAL GAS
NTS	NOT TO SCALE
OD	OVERFLOW DRAIN
PRV	PRESSURE REDUCING VALVE
SS	SANITARY SEWER
SSV	SANITARY SEWER VENT
THW	TEMPERED HOT WATER
THWR	TEMPERED HOT WATER RETURN
TYP	TYPICAL
UG	UNDERGROUND
VAC	VACUUM
VTR	VENT THRU ROOF
WCO	WALL CLEAN OUT
WHA	WATER HAMMER ARRESTER
YCO	YARD CLEAN OUT

SYMBOLS

SHUT-OFF/GATE VALVE
SHUT-OFF/BALL VALVE
CHECK VALVE
BACKFLOW PREVENTER
HOSE BIBB/WALL HYDRANT
WATER HAMMER ARRESTER
FLOOR DRAIN
SANITARY FLOOR SINK
HUB DRAIN
TIE POINT
CLEANOUT PLUG
FLOOR CLEAN OUT
WALL CLEAN OUT
PIPE DOWN
PIPE UP
PIPE UP OR DROP
PLUG VALVE
PRESSURE REGULATOR
BRANCH-TOP CONNECTION
BRANCH-BOTTOM CONNECTION
CAP ON END OF PIPE
ELBOW
TEE
UNION
SANITARY FITTING

PLUMBING LEGEND

—— CW ——	COLD WATER
— — CW — —	COLD WATER BURIED
—— HW ——	140°F HOT WATER
—— THW ——	110°F TEMPERED HOT WATER
—— SS ——	SANITARY SEWER
— — SS — —	SANITARY SEWER BURIED OR BELOW FLOOR
— — — — —	SANITARY SEWER VENT

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SOUTH CAROLINA NO. 14860 REGISTERED PROFESSIONAL ENGINEER
11/24/15

CAMP COURAGE

DR. CARY E. STROUD CAMPER CARE CENTER

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
A	2015.10.23	DESIGN DEVELOPMENT	DCB
B	2015.11.25	ISSUE FOR PERMIT	DCB

ISSUE FOR PERMIT 2015.11.25

PRINCIPAL IN CHARGE: JCL
PROJECT ENGINEER: DCB
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SHEET TITLE:
PLUMBING SCHEDULES, DETAILS, & SPECIFICATIONS

SHEET NO. P2.21

PROJ. NO. 015292.00

5/31/2016 3:15:53 PM \\server1\users$\tpoole\Documents\15147 ELECTRICAL DRAWINGS R15_tpoole.rvt
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SYMBOL	DESCRIPTION
A-1,3	HOME RUN TO LIGHTING/SERVICE PANEL. HASH MARKS, WHEN SHOWN, INDICATE NUMBERS OF CONDUCTORS. "/" INDICATES HOT WIRE, "N" INDICATES NEUTRAL CONDUCTOR, "P" INDICATES GROUND CONDUCTOR. HOME RUN NOTE INDICATES PANEL NAME AND CIRCUIT NAME OR FEEDER TAG. CONDUCTORS SHALL BE #12 AWG IN 3/4" CONDUIT UNLESS NOTED OTHERWISE. ANY HOME RUN OR CONDUIT WITHOUT HASH MARKS IS TO CONTAIN 3 CONDUCTORS; 1 HOT, 1 NEUTRAL, AND 1 EQUIPMENT GROUND, EACH HOT CIRCUIT SHALL BE PAIRED WITH A SEPARATE NEUTRAL CONDUCTOR. SHARING OF NEUTRAL CONDUCTORS BETWEEN CIRCUITS IS NOT ALLOWED.
	EXPOSED CONDUIT
	CONDUIT RUN IN SLAB OR UNDERGROUND.
	CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS, UNLESS NOTED OTHERWISE.
	CONDUIT JUNCTION IN CONDULET OR JUNCTION BOX.
	FLEXIBLE CONDUIT
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
J	JUNCTION BOX STEM INDICATES WALL MOUNTED
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED.(208V)
EF	EXHAUST FAN. SEE MECHANICAL DRAWINGS FOR FAN SPECIFICATIONS.
WH	WATER HEATER.
30/20/3P/3R	SAFETY DISCONNECT SWITCH. "30" INDICATES AMP RATING, "20" INDICATES FUSE SIZES, "3P" INDICATES NUMBER OF POLES, ENCLOSURE TO BE NEMA 1 UNLESS NOTED OTHERWISE (3R, 4X, ETC.) SQUARE D H300 SERIES HEAVY DUTY SAFETY SWITCH
PE	PHOTOELECTRIC CELL, SPEC GRADE, TO BE MOUNTED ON ROOF, FACING NORTH, TORK MODEL 2101 OR EQUAL.
	WIRING DEVICES
	NOTE: ALL WIRING DEVICES TO BE IVORY, WITH #302 STAINLESS STEEL COVERPLATE (FLUSH MOUNTED) UNLESS NOTED OTHERWISE ON THE DRAWING OR SPECIFICATIONS.
	SWITCH SYMBOLS
S_M	MANUAL MOTOR STARTER
S	SINGLE POLE LIGHTING SWITCH 120-277 VOLT, 20 AMP, SPEC GRADE. LETTER ("a") DESIGNATES WHICH FIXTURES ARE CONTROLLED FROM WHICH SWITCHES WHEN MULTIPLE SWITCHES ARE USED ON ONE CIRCUIT
S_3	SAME AS "S" ABOVE EXCEPT "3" IN SUBSCRIPT DENOTES 3-WAY SWITCH.
S_D	DIMMER SWITCH WITH SLIDE CONTROL
S_4	SAME AS "S" ABOVE EXCEPT "4" IN SUBSCRIPT DENOTES 4-WAY SWITCH.
S_{OS}	PASSIVE INFRARED WALL SWITCH/OCCUPANCY SENSOR - WATTSTOPPER # PW-301
	UNI-DIRECTIONAL DUAL TECHNOLOGY CEILING/WALL OCCUPANCY SENSOR - WATTSTOPPER # DT-200
D	OMNI-DIRECTIONAL PASSIVE INFRARED CEILING OCCUPANCY SENSOR - WATTSTOPPER # CI-300
	STRAIGHT BLADE DEVICE SYMBOLS
	20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPTACLE. HUBBELL 5362-I OR EQUAL. STANDARD POWER. "WP" DENOTES WEATHERPROOF COVER PLATE. "GFI" DENOTES GFCI TYPE.
	SAME AS " " ABOVE EXCEPT MOUNTED IN FLOOR BOX.
	SAME AS " " ABOVE EXCEPT BOTTOM OF OUTLET MOUNTED ABOVE COUNTER HEIGHT
	QUADRAPLEX - TWO DUPLEX OUTLETS MOUNTED IN A TWO GANG BOX WITH TWO GANG COVER PLATE
	FIRE ALARM, COMMUNICATIONS AND CONTROLS
	COMBINATION DATA/TELEPHONE OUTLET WITH 1" CONDUIT TO CABLE TRAY, WITH PULL WIRE. JACKS, CABLE AND BOX COVER BY SYSTEM INSTALLER. "W" INDICATES WALL PHONE OUTLET, 54" A.F.F.
	COMBINATION DATA/TELEPHONE OUTLET LOCATED IN FLOOR.
T	CABLE TV OUTLET WITH 3/4"C TO CEILING SPACE WITH PULLWIRE. TELEVISION CONNECTION, PROVIDE CHIEF # PAC525, 16x9 WALL ENCLOSURE (OR EQUAL). PROVIDE (1) 2" CONDUIT TO ABOVE CEILING AND (1) 2" CONDUIT TO BELOW FLOOR. COORDINATE EXACT BOX LOCATION WITH ARCHITECT TO BE CONCEALED BEHIND T.V.
	TELEPHONE BOARD, ROUTE NO. 6 AWG CU. GROUND TO SERVICE GROUND
FACP	FIRE ALARM CONTROL PANEL
ANN	REMOTE ANNUNCIATOR PANEL
S	AREA SMOKE DETECTOR WITH SOUNDER BASE.
	FIRE ALARM SYSTEM STROBE UNIT ONLY
	FIRE ALARM SYSTEM HORN/STROBE UNIT
F	MANUAL FIRE ALARM PULL STATION
	LIGHTING SYMBOLS:
OR	SWITCHED FIXTURE WITH EMERGENCY LIGHTED BATTERY BACKUP. ROUTE `HOT' SENSING CIRCUIT TO BATTERY
	PENDANT LINEAR DIRECT/INDIRECT.
	4' STRIP FIXTURE
	UNDER CABINET LIGHT
	WALL MOUNTED FIXTURE
	SURFACE CEILING MOUNTED OR RECESSED DOWNLIGHT
	CEILING FAN WITH LIGHT
	EXTERIOR WALL SCONCE
	POLE LIGHT
	EXIT FIXTURE WITH INTEGRAL BATTERIES - ARROW INDICATES ILLUMINATED DIRECTIONAL ARROWS, SHADED SECTION INDICATES FACE WHICH IS ILLUMINATED. STEM INDICATES WALL MOUNTED. ALL EXIT LIGHTS SHALL BE MOUNTED TO THE STRUCTURE.
	COMBINATION EMERGENCY LIGHT AND EXIT FIXTURE.

GENERAL LIGHTING NOTES:

1. MANUFACTURERS & NUMBERS ARE LISTED TO ESTABLISH QUALITY ONLY AND NOT TO LIMIT COMPETITION. PRIOR TO BIDDING, SUBSTITUTIONS ARE ALLOWED SUBJECT TO SUBMITTAL DATA, PHOTOMETRICS & ENGINEERS APPROVAL AS REQUIRED BY SPECIFICATIONS.
2. ALL FIXTURES TO BE U.L. LABELED. ALL EXTERIOR FIXTURES SHALL HAVE U.L. WET LABEL OR DAMP LABEL AS REQUIRED BY LOCATION. CONTRACTOR SHALL VERIFY BEFORE SUBMITTING FIXTURE.
3. PROVIDE ALL MOUNTING ACCESSORIES, BAR HANGARS & HARDWARE REQUIRED.
4. EMERGENCY BATTERIES SHALL PROVIDE A MINIMUM OF 1100 LUMEN OUTPUT. BATTERIES SHALL CONTAIN INTEGRAL SENSING CIRCUIT TO ALLOW FIXTURE TO BE SWITCHED WITH AREA FIXTURES FOR NORMAL OPERATION AND ENERGIZE LED'S UPON LOSS OF POWER CIRCUIT, REGARDLESS OF SWITCH POSITION. MANUFACTURER SHALL BE BODINE OR APPROVED EQUAL.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MOUNTING HEIGHT	LAMP	WATTAGE	VOLTAGE
AL	ASYMMETRIC LED WALL MOUNT INDIRECT 14" FIXTURE	COOPER # WL-IN-C-B03-AI-40K-UNV-K-RC-D10	10'-6" AFF	NOMINAL 6000 LUMEN LED PANEL 4000K	70 VA	UNIVERSAL
BL	CONCRETE 11" ROUND OUTDOOR BOLLARD, WET LISTED.	VISIONAIRE LIGHTING # EDS-1B-HZG-20LC-7-5K-UNV-AB-BK-MD	SEE MODEL	COATED PMH	21 VA	UNIVERSAL
CLF	CEILING FAN WITH INTEGRATED DOWNLIGHT, DARK WOOD BLADES, BRONZE FINISH	KICHLER # 300114OZ OR APPROVED EQUAL	SEE MODEL	3-GE ENERGY SMART LED 13W LAMP	70 VA	120V
EM	WALL MOUNTED SPECIFICATION GRADE TWIN-HEAD EMERGENCY LIGHT WITH BATTERY BACKUP	BARRON # LED-90-BL	8'-0" AFF	LED	10 VA	UNIVERSAL
EX	UNIVERSAL MOUNTED EXIT SIGN WITH RED LETTERS ON WHITE HOUSING. DIFFUSER LENS, SPECIFICATION GRADE DIE CAST ALUMINUM HOUSING. EMERGENCY BATTERY BACKUP.	LITHONIA # LE-S-W-X-R-EL N EMERGILITE # WWPDN-X-R LIGHTALARMS # X-XDN-W-RW		RED LED BY MFR	5 VA	UNIVERSAL
EXM	UNIVERSAL MOUNTED EXIT SIGN COMBO WITH RED LETTERS ON WHITE HOUSING. DIFFUSER LENS, WITH TWIN LED EMERGENCY HEADS.	LITHONIA # LHQM-LED-R EMERGILITE # ELXN400-R-2LED LIGHTALARMS # UQLXN500-R-2LED		RED LED/LED HEADS BY MFR	5 VA	UNIVERSAL
ILA	4', LED CHANNEL STRIP LIGHT, STEEL HOUSING, FROSTED ACRYLIC LENS, WHITE FINISH, PAF, 0-10V DIMMING DRIVER	LITHONIA # ZL1D-L48-5000LM-FST-MVOLT-35K-80CRI-WH LSI # SDL-4-LED-HO-WW-UE COLUMBIA # LCL4-35-ML-EDU-PAF	SURFACE MOUNT	NOMINAL 5000 LUMEN LED PANEL 3500K	48 VA	UNIVERSAL
ILAE	SAME AS 'IA' EXCEPT WITH EMERGENCY BATTERY BACKUP	LITHONIA # ZL1D-L48-5000LM-FST-MVOLT-35K-80CRI-E7W-WH LSI # SDL-4-LED-HO-WW-UE-EM COLUMBIA # LCL4-35-ML-EDU-PAF-ELL14	SURFACE MOUNT	NOMINAL 5000 LUMEN LED PANEL 3500K	48 VA	UNIVERSAL
PA	LED AREA/ROADWAY LIGHT, POLE MOUNTED WITH ALUMINUM BODY, TYPE 3 ROADWAY OPTICS AND BRONZE FINISH, POLE WITH RAISED ROUND CONCRETE BASE.	COOPER # GLEON-AE-03-LED-E1-T3R-BZ-EA-7060-7100-MS/DIM-L40 COOPER RSS POLE OR EQUAL	20'	64 LED PANEL/ 60K	157 VA	UNIVERSAL
PLA	PENDANT LINEAR DIRECT/INDIRECT, ADJUSTABLE CABLE	ALERA # LCV-4-45-ML-PERF-CM-48-ED-U-MW OR APPROVED EQUAL	8' - 6"	NOMINAL 4300 LUMEN LED PANEL, 3500K	43 VA	UNIVERSAL
PLAE	SAME AS 'PLA' EXCEPT WITH EMERGENCY BATTERY BACKUP.	ALERA # LCV-4-45-ML-PERF-CM-48-ED-U-MW-ELL10 OR APPROVED EQUAL	8' - 6"	NOMINAL 4300 LUMEN LED PANEL, 3500K	43 VA	UNIVERSAL
PLB	10" PENDANT LED CYLINDER, MATTE BLACK FINISH, CLEAR REFLECTOR	PRESCOLITE # MC10ED-P-6L-35K-8-FL35-26-BL OR APPROVED EQUAL	RECESSED	NOMINAL 6000 LUMEN LED PANEL, 3500K	67 VA	UNIVERSAL
RB	6" DIA. RECESSED LED CAN LIGHT WITH CLEAR APERTURE	CONTECH # RA6LIC-535K-12D2-CST6322L2-CLR	RECESSED	NOMINAL 2000 LUMEN LED PANEL 3500K	29 VA	UNIVERSAL
RS	6" DIA. RECESSED LED CAN LIGHT WITH COVER, WET LISTED	CONTECH # RA6LIC-535K-12D2-CTR6327L2-CLR	RECESSED	NOMINAL 2000 LUMEN LED PANEL 3500K	29 VA	UNIVERSAL
UC	FLEXIBLE LED RIBBON UNDER-CABINET LIGHT WITH 18 LEDs AND 4.4 WATTS PER FOOT, MOUNTED IN .8" WIDE ALUMINUM CHANNEL WITH FROSTED LENS. RIBBON AND CHANNEL TO BE 3' IN LENGTH. .	ACOLYTE # RB244.435 WITH CHANNEL # CHAS11F AND CLIP # CHMNTAS1 JESCO # DL-FLEX-UP-ULTRA-35K/CH6/FL6/CH-CLIP TIVOLI # TPL-HO-4.4-I-35-3' 24+ADUL-300-3-4-24-D CHANNEL # TPL-I-MCHAN-8 AND FROSTED TUBE # TPL-I-TUBE-C/F-8	MOUNT UNDER CABINETS	54 LED RIBBON 3500K	14 VA	24V VIA 277V XFMR
WLAE	4' WALL MOUNTED BATHROOM FIXTURE, 1 LAMP UP / 1 LAMP DOWN, WHITE, PAF	WILLIAMS #WMAUD-4-LEDPH30/835U/ PH30/835D-AF-UNV OR APPROVED EQUAL	7' - 6"	NOMINAL 3000 LUMEN LED UP/DOWN 3500K	74 VA	UNIVERSAL
WP	WALL MOUNTED MINI-SCONCE, CUTOFF, MEDIUM THROW, DIE CAST ALUMINUM HOUSING AND DOOR FRAME, TEMPERED GLASS GASKETED LENS, SPECULAR EXTRUDED POLISHED ANODIZED SEALED REFLECTOR, WET LOCATION.	LITHONIA # WSQLED-1-10A700/40K-SR3-MVOLT-DBLXD	8'-0" AFG	NOMINAL 2000 LUMEN LED PANEL 4000K	24 VA	UNIVERSAL
WPE	WALL MOUNTED MINI-SCONCE, CUTOFF, MEDIUM THROW, DIE CAST ALUMINUM HOUSING AND DOOR FRAME, TEMPERED GLASS GASKETED LENS, SPECULAR EXTRUDED POLISHED ANODIZED SEALED REFLECTOR, WET LOCATION WITH REMOTE MOUNTED EMERGENCY BACKUP COMPLETE WITH REQUIRED INTERCONNECTING WIRING, TEST SWITCH MOUNTING TRAY AND INDICATOR LIGHT.	LITHONIA # WSQLED-1-10A700/40K-SR3-MVOLT-ELCW-DBLXD	8'-0" AFG	NOMINAL 2000 LUMEN LED PANEL 4000K	24 VA	UNIVERSAL

ELECTRICAL GENERAL NOTES:

1. INSPECT SITE PRIOR TO SUBMITTING BID. DRAWINGS ARE INTENDED TO COVER THE REQUIRED ELECTRICAL SYSTEMS. DRAWINGS MAY NOT SHOW COMPLETE OR ACCURATE DETAILS OF THE BUILDING OR SYSTEM IN EVERY RESPECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY ADDITIONAL INFORMATION AS REQUIRED.
2. CONFORM TO THE NATIONAL ELECTRICAL CODE (2011), IBC (2012), IECC (2009), APPLICABLE NEMA, ANSI AND IEEE PUBLICATIONS, U.L. AND ADA STANDARDS AND OSHA REQUIREMENTS. COMPLY WITH LOCAL, COUNTY, STATE AND NATIONAL CODES HAVING JURISDICTION.
3. FURNISH AND INSTALL ALL MATERIALS IN A NEAT AND WORKMANLIKE FASHION. ALL MATERIALS SHALL BE NEW, WITH FIRST QUALITY AND UL LABEL.
4. VERIFY ALL DIMENSIONS AND CLEARANCES PRIOR TO INSTALLATION OF EQUIPMENT AND RACEWAYS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK WITH THAT OF ALL OTHER TRADES AS REQUIRED.
5. CONDUIT SHALL BE EMT FOR BRANCH CIRCUIT WIRING AS ALLOWED BY NEC, EXCEPT THAT SET SCREW OR CRIMP FITTINGS ARE NOT ALLOWED. WHERE EXPOSED TO PHYSICAL DAMAGE CONDUITS SHALL BE RIGID GALVANIZED STEEL. MINIMUM CONDUIT SIZE SHALL BE 3/4". ALL CONDUCTORS SHALL BE TYPE THHN/THWN, STRANDED 600V COPPER BUILDING WIRE. MINIMUM SIZE SHALL BE #12 AWG COPPER UNLESS NOTED. UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40 WITH TRANSITION TO RIGID GALVANIZED STEEL FOR EXPOSED CONDUITS.
6. PROVIDE GROUNDING FOR ALL EQUIPMENT IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE. GROUND SERVICE TO BUILDING STEEL, DRIVEN GROUND ROD AND COLD WATER PIPE.
7. ALL ENCLOSURES SHALL BE OF THE NEMA TYPE WHICH IS SUITABLE FOR THE APPLICATION.
8. ALL WORK SHALL HAVE PROPER LABELING AND NAMEPLATES. ALL CIRCUITS SHALL BE LABELED AT PANELS AND BOXES AS INDICATED. ALL PANELS AND DISCONNECTS ARE TO BE PERMANENTLY MARKED WITH NAME OR EQUIPMENT SERVED. ALL PANELS ARE TO BE PROVIDED WITH TYPEWRITTEN PANEL SCHEDULES.
9. ALL BREAKERS ON CIRCUITS SUPPLYING HVAC EQUIPMENT SHALL BE TYPE HACR BREAKERS.
10. PROVIDE TELEPHONE ENTRY CONDUIT AND CONNECTION BOARD AS REQUIRED. STUB CONDUIT INTO SPACE AND EXTEND BEYOND PAVEMENT. COORDINATE WITH TELEPHONE SERVICE PROVIDER AND PAY ALL CHARGES. SEAL ALL TELEPHONE SERVICE CONDUIT AND AROUND CABLES TO PREVENT WATER ENTRY AROUND CONDUIT OR THRU CONDUIT.
11. COORDINATE WITH ELECTRICAL UTILITY AS REQUIRED FOR SERVICE ENTRY. TRANSFORMTER AND METER ARE EXISTING. PAY ALL REQUIRED FEES OR CHARGES FOR SERVICES SHOWN.
12. THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS BEFORE PLACING IN OPERATION. RESTORE FINISHED SURFACES IF DAMAGED AND DELIVER THE ENTIRE INSTALLATION IN AN APPROVED CONDITION. INSTRUCT THE OWNERS' PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS. FURNISH TO THE OWNER THREE SETS OF OPERATION AND MAINTENANCE MANUALS FOR EACH SYSTEM.
13. GUARANTEE THE WORK INSTALLED FOR A PERIOD OF ONE YEAR AFTER DATE OF FINAL ACCEPTANCE. DEFECTS WHICH APPEAR AS A RESULT OF NORMAL USAGE SHALL BE REMEDIED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER WITHOUT COST TO THE OWNER.
14. CONTRACTOR SHALL KEEP CURRENT A SET OF PLANS FOR THE DURATION OF CONSTRUCTION WITH ALL CHANGES TO WORK NEATLY AND ACCURATELY MARKED IN RED AND SHALL TURN OVER TO OWNER AT COMPLETION OF PROJECT.
15. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED TO MEET SEISMIC REQUIREMENTS OF 2012 IBC AND SHALL BE SUBJECT TO SPECIAL INSPECTION REQUIREMENTS, CHAPTER 17 OF 2012 IBC AS IT RELATES TO ELECTRICAL EQUIPMENT.
16. FLOORBOXES INSTALLED IN CONTACT WITH SLAB ON GRADE SHALL BE CAST TYPE. STAMPED STEEL BOXES ARE ACCEPTABLE ONLY IN ELEVATED SLABS. COORDINATE ALL OPENINGS IN SLAB WITH STRUCTURAL ENGINEER BEFORE OPENING.
17. ALL PANELBOARDS SHALL BE FURNISHED WITH COPPER BUS BARS AND A COPPER GROUNDING BUS BAR.

ABBREVIATIONS:

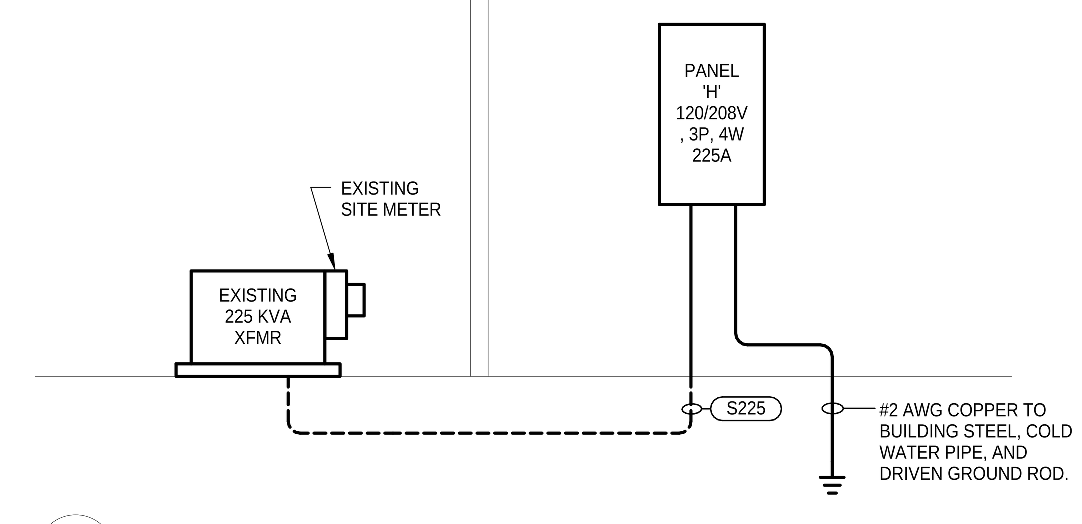
AFF	ABOVE FINISHED FLOOR	**FU**	FUSE	**RECPT**	RECEPTACLE (R.)
AFG	ABOVE FINISHED GRADE	**GFI**	GROUND FAULT INTERRUPTER DEVICE	**REQD**	REQUIRED
ACH	ABOVE COUNTER HEIGHT	**LTG**	LIGHTING (L.)	**TYP**	TYPICAL
AL	ALUMINUM	**MLO**	MAIN LUGS ONLY	**UV**	UNIT VENTILATOR
BKR	BREAKER	**MCB**	MAIN CIRCUIT BREAKER	**UH**	UNIT HEATER
CU	COPPER	**MFR**	MANUFACTURER	**UGND**	UNDERGROUND
CKT	CIRCUIT	**MDP**	MAIN DISTRIBUTION PANEL	**W/**	WITH
D	DEDICATED OUTLET	**MSB**	MAIN SWITCHBOARD	**WH**	WATER HEATER
DWG	DRAWING	**NTS**	NOT TO SCALE	**WP**	WEATHER PROOF
EC	ELECTRICAL CONTRACTOR	**PH**	PHASE	**XFMR**	TRANSFORMER
EMT	ELECTRICAL METALLIC TUBING	**PNL**	PANEL		
EWC	ELECTRIC WATER COOLER	**PVC**	POLYVINYL CHLORIDE CONDUIT		

CABLE/CONDUIT SCHEDULE

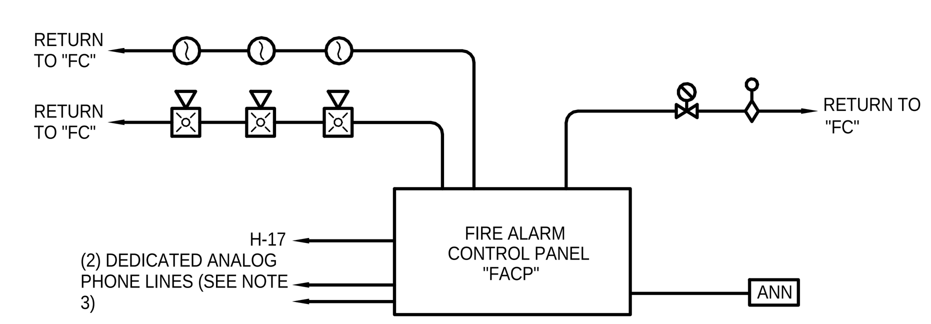
TAG	WIRE AND CONDUIT
S225	4 #4/0; 2 1/2"C

NOTE:

1. BUILDING TO BE METERED AT EXISTING SITE METER (COORDINATE WITH BLUE RIDGE ELECTRIC).



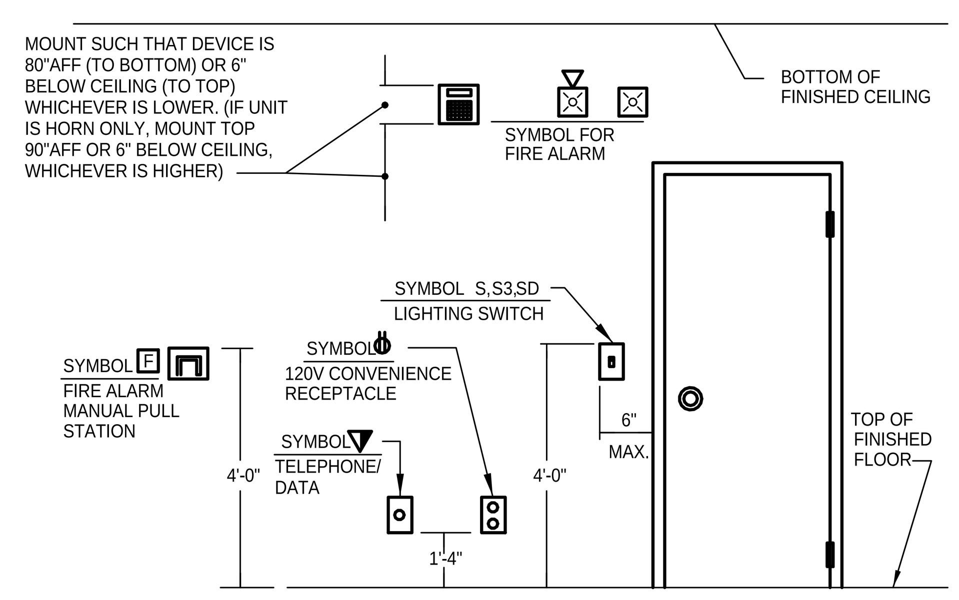
4 / E0.01 ELECTRICAL RISER DIAGRAM
NOT TO SCALE



NOTES;

1. ALL WIRING SHALL BE IN CONDUIT. ALL CONDUIT SHALL BE 3/4" MIN. WITH WIRING AS REQUIRED BY MANUFACTURER. PAINT ALL JUNCTION BOXES, COVERS AND MARK CONDUIT EVERY 10' WITH RED PAINT.
2. SEE 1/E1.01 FOR QUANTITIES AND LOCATIONS OF DEVICES.
3. COORDINATE WITH OWNER TO PROVIDE.

3 / E0.01 FIRE ALARM RISER DIAGRAM
NOT TO SCALE



NOTES:

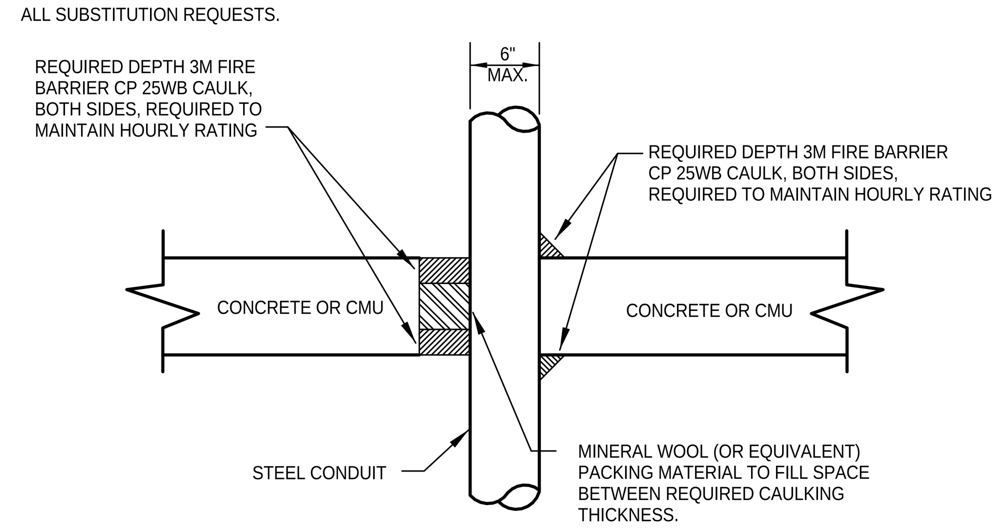
1. DEVICE BOXES MOUNTED IN THE SAME WALL BUT IN SEPARATE ROOMS OR SPACES SHALL NOT BE MOUNTED IN THE SAME WALL CAVITY.

1 / E0.01 TYPICAL DEVICE MOUNTING HEIGHT
NOT TO SCALE

PANEL	H		CABINET	SURFACE	TYPE	SQUARE D NQ
VOLTAGE	120/208 Wye	PHASE 3 WIRES 4	FEEDER	BOTTOM	MAINS	225 A MCB

DEVICE AMPS TRIP	POLES	NOTES	BRANCH CIRCUIT DESIGNATION	No.	A	A	B	B	C	C	No.	BRANCH CIRCUIT DESIGNATION	NOTES	POLES	DEVICE AMPS TRIP
20 A	1		L.-INFIRMARY 113	1	425	540					2	R.-INFIRMARY		1	20 A
20 A	1		L.-CORRIDOR	3			459	720			4	R.-INFIRMARY BEDS		1	20 A
20 A	1		L.-BEDROOMS109,112,TLTS	5					482	1500	6	R.-COFFEE INFIRMARY		1	20 A
20 A	1		L.-STO. 106,LAUND. 107, TLT 105	7	429	1500					8	R.-HOT WATER POT		1	20 A
20 A	1		L.-LIVING ROOM 101	9			505	900			10	R.-SW BEDROOM AND BATH		1	20 A
20 A	1		L.- EXTERIOR	11					344	720	12	R.-S BEDROOM AND BATH		1	20 A
40 A	2		WH	13	3000	180					14	R.-STORAGE		1	20 A
				15			3000	360			16	R.-TELEPHONE BOARD		1	20 A
20 A	1		FACP	17					300	360	18	R.-TELEPHONE BOARD		1	20 A
20 A	1		R. - DRINKING FOUNTAIN	19	500	2750					20	R.-DRYER		2	35 A
20 A	1		R. - DRINKING FOUNTAIN	21			500	2750			22				
20 A	1		SPARE	23					0	180	24	R.-WASHER		1	20 A
20 A	1		SPARE	25	0	1260					26	R.-SE BEDROOM AND BATH		1	20 A
50 A	2		AHU-1	27			4784	840			28	R.-DRUG CLOSET REF.		1	20 A
				29					4784	1260	30	R.-DRUG CLOSET AND LIVING RM		1	20 A
35 A	2		AHU-2	31	3328	1500					32	R.-COFFEE		1	20 A
				33			3328	1500			34	R.-MICROWAVE		1	20 A
50 A	2		HP-1	35					3016	1500	36	R.-TOASTER		1	20 A
				37	3016	840					38	R.-REFRIGERATOR		1	20 A
25 A	2		HP-2	39			1779	900			40	R.-PORCH		1	20 A
				41					1779	180	42	P.-MEZZANINE		1	20 A
RATING	22K AIC				19.3 kVA		22.3 kVA		16.4 kVA			PANELBOARD LOAD TOTAL			57.7 kVA

PROVIDE FIRESTOPPING THRU ALL RATED (1 HOUR AND ABOVE) WALLS. FIRESTOPPING SHALL BE 3M CP 25WB CAULK OR FIREDAM 150 CAULK OR EQUAL. FIRESTOPPING SHALL BE AS REQUIRED TO MAINTAIN A U.L. SYSTEM CLOSURE. PROVIDE U.L. NO. AND MANUFACTURER'S SPECIFICATION AND INSTALLATION DRAWING FOR ALL SUBSTITUTION REQUESTS.



2 / E0.01 TYPICAL CONDUIT SLEEVE DETAIL
NOT TO SCALE

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SEALS
SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION BURDETTE ENGINEERING, INC. No. C00495
SOUTH CAROLINA PROFESSIONAL ENGINEER DONALD J. BURDETTE No. 9380 6/1/16

GREENVILLE COUNTY
DR. CARY E. STROUD CAMPER CARE CENTER
MARIETTA, SC

SHEET ISSUE:

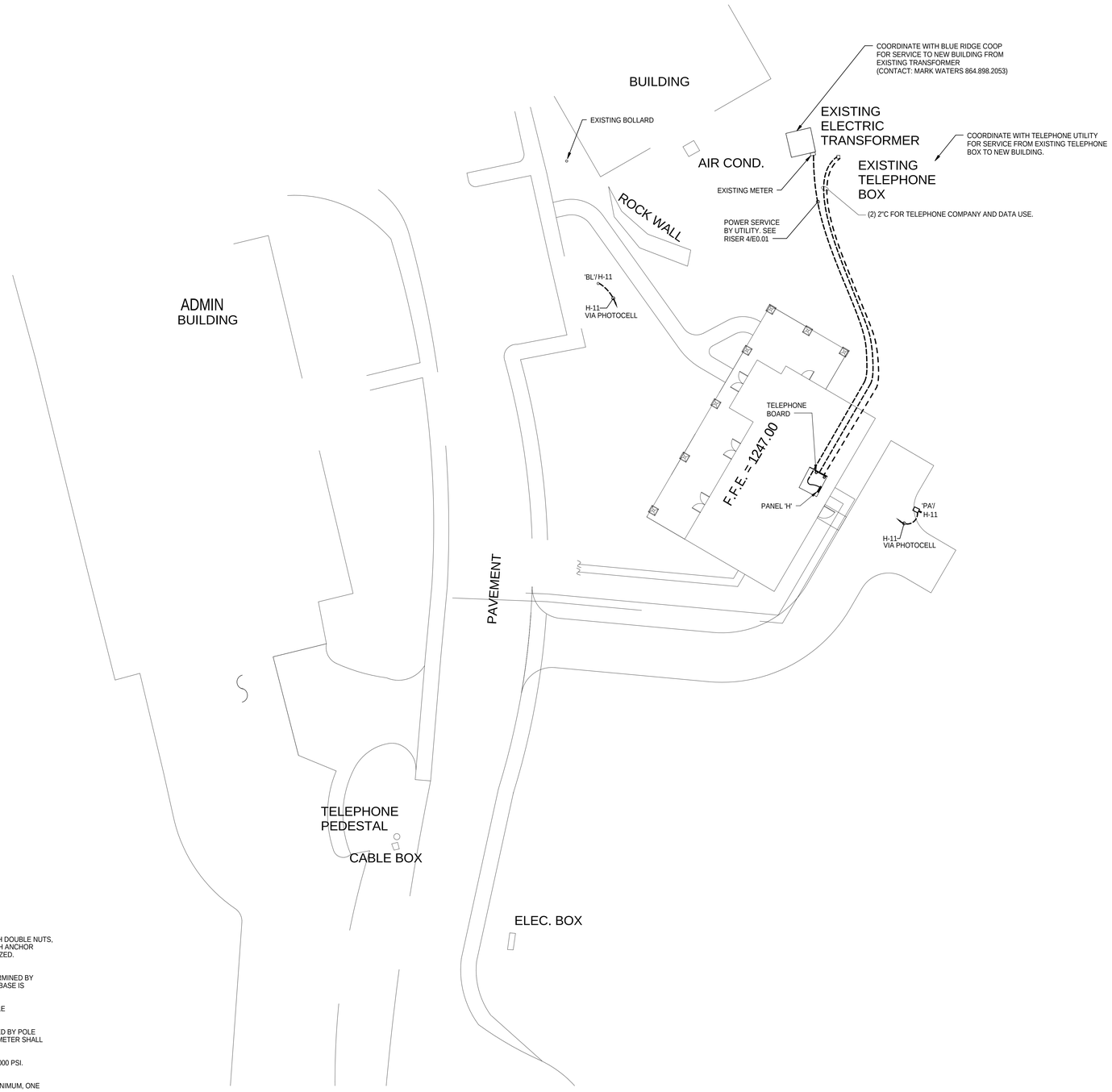
NO.	DATE	DESCRIPTION	BY
A	2015.10.23	DESIGN DEVELOPMENT	DJB
B	2015.11.25	ISSUE FOR PERMIT	DJB
C	2016.6.1	BID SET	DJB

BID SET 2016.6.1

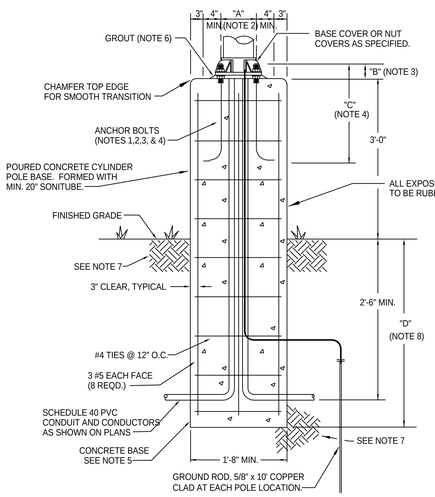
PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: KNC
DRAWN BY: TMP/LJK

SHEET TITLE:
ELECTRICAL LEGEND AND SCHEDULES

SHEET NO. E0.01
PROJ. NO. 015292.00



1 E0.02 ELECTRICAL SITE PLAN
1/16" = 1'-0"



NOTES

1. POLE SHALL BE PROVIDED WITH MINIMUM OF FOUR ANCHOR BOLTS WITH DOUBLE NUTS, DOUBLE FLAT WASHERS, AND ONE LOCK WASHER SIZED TO MATCH EACH ANCHOR BOLT. ALL NUTS, WASHERS, AND BOLTS SHALL BE HOT DIPPED GALVANIZED.
2. ANCHOR BOLT GAGE, DIMENSION "A", SHALL BE AS REQUIRED BY POLE MANUFACTURER. EXACT LOCATION OF ANCHOR BOLTS SHALL BE DETERMINED BY CONTRACTOR AFTER POLES ARE PURCHASED AND BEFORE CONCRETE BASE IS CONSTRUCTED.
3. BOLT PROJECTION, DIMENSION "B", SHALL BE AS RECOMMENDED BY POLE MANUFACTURER AND SHALL NOT BE LESS THAN 3".
4. ANCHOR BOLT EMBEDMENT, DIMENSION "C", SHALL BE AS RECOMMENDED BY POLE MANUFACTURER AND SHALL NOT BE LESS THAN 12". ANCHOR BOLT DIAMETER SHALL NOT BE LESS THAN 3/4".
5. CONCRETE BASE SHALL BE OF MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. REINFORCING BARS SHALL BE DEFORMED STEEL, GRADE 60.
6. GROUT SHALL BE PRE-BAG MIX NON-SHRINK, NON-METALLIC, 5000 PSI MINIMUM, ONE TO TWO INCHES THICK.
7. SOIL AROUND FOUNDATION BASE SHALL BE NON-ORGANIC GRANULAR SOIL COMPACTED TO 95% STANDARD PROCTOR (ASTM D-698). TOP 4 TO 6 INCHES MAY BE TOP SOIL OR PAVEMENT.
8. FOUNDATION EMBEDMENT DEPTH, DIMENSION "D", SHALL BE 15 PERCENT OF POLE HEIGHT ABOVE GRADE, MINIMUM OF 3'-0".
9. BURIED CONCRETE BASE SHALL BE USED ONLY WHEN POLE IS PROTECTED ON SITE BY BARRIERS OR BY VIRTUE OF LOCATION.

2 E0.02 PEDESTAL CONCRETE BASE FOR METAL POLE
NOT TO SCALE

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GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

SHEET ISSUE:

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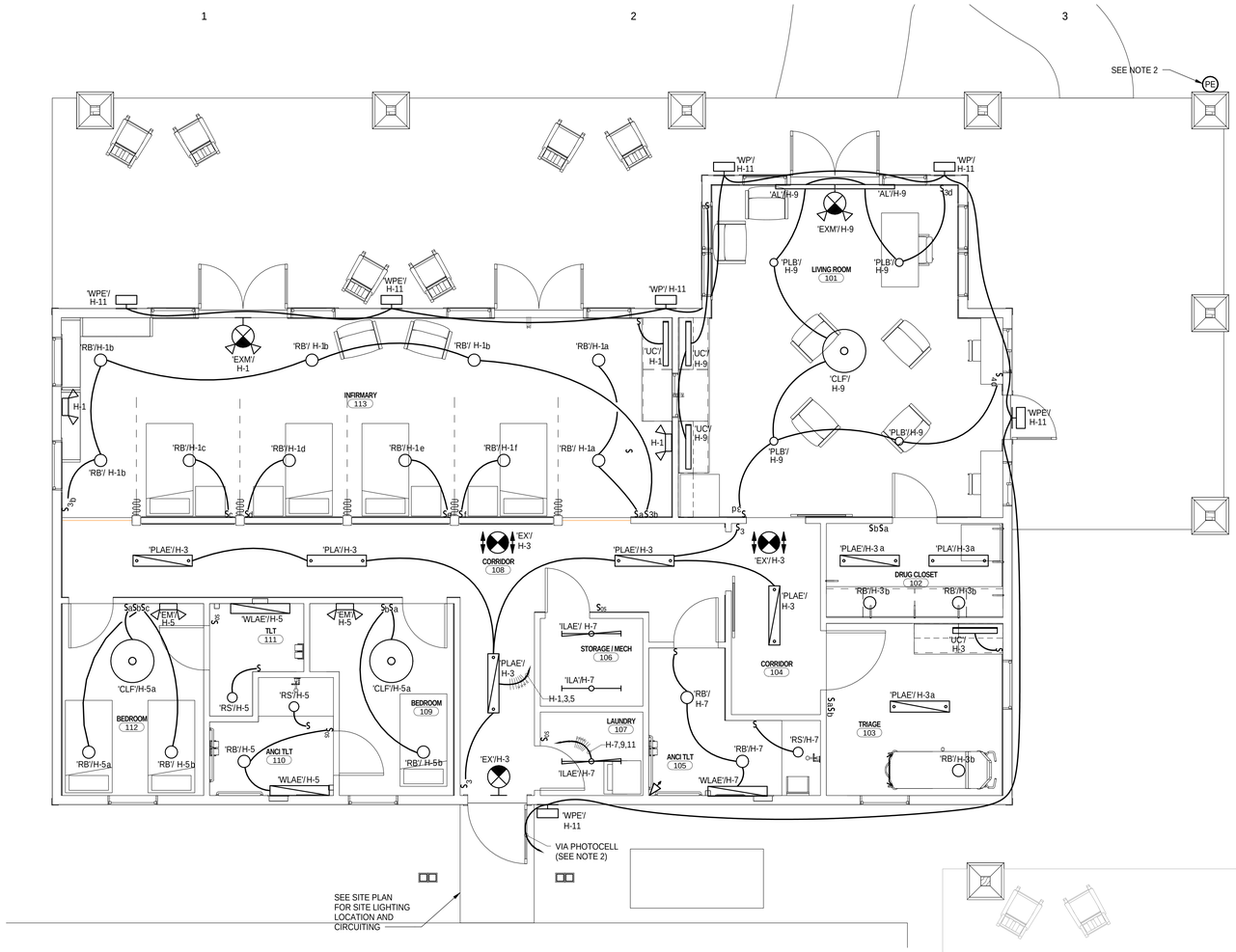
BID SET 2016.6.1

PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: KNC
DRAWN BY: TMP/LJK

SHEET TITLE:
ELECTRICAL SITE PLAN

SHEET NO. E0.02

PROJ. NO. 015292.00

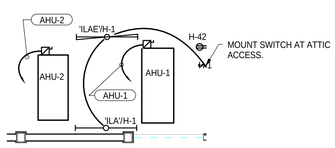


2 E1.01 ELECTRICAL LIGHTING PLAN
1/4" = 1'-0"

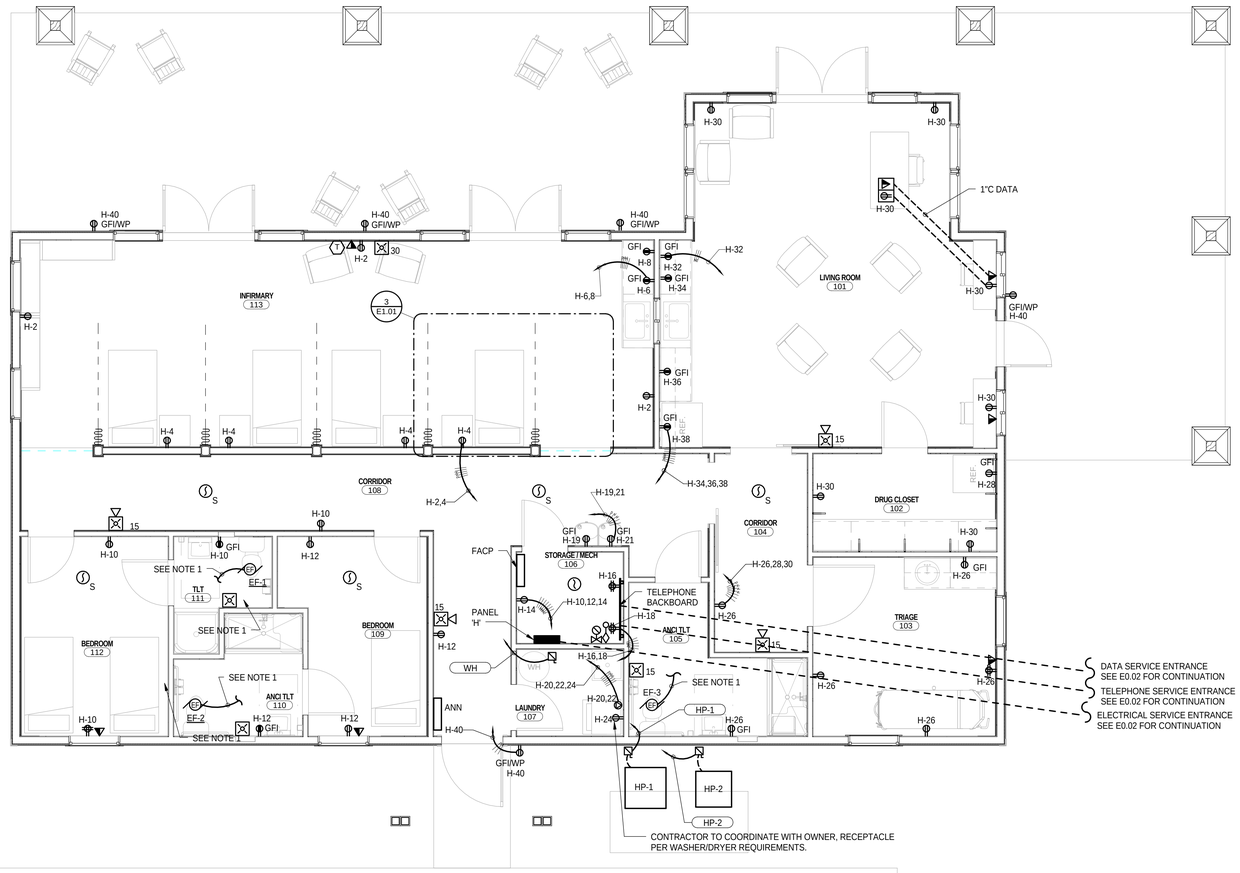
EQUIPMENT SCHEDULE MEZZANINE					
EQUIPMENT TAG	ELECTRICAL DATA	PANEL	CIRCUIT NUMBER	WIRE/CONDUIT	DISCONNECT
AHU-1	208 V/2-9568 VA	H	27,29	1 #8, 1 #10G; 3/4" C	60/FU/2P
AHU-2	208 V/2-6656 VA	H	31,33	1 #8, 1 #10G; 3/4" C	60/FU/2P
HP-1	208 V/2-6032 VA	H	35,37	1 #8, 1 #10G; 3/4" C	60/FU/2P/ NEMA 3R
HP-2	208 V/2-3557 VA	H	39,41	1 #10, 1 #10G; 3/4" C	30/FU/2P/ NEMA 3R
WH	208 V/2-6000 VA	H	13,15	1 #8, 1 #10G; 3/4" C	60/NF/2P

NOTES:

1. FANS TO BE SWITCHED WITH LIGHTS.
2. EXTERIOR LIGHTING CIRCUIT SHALL BE ROUTED THROUGH PHOTOCELL.
3. SEE ARCHITECTURAL RCP FOR EXACT FIXTURE LOCATIONS AND LAYOUT.



3 E1.01 MECHANICAL EQUIPMENT MEZZANINE PLAN
1/4" = 1'-0"



1 E1.01 ELECTRICAL POWER PLAN
1/4" = 1'-0"

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DR. CARY E. STROUD CAMPER CARE CENTER

MARIETTA, SC

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BID SET 2016.6.1

PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: KNC
DRAWN BY: TMP/LJK

SHEET TITLE:

ELECTRICAL LIGHTING AND POWER PLANS

SHEET NO. E1.01

PROJ. NO. 015292.00

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FOR

GREENVILLE COUNTY

DR. CARY E. STROUD CAMPER CARE CENTER

Marietta, South Carolina

PREPARED FOR:

Greenville County

June 1, 2016

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DOCUMENT 00 01 01 - PROJECT TITLE PAGE

1.1 PROJECT MANUAL

A. Dr. Cary E. Stroud Camper Care Center for Greenville County

B. Marietta, South Carolina.

C. Architect Project No. MPS #015292.00

D. McMillan Pazdan Smith LLC

E. PO Box 8922

F. Greenville, South Carolina

G. Phone: 864-232-2033

H. Issued: May 30, 2016

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END OF DOCUMENT 00 01 01

PROJECT MANUAL / SPECIFICATIONS

Project Name: **Cary E. Stroud Camper Center for Greenville County**
Project Location: **Marietta, South Carolina**

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01 23 00 ALTERNATES
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01 26 00 CONTRACT MODIFICATION PROCEDURES
01 29 00 PAYMENT PROCEDURES
01 31 00 PROJECT MANAGEMENT AND COORDINATION
01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
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See attached Fire protection spec sheet

DOCUMENT 00 01 15 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

A. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated: Dr. E. Cary Stroud Camper Care Center Project. Dated 11/25/15, Issued for Bids.

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G1.11 Life Safety Plan

CIVIL

C101 Site Plan

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A4.11 Roof Plan

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PLUMBING

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P2.12 Plumbing Schedules, Details, & Specifications

END OF DOCUMENT 00 01 15

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents. **Owner cost for tap fees.**
3. Access to site.
4. Work restrictions.
5. Specification and drawing conventions.

1.2 PROJECT INFORMATION

A. Project Identification: Dr. Cary E. Stroud Camper Care Center for Greenville County

1. Project Location: Marietta, South Carolina

B. Owner: Greenville County

1. Owner's Representative: Rick Brookey County of Greenville

C. Architect: McMillan Pazdan Smith Architecture

1. Architect Representative: Earle Hungerford

D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Civil:
2. Structural:
3. Mechanical/Plumbing:
4. Electrical:

E. Contractor: TBD

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project: New 2,300 sf camper care building for Greenville County at Camp Spearhead Cleveland/Marietta SC. Wood stud with cement board shingle exterior walls with wood truss and metal roof. Interior walls of wood stud and gypsum wallboard with finish materials including: paint, carpet, vinyl tile, ceramic tile and some concrete floors. Aluminum clad wood windows and doors with insulated glazing will be used. Building will include lobby room with millwork, exam room, toilet, four camper beds, two adult sleeping rooms.

B. Type of Contract: Single Prime Lump Sum. **Note: Owner will pay Tap fees, inspections fees, meter fees associated with water and sewer work.**

1.4 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 ACCESS TO SITE

A. General: Contractors shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

2. Contractor to set/coordinate all onsite restrictions.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The 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. Imperative mood and streamlined language are generally used in the Specifications. 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.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.

2. Unit-cost allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices.

2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM AND UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.

2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.

4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. One (1)-Door Hardware: Unit-Cost Allowance: Include the sum of $800 per door leaf: Include mechanical door hardware with quality standards as specified in Section 087111 "Door Hardware (Descriptive Specification)".

1. This allowance includes material cost. Design and schedule to be filled out by hardware supplier. See spec.

2. This allowance does not include electrified security systems to be specified separately in this project.

B. Allowance No. Two (2)-unsuitable soils: Unit-Cost Allowance: $5,000

1. This allowance includes excavation, installation and hauling cost.

C. Allowance No. Three (3)-Interior Signage: Lump-Sum Allowance: Include the sum of $1000 for purchase of interior signage.

1. This allowance includes material cost and installation.

D. Allowance No. Four (4)-Exterior Signage: Lump-Sum Allowance: Include the sum of $4000 for purchase of exterior signage.

1. This allowance includes material cost and installation. NOTE: THE ALLOWANCE IS TO BE APPLIED TO THE TOP PORTION OF THE DONOR SIGN SHOWN ON DETAIL A3/A8.11. CONTRACTOR IS TO INCLUDE IN THEIR BID PRICE OUTSIDE OF THE ALLOWANCE THE STONE PIERS AND FOOTINGS AS THIS SAME MATERIAL IS BEING USED ELSEWHERE IN THE PROJECT.

E. Allowance No. Five (5)-Appliances: Lump-Sum Allowance: Include the sum of $4000 for appliances. References section 113100 "Residential Appliances" for general quality and installation standards as well as drawing for general layouts and locations.

1. This allowance includes material cost.

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.2 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

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

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. One (1) - Unsatisfactory soil.

1. Description: Removal of unsatisfactory soil and replacement with satisfactory soil material.

2. Unit of Measurement: Cubic Yard.

B. Unit Price No. Two (2) – Mass Rock excavation – haul off and haul in.

1. Description: Removal of Mass Rock and replacement with Mass Rock material.

2. Unit of Measurement: Cubic Yard.

C. Unit Price No. Three (3) – Trench Rock excavation – haul off and haul in.

1. Description: Removal of trench Rock and replacement with trench Rock material.

2. Unit of Measurement: Cubic Yard.

D.

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.

2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. One (1): provide wood ceiling in infirmary room #113

1. Base Bid: Gyp bd ceiling

2. Alternate: provide wood ceiling in infirmary room in lieu of gyp bd ceiling

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.

j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor through of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Requested substitution provides sustainable design characteristics that specified product provided.

c. Requested substitution will not adversely affect Contractor's construction schedule.

d. Requested substitution has received necessary approvals of authorities having jurisdiction.

e. Requested substitution is compatible with other portions of the Work.

f. Requested substitution has been coordinated with other portions of the Work.

g. Requested substitution provides specified warranty.

h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

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

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

e. Quotation Form: Use forms acceptable to the Architect and Owner as outlined in the agreement between Owner and Contractor.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.4 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: Refer to Contract Conditions (Agreement between Owner and Contractor) for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances, and accepted alternates.

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction or Work Change Directive: Architect and University Project manager may issue a Work Change Directive on AIA Document G714. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with continuation sheets.

b. Submittal schedule.

c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.

b. Name of Architect.

c. Architect's project number.

d. Contractor's name and address.

e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment. .

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

    1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

2. When an application shows completion of an item, submit conditional final or full waivers.

3. Owner reserves the right to designate which entities involved in the Work must submit waivers.

4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

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

1. List of subcontractors.

2. Schedule of values.

3. Contractor's construction schedule (preliminary if not final).

4. Schedule of unit prices.

5. Submittal schedule (preliminary if not final).

6. List of Contractor's staff assignments.

7. List of Contractor's principal consultants.

8. Copies of building permits.

9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.

10. Initial progress report.

11. Report of preconstruction conference.

12. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.

3. Updated final statement, accounting for final changes to the Contract Sum.

4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."

5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."

6. AIA Document G707-1994, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.

8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination drawings.

2. Requests for Information (RFIs).

3. Project meetings.

B. Related Requirements:

1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

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

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.

2. Project number.

3. Date.

4. Name of Contractor.

5. Name of Architect.

6. RFI number, numbered sequentially.

7. RFI subject.

8. Specification Section number and title and related paragraphs, as appropriate.

9. Drawing number and detail references, as appropriate.

10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

   a. Requests for approval of submittals.

   b. Requests for approval of substitutions.

   c. Requests for coordination information already indicated in the Contract Documents.

   d. Requests for adjustments in the Contract Time or the Contract Sum.

   e. Requests for interpretation of Architect's actions on submittals.

   f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly with the following:

1. Project name.

2. Name and address of Contractor.

3. Name and address of Architect.

4. RFI number including RFIs that were dropped and not submitted.

5. RFI description.

6. Date the RFI was submitted.

7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 20 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.

b. Phasing.

c. Critical work sequencing and long-lead items.

d. Designation of key personnel and their duties.

e. Procedures for processing field decisions and Change Orders.

f. Procedures for RFIs.

g. Procedures for testing and inspecting.

h. Procedures for processing Applications for Payment.

i. Distribution of the Contract Documents.

j. Submittal procedures.

k. Preparation of record documents.

l. Use of the premises.

m. Work restrictions.

n. Working hours.

o. Owner's occupancy requirements.

p. Responsibility for temporary facilities and controls.

q. Procedures for moisture and mold control.

r. Procedures for disruptions and shutdowns.

s. Construction waste management and recycling.

t. Parking availability.

u. Office, work, and storage areas.

v. Equipment deliveries and priorities.

w. First aid.

x. Security.

y. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner's Commissioning Authority of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.

b. Options.

c. Related RFIs.

d. Related Change Orders.

e. Purchases.

f. Deliveries.

g. Submittals.

h. Review of mockups.

i. Possible conflicts.

j. Compatibility problems.

k. Time schedules.

l. Weather limitations.

m. Manufacturer's written instructions.

n. Warranty requirements.

o. Compatibility of materials.

p. Acceptability of substrates.

q. Temporary facilities and controls.

r. Space and access limitations.

s. Regulations of authorities having jurisdiction.

t. Testing and inspecting requirements.

u. Installation procedures.

v. Coordination with other work.

w. Required performance results.

x. Protection of adjacent work.

y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals.

1. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

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

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.

2) Sequence of operations.

3) Status of submittals.

4) Deliveries.

5) Off-site fabrication.

6) Access.

7) Site utilization.

8) Temporary facilities and controls.

9) Progress cleaning.

10) Quality and work standards.

11) Status of correction of deficient items.

12) Field observations.

13) Status of RFIs.

14) Status of proposal requests.

15) Pending changes.

16) Status of Change Orders.

17) Pending claims and disputes.

18) Documentation of information for payment requests.

3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Construction schedule updating reports.
3. Daily construction reports.
4. Site condition reports.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for preparing a combined Contractor's construction schedule.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.

2. PDF electronic file.

3. Two paper copies.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

3. Total Float Report: List of all activities sorted in ascending order of total float.

4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.

2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.

4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect'sadministrative procedures necessary for certification of Substantial Completion.

6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.

2. Work under More Than One Contract: Include a separate activity for each contract.

3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.

4. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.

b. Limitations of continued occupancies.

c. Uninterruptible services.

d. Partial occupancy before Substantial Completion.

e. Use of premises restrictions.

f. Provisions for future construction.

g. Seasonal variations.

h. Environmental control.

5. Work Stages: Indicate important stages of construction for each major portion of the Work.

6. Other Constraints: .

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.

2. Unanswered Requests for Information.

3. Rejected or unreturned submittals.

4. Notations on returned submittals.

5. Pending modifications affecting the Work and Contract Time.

F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.

G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

2.3 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.

2. List of separate contractors at Project site.

3. Approximate count of personnel at Project site.

4. Equipment at Project site.

5. Material deliveries.

6. High and low temperatures and general weather conditions, including presence of rain or snow.

7. Accidents.

8. Meetings and significant decisions.

9. Unusual events.

10. Stoppages, delays, shortages, and losses.

11. Meter readings and similar recordings.

12. Emergency procedures.

13. Orders and requests of authorities having jurisdiction.

14. Change Orders received and implemented.

15. Construction Change Directives received and implemented.

16. Services connected and disconnected.

17. Equipment or system tests and startups.

18. Partial completions and occupancies.

19. Substantial Completions authorized.

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

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:

1. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.

2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

3. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings willbe provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittal, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow 15days for review of each resubmittal.

D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.

3. Include the following information for processing and recording action taken:

a. Project name.

b. Date.

c. Name of Architect.

d. Name of Contractor.

e. Name of subcontractor.

f. Name of supplier.

g. Name of manufacturer.

h. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

i. Number and title of appropriate Specification Section.

j. Drawing number and detail references, as appropriate.

k. Location(s) where product is to be installed, as appropriate.

l. Other necessary identification.

4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.

a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.

4. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software acceptable to Owner, containing the following information:

    a. Project name.

    b. Date.

    c. Name and address of Architect.

    d. Name of Contractor.

    e. Name of firm or entity that prepared submittal.

    f. Names of subcontractor, manufacturer, and supplier.

    g. Category and type of submittal.

    h. Submittal purpose and description.

    i. Specification Section number and title.

    j. Specification paragraph number or drawing designation and generic name for each of multiple items.

    k. Drawing number and detail references, as appropriate.

    l. Location(s) where product is to be installed, as appropriate.

    m. Related physical samples submitted directly.

    n. Indication of full or partial submittal.

    o. Transmittal number, numbered consecutively.

    p. Submittal and transmittal distribution record.

    q. Other necessary identification.

    r. Remarks.

5. Metadata: Include the following information as keywords in the electronic submittal file metadata:

    a. Project name.

    b. Number and title of appropriate Specification Section.

c. Manufacturer name.

d. Product name.

F. Options: Identify options requiring selection by Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.

a. Architect, through will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.

3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.

4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.

b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.

b. Manufacturer's product specifications.

c. Standard color charts.

d. Statement of compliance with specified referenced standards.

e. Testing by recognized testing agency.

f. Application of testing agency labels and seals.

g. Notation of coordination requirements.

h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams showing factory-installed wiring.

b. Printed performance curves.

c. Operational range diagrams.

d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

6. Submit Product Data in the following format:

a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data[, unless submittal based on Architect's digital data drawing files is otherwise permitted].

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.

    b. Schedules.

    c. Compliance with specified standards.

    d. Notation of coordination requirements.

    e. Notation of dimensions established by field measurement.

    f. Relationship and attachment to adjoining construction clearly indicated.

    g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm)] <Insert dimensions>.

3. Submit Shop Drawings in the following format:

    a. PDF electronic file.

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

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:

    a. Generic description of Sample.

    b. Product name and name of manufacturer.

    c. Sample source.

    d. Number and title of applicable Specification Section.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:

a. PDF electronic file.

F. Coordination Drawings Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."

H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures.

I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."

J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."

K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."

L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

U. Schedule of Tests and Inspections: Comply with requirements specified in Section 014000 "Quality Requirements."

V. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

W. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed

before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

X. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

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

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

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

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.

3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.

2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.

2. Project title and number.

3. Name, address, and telephone number of testing agency.

4. Dates and locations of samples and tests or inspections.

5. Names of individuals making tests and inspections.

6. Description of the Work and test and inspection method.

7. Identification of product and Specification Section.

8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.

10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Name and signature of laboratory inspector.

13. Recommendations on retesting and reinspecting.

B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of representative making report.

2. Statement on condition of substrates and their acceptability for installation of product.

3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

4. Results of operational and other tests and a statement of whether observed performance complies with requirements.

5. Other required items indicated in individual Specification Sections.

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

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.

b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.

5. Preliminary design mix proposed for use for material mixes that require control by testing agency.

6. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to Architect.

4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

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

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

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

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

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

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. AABC - Associated Air Balance Council; www.aabc.com.

2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.

3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.

4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.

5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.

6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.

7. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.

8. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.

9. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.

10. AF&PA - American Forest & Paper Association; www.afandpa.org.

11. AGA - American Gas Association; www.aga.org.

12. AHAM - Association of Home Appliance Manufacturers; www.aham.org.

13. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.

14. AI - Asphalt Institute; www.asphaltinstitute.org.

15. AIA - American Institute of Architects (The); www.aia.org.

16. AISC - American Institute of Steel Construction; www.aisc.org.

17. AISI - American Iron and Steel Institute; www.steel.org.

18. AITC - American Institute of Timber Construction; www.aitc-glulam.org.

19. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.

20. ANSI - American National Standards Institute; www.ansi.org.

21. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.

22. APA - APA - The Engineered Wood Association; www.apawood.org.

23. APA - Architectural Precast Association; www.archprecast.org.

24. API - American Petroleum Institute; www.api.org.

25. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).

26. ARI - American Refrigeration Institute; (See AHRI).

27. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.

28. ASCE - American Society of Civil Engineers; www.asce.org.

29. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).

30. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.

31. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.

32. ASSE - American Society of Safety Engineers (The); www.asse.org.

33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.

34. ASTM - ASTM International; (American Society for Testing and Materials International); www.astm.org.

35. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.

36. AWEA - American Wind Energy Association; www.awea.org.

37. AWI - Architectural Woodwork Institute; www.awinet.org.

38. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.

39. AWPA - American Wood Protection Association; (Formerly: American Wood-Preservers' Association); www.awpa.com.

40. AWS - American Welding Society; www.aws.org.

41. AWWA - American Water Works Association; www.awwa.org.

42. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.

43. BIA - Brick Industry Association (The); www.gobrick.com.

44. BICSI - BICSI, Inc.; www.bicsi.org.

45. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.

46. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.

47. BOCA - BOCA; (Building Officials and Code Administrators International Inc.); (See ICC).

48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.

49. CDA - Copper Development Association; www.copper.org.

50. CEA - Canadian Electricity Association; www.electricity.ca.

51. CEA - Consumer Electronics Association; www.ce.org.

52. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.

53. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.

54. CGA - Compressed Gas Association; www.cganet.com.

55. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.

56. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.

57. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.

58. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.

59. CPA - Composite Panel Association; www.pbmdf.com.

60. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.

61. CRRC - Cool Roof Rating Council; www.coolroofs.org.

62. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.

63. CSA - Canadian Standards Association; www.csa.ca.

64. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.

65. CSI - Construction Specifications Institute (The); www.csinet.org.

66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.

67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.

68. CWC - Composite Wood Council; (See CPA).

69. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.

70. DHI - Door and Hardware Institute; www.dhi.org.

71. ECA - Electronic Components Association; www.ec-central.org.

72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECA).

73. EIA - Electronic Industries Alliance; (See TIA).

74. EIMA - EIFS Industry Members Association; www.eima.com.

75. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.

76. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.

77. ESTA - Entertainment Services and Technology Association; (See PLASA).

78. EVO - Efficiency Valuation Organization; www.evo-world.org.

79. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.

80. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.

81. FM Approvals - FM Approvals LLC; www.fmglobal.com.

82. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.

83. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.

84. FSA - Fluid Sealing Association; www.fluidsealing.com.

85. FSC - Forest Stewardship Council U.S.; www.fscus.org.

86. GA - Gypsum Association; www.gypsum.org.

87. GANA - Glass Association of North America; www.glasswebsite.com.

88. GS - Green Seal; www.greenseal.org.

89. HI - Hydraulic Institute; www.pumps.org.

90. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).

91. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).

92. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.

93. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.

94. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.

95. IAS - International Approval Services; (See CSA).

96. ICBO - International Conference of Building Officials; (See ICC).

97. ICC - International Code Council; www.iccsafe.org.

98. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.

99. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.

100. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.

101. IEC - International Electrotechnical Commission; www.iec.ch.

102. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.

103. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.

104. IESNA - Illuminating Engineering Society of North America; (See IES).

105. IEST - Institute of Environmental Sciences and Technology; www.iest.org.

106. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.

107. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.

108. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.

109. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.

110. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.

111. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).

112. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.

113. ISO - International Organization for Standardization; www.iso.org.

114. ISSFA - International Solid Surface Fabricators Association; (See ISFA).

115. ITU - International Telecommunication Union; www.itu.int/home.

116. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.

117. LMA - Laminating Materials Association; (See CPA).

118. LPI - Lightning Protection Institute; www.lightning.org.

119. MBMA - Metal Building Manufacturers Association; www.mbma.com.

120. MCA - Metal Construction Association; www.metalconstruction.org.

121. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.

122. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.

123. MHIA - Material Handling Industry of America; www.mhia.org.

124. MIA - Marble Institute of America; www.marble-institute.com.

125. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.

126. MPI - Master Painters Institute; www.paintinfo.com.

127. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.

128. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.

129. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.

130. NADCA - National Air Duct Cleaners Association; www.nadca.com.

131. NAIMA - North American Insulation Manufacturers Association; www.naima.org.

132. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.

133. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.

134. NCMA - National Concrete Masonry Association; www.ncma.org.

135. NEBB - National Environmental Balancing Bureau; www.nebb.org.

136. NECA - National Electrical Contractors Association; www.necanet.org.

137. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.

138. NEMA - National Electrical Manufacturers Association; www.nema.org.

139. NETA - InterNational Electrical Testing Association; www.netaworld.org.

140. NFHS - National Federation of State High School Associations; www.nfhs.org.

141. NFPA - NFPA; (National Fire Protection Association); www.nfpa.org.

142. NFPA - NFPA International; (See NFPA).

143. NFRC - National Fenestration Rating Council; www.nfrc.org.

144. NHLA - National Hardwood Lumber Association; www.nhla.com.

145. NLGA - National Lumber Grades Authority; www.nlga.org.

146. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).

147. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.

148. NRCA - National Roofing Contractors Association; www.nrca.net.

149. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.

150. NSF - NSF International; (National Sanitation Foundation International); www.nsf.org.

151. NSPE - National Society of Professional Engineers; www.nspe.org.

152. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.

153. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.

154. NWFA - National Wood Flooring Association; www.nwfa.org.

155. PCI - Precast/Prestressed Concrete Institute; www.pci.org.

156. PDI - Plumbing & Drainage Institute; www.pdionline.org.

157. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.

158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.

159. RFCI - Resilient Floor Covering Institute; www.rfci.com.

160. RIS - Redwood Inspection Service; www.redwoodinspection.com.

161. SAE - SAE International; (Society of Automotive Engineers); www.sae.org.

162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.

163. SDI - Steel Deck Institute; www.sdi.org.

164. SDI - Steel Door Institute; www.steeldoor.org.

165. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.

166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).

167. SIA - Security Industry Association; www.siaonline.org.

168. SJI - Steel Joist Institute; www.steeljoist.org.

169. SMA - Screen Manufacturers Association; www.smainfo.org.

170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.

171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.

172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.

173. SPIB - Southern Pine Inspection Bureau; www.spib.org.

174. SPRI - Single Ply Roofing Industry; www.spri.org.

175. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.

176. SSINA - Specialty Steel Industry of North America; www.ssina.com.

177. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.

178. STI - Steel Tank Institute; www.steeltank.com.

179. SWI - Steel Window Institute; www.steelwindows.com.

180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.

181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.

182. TCNA - Tile Council of North America, Inc.; (Formerly: Tile Council of America); www.tileusa.com.

183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.

184. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.

185. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).

186. TMS - The Masonry Society; www.masonrysociety.org.

187. TPI - Truss Plate Institute; www.tpinst.org.

188. TPI - Turfgrass Producers International; www.turfgrasssod.org.

189. TRI - Tile Roofing Institute; www.tileroofing.org.

190. UBC - Uniform Building Code; (See ICC).

191. UL - Underwriters Laboratories Inc.; www.ul.com.

192. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.

193. USAV - USA Volleyball; www.usavolleyball.org.

194. USGBC - U.S. Green Building Council; www.usgbc.org.

195. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.

196. WASTEC - Waste Equipment Technology Association; www.wastec.org.

197. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.

198. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.

199. WDMA - Window & Door Manufacturers Association; www.wdma.com.

200. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.

201. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).

202. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.

203. WPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.

2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.

3. ICC - International Code Council; www.iccsafe.org.

4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

1. COE - Army Corps of Engineers; www.usace.army.mil.

2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.

3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.

4. DOD - Department of Defense; http://dodssp.daps.dla.mil.

5. DOE - Department of Energy; www.energy.gov.

6. EPA - Environmental Protection Agency; www.epa.gov.

7. FAA - Federal Aviation Administration; www.faa.gov.

8. FG - Federal Government Publications; www.gpo.gov.

9. GSA - General Services Administration; www.gsa.gov.

10. HUD - Department of Housing and Urban Development; www.hud.gov.

11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; http://eetd.lbl.gov.

12. OSHA - Occupational Safety & Health Administration; www.osha.gov.

13. SD - Department of State; www.state.gov.

14. TRB - Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.

15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.

16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.

17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.

18. USP - U.S. Pharmacopeia; www.usp.org.

19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

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

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

1.3 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

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

C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its

use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel.

1. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.

b. Ambulance service.

c. Contractor's home office.

d. Contractor's emergency after-hours telephone number.

e. Architect's office.

f. Engineers' offices.

g. Owner's office.

h. Principal subcontractors' field and home offices.

2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

J. Electronic Communication Service: Provide a desktop computer(or equivalent) in the primary field office adequate for use by Architect and Owner to access project electronic documents and maintain electronic communications. Equip computer with software compatible with the Architects:

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.

2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

2. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.

2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

3. Maintain and touchup signs so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

E. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.

1. Prohibit smoking in construction areas.

2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.

2. Keep interior spaces reasonably clean and protected from water damage.

3. Discard or replace water-damaged and wet material.

4. Discard, replace, or clean stored or installed material that begins to grow mold.

5. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable

product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 013300 "Submittal Procedures."

b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

2. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

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

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.

2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

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

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

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

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

3. Products:

   a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

   b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

   a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

   b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.

2. Field engineering and surveying.

3. Installation of the Work.

4. Cutting and patching.

5. Coordination of Owner-installed products.

6. Progress cleaning.

7. Starting and adjusting.

8. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.

2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 INFORMATIONAL SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

C. Certified Surveys: Submit two copies signed by land surveyor.

D. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

2. Establish limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

4. Inform installers of lines and levels to which they must comply.

5. Check the location, level and plumb, of every major element as the Work progresses.

6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Temporary Support: Provide temporary support of work to be cut.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

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

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

3.7 PROGRESS CLEANING

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

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

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).

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

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

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

1. Remove liquid spills promptly.

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

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements"

3.9 PROTECTION OF INSTALLED CONSTRUCTION

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

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

END OF SECTION

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Disposing of nonhazardous construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.3 PERFORMANCE REQUIREMENTS

A. General: Recycle construction waste as per best practices standards and requirements of local authorities or as directed by Owner.

1.4 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Provide for waste disposal in accordance with state and local rules and regulation as well as any owner specified requirements. Provide training of work forces to implement plan.

PART 2 - EXECUTION

2.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

2.2 RECYCLING CONSTRUCTION WASTE, GENERAL

A. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

2.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.

2. Final completion procedures.

3. Warranties.

4. Final cleaning.

5. Repair of the Work.

1.2 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section.

5. Submit test/adjust/balance records.

6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.

2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."

6. Advise Owner of changeover in heat and other utilities.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

9. Complete final cleaning requirements, including touchup painting.

10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."

2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Submit pest-control final inspection report and warranty.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Architect will return annotated copy.

b. PDF electronic file. Architect will return annotated copy.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

h. Sweep concrete floors broom clean in unoccupied spaces.

i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.

p. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.

2. Emergency manuals.

3. Operation manuals for systems, subsystems, and equipment.

4. Product maintenance manuals.

5. Systems and equipment maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.

2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.

b. Enable inserted reviewer comments on draft submittals.

2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.

C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.

B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.

2. Table of contents.

3. Manual contents.

C. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

D. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2.2 EMERGENCY MANUALS

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

1. Type of emergency.

2. Emergency instructions.

3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.

2. Flood.

3. Gas leak.

4. Water leak.

5. Power failure.

6. Water outage.

7. System, subsystem, or equipment failure.

8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.

2. Shutdown instructions for each type of emergency.

3. Operating instructions for conditions outside normal operating limits.

4. Required sequences for electric or electronic systems.

5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.

2. Performance and design criteria if Contractor is delegated design responsibility.

3. Operating standards.

4. Operating procedures.

5. Operating logs.

6. Wiring diagrams.

7. Control diagrams.

8. Piped system diagrams.

9. Precautions against improper use.

10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.

2. Manufacturer's name.

3. Equipment identification with serial number of each component.

4. Equipment function.

5. Operating characteristics.

6. Limiting conditions.

7. Performance curves.

8. Engineering data and tests.

9. Complete nomenclature and number of replacement parts.

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

1. Startup procedures.

2. Equipment or system break-in procedures.

3. Routine and normal operating instructions.

4. Regulation and control procedures.

5. Instructions on stopping.

6. Normal shutdown instructions.

7. Seasonal and weekend operating instructions.

8. Required sequences for electric or electronic systems.

9. Special operating instructions and procedures.

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

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

2.4 PRODUCT MAINTENANCE MANUALS

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

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

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

1. Product name and model number.

2. Manufacturer's name.

3. Color, pattern, and texture.

4. Material and chemical composition.

5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.

2. Types of cleaning agents to be used and methods of cleaning.

3. List of cleaning agents and methods of cleaning detrimental to product.

4. Schedule for routine cleaning and maintenance.

5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product,

list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

3. Identification and nomenclature of parts and components.

4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.

2. Troubleshooting guide.

3. Precautions against improper maintenance.

4. Disassembly; component removal, repair, and replacement; and reassembly instructions.

5. Aligning, adjusting, and checking instructions.

6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance manuals.

F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.

2. Record Specifications.

3. Record Product Data.

B. Related Requirements:

1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints and one paper copy set(s) of file prints.

2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints and three set(s) of prints.

2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

b. Record data as soon as possible after obtaining it.

c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.

3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.

2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.

3. Refer instances of uncertainty to Architect for resolution.

4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Format: Annotated PDF electronic file with comment function enabled.

3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

4. Identification: As follows:

   a. Project name.

   b. Date.

   c. Designation "PROJECT RECORD DRAWINGS."

   d. Name of Architect.

   e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

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

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.

2. Training in operation and maintenance of systems, subsystems, and equipment.

3. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

B. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training.

1.5 COORDINATION

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

B. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system(as indicated) including:

1. Basis of System Design, Operational Requirements, and Criteria.

2. Documentation.

3. Emergencies.

4. Operations.

5. Adjustments and Troubleshooting.

6. Maintenance and Repairs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.

2. Slabs-on-grade.

B. Related Sections:

1. Section 033300 "Architectural Concrete" for general building applications of specially finished formed concrete.

2. Section 035300 "Concrete Topping" for emery- and iron-aggregate concrete floor toppings.

3. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.

4. Section 321313 "Concrete Paving" for concrete pavement and walks.

5. Section 321316 "Decorative Concrete Paving" for decorative concrete pavement and walks.

1.3 DEFINITIONS

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

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

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

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer, and testing agency.

B. Welding certificates.

C. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.

2. Admixtures.

3. Form materials and form-release agents.

4. Steel reinforcement and accessories.

5. Waterstops.

6. Curing compounds.

7. Floor and slab treatments.

8. Bonding agents.

9. Adhesives.

10. Vapor retarders.

11. Semirigid joint filler.

12. Joint-filler strips.

13. Repair materials.

D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

E. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

F. Field quality-control reports.

G. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

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.

2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code - Reinforcing Steel."

F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

H. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

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.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. 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 exposed concrete surface.

2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

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

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

C. Deformed-Steel Wire: ASTM A 496/A 496M.

D. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," 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 steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I. Supplement with the following:

a. Fly Ash: ASTM C 618, Class F.

b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, uniformly graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 1 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94 and potable.

2.5 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

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

a. Greenstreak.

b. Williams Products, Inc.

2. Profile: To suit joint.

B. Flexible PVC Waterstops: CE CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.

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

a. BoMetals, Inc.

b. Greenstreak.

c. Paul Murphy Plastics Company.

d. Vinylex Corp.

2. Profile: To suit joint.

C. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle Coatings & Waterproofing, Inc.; MiraSTOP.

b. CETCO; Volclay Waterstop-RX.

c. Concrete Sealants Inc.; Conseal CS-231.

d. Greenstreak; Swellstop.

e. Henry Company, Sealants Division; Hydro-Flex.

f. JP Specialties, Inc.; Earth Shield Type 20.

D. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Adeka Ultra Seal/OCM, Inc.; Adeka Ultra Seal.

b. Greenstreak; Hydrotite.

c. Vinylex Corp.; Swellseal.

2.7 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A, not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Carlisle Coatings & Waterproofing, Inc.; Blackline 400.

b. Fortifiber Building Systems Group; Moistop Ultra 15.

c. Grace Construction Products, W. R. Grace & Co.; Florprufe 120.

d. Meadows, W. R., Inc.; Perminator 15 mil.

e. Raven Industries Inc.; Vapor Block 15.

f. Reef Industries, Inc.; Griffolyn 15 mil Green.

g. Stego Industries, LLC; Stego Wrap 15 mil Class A.

B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

2.8 FLOOR AND SLAB TREATMENTS

A. Slip-Resistive Emery Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive, crushed emery aggregate containing not less than 50 percent

aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials with 100 percent passing No. 8 sieve.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Anti-Hydro International, Inc.; Emery.

   b. Dayton Superior Corporation; Emery Tuff Non-Slip.

   c. Lambert Corporation; EMAG-20.

   d. L&M Construction Chemicals, Inc.; Grip It.

   e. Metalcrete Industries; Metco Anti-Skid Aggregate.

2.9 LIQUID FLOOR TREATMENTS

A. VOC Content: Liquid floor treatments shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. ChemMasters; Chemisil Plus.

   b. ChemTec Int'l; ChemTec One.

   c. Conspec by Dayton Superior; Intraseal.

   d. Curecrete Distribution Inc.; Ashford Formula.

   e. Dayton Superior Corporation; Day-Chem Sure Hard (J-17).

   f. Edoco by Dayton Superior; Titan Hard.

   g. Euclid Chemical Company (The), an RPM company; Euco Diamond Hard.

   h. Kaufman Products, Inc.; SureHard.

   i. L&M Construction Chemicals, Inc.; Seal Hard.

   j. Meadows, W. R., Inc.; LIQUI-HARD.

   k. Metalcrete Industries; Floorsaver.

   l. Nox-Crete Products Group; Duro-Nox.

m. Symons by Dayton Superior; Buff Hard.

n. US SPEC, Division of US Mix Products Company; US SPEC Industraseal.

o. Vexcon Chemicals, Inc.; Vexcon StarSeal PS Clear.

C. Penetrating Liquid Floor Treatments for Polished Concrete Finish: Clear, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and is suitable for polished concrete surfaces.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Advanced Floor Products; Retro-Plate 99.

b. L&M Construction Chemicals, Inc.; FGS Hardener Plus.

c. QuestMark, a division of CentiMark Corporation; DiamondQuest Densifying Impregnator Application.

2.10 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Axim Italcementi Group, Inc.; CATEXOL CimFilm.

b. BASF Construction Chemicals - Building Systems; Confilm.

c. ChemMasters; SprayFilm.

d. Conspec by Dayton Superior; Aquafilm.

e. Dayton Superior Corporation; Sure Film (J-74).

f. Edoco by Dayton Superior; BurkeFilm.

g. Euclid Chemical Company (The), an RPM company; Eucobar.

h. Kaufman Products, Inc.; Vapor-Aid.

i. Lambert Corporation; LAMBCO Skin.

j. L&M Construction Chemicals, Inc.; E-CON.

k. Meadows, W. R., Inc.; EVAPRE.

l. Metalcrete Industries; Waterhold.

m. Nox-Crete Products Group; MONOFILM.

n. Sika Corporation; SikaFilm.

o. SpecChem, LLC; Spec Film.

p. Symons by Dayton Superior; Finishing Aid.

q. TK Products, Division of Sierra Corporation; TK-2120 TRI-FILM.

r. Unitex; PRO-FILM.

s. Vexcon Chemicals, Inc.; Certi-Vex Envio Set.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals - Building Systems; Kure-N-Seal 25 LV.

b. ChemMasters; Spray-Cure & Seal Plus.

c. Conspec by Dayton Superior; Sealcure 1315.

d. Dayton Superior Corporation; Day-Chem Cure and Seal (J-22UV).

e. Edoco by Dayton Superior; Cureseal 1315.

f. Euclid Chemical Company (The), an RPM company; Super Diamond Clear; LusterSeal 300.

g. Kaufman Products, Inc.; Sure Cure 25.

h. Lambert Corporation; UV Super Seal.

i. L&M Construction Chemicals, Inc.; Lumiseal Plus.

j. Meadows, W. R., Inc.; CS-309/30.

k. Metalcrete Industries; Seal N Kure 30.

l. Right Pointe; Right Sheen 30.

m. Vexcon Chemicals, Inc.; Certi-Vex AC 1315.

2. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Construction Chemicals - Building Systems; Kure 1315.

b. ChemMasters; Polyseal WB.

c. Conspec by Dayton Superior; Sealcure 1315 WB.

d. Edoco by Dayton Superior; Cureseal 1315 WB.

e. Euclid Chemical Company (The), an RPM company; Super Diamond Clear VOX; LusterSeal WB 300.

f. Kaufman Products, Inc.; Sure Cure 25 Emulsion.

g. Lambert Corporation; UV Safe Seal.

h. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.

i. Meadows, W. R., Inc.; Vocomp-30.

j. Metalcrete Industries; Metcure 30.

k. Right Pointe; Right Sheen WB30.

l. Symons by Dayton Superior; Cure & Seal 31 Percent E.

m. Vexcon Chemicals, Inc.; Vexcon Starseal 1315.

2. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.11 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements.

2.12 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109.

2.13 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture 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 mixtures where indicated.

2.14 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: As indicated on drawings.

2. Maximum Water-Cementitious Materials Ratio: 0.50.

3. Slump Limit: 4 inches; 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.

B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: As indicated on drawings.

2. Slump Limit: 5 inches, plus or minus 1 inch.

3. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.

4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.15 FABRICATING REINFORCEMENT

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

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, 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.

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 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 347 as abrupt or gradual, as follows:

1. Class C, 1/2 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. 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 rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

B. 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.

C. 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 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

B. Granular Course: 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.

3.5 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 that would reduce bond to concrete.

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.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire reinforcement 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.

3.6 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. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3. 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.

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. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: 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.

3.7 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

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.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal 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 indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.

2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations 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 mixture 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, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg 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. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist 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 defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.

C. 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 ACI 302.1R recommendations 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 to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings or mortar setting beds for 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 receive trowel finish and 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 troweling 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, 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, according to ASTM E 1155, for a randomly trafficked floor surface:

a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, 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 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.

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the 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 from manufacturer furnishing machines and equipment.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 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 for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, 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 certifies will not interfere with bonding of floor covering used on Project.

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.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

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. Polished Concrete Floor Treatment: Apply polished concrete finish system to cured and prepared slabs to match accepted mockup.

1. Machine grind floor surfaces to receive polished finishes level and smooth.

2. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.

3. Continue polishing with progressively finer grit diamond polishing pads to gloss level to match approved mockup.

4. Control and dispose of waste products produced by grinding and polishing operations.

5. Neutralize and clean polished floor surfaces.

C. 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 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 Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 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 mixture 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.

D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.

2. Verification of use of required design mixture.

3. Concrete placement, including conveying and depositing.

4. Curing procedures and maintenance of curing temperature.

C. Concrete Tests: 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 mixture 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/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete;one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. 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.

8. Strength of each concrete mixture 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.

9. 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 mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

10. 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.

11. 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/C 42M or by other methods as directed by Architect.

12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

3.17 PROTECTION OF LIQUID FLOOR TREATMENTS

A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION 03 30 00

SECTION 04 43 13.16 - ADHERED MANUFACTURERD STONE MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stone masonry adhered to cold-formed metal framing and sheathing.

B. Related Requirements:

1. Section 042000 "Unit Masonry" for concealed flashing.

2. Section 055000 "Metal Fabrications" for furnishing steel lintels and shelf angles for stone masonry.

1.2 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Samples:

1. For each stone type indicated.

2. For each color of mortar required.

1.3 FIELD CONDITIONS

A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work.

B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried.

C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERED STONE

A. Varieties and Sources: Subject to compliance with requirements, provide the following:

1. Basis of design. Heritage Stone (Provia): Dry Stack, Colorado. **MATCH CAMP EXISTING**

B. Properties:

1. Manufactured Masonry Physical Properties:

a. Compressive Strength: ASTM C39, 5970 psi, 5 specimen average.

b. Tensile Strength: ASTM C190: 297.4 psi.

c. Flexural Strength: ASTM C348: 584.2 psi.

d. Shear Bond: ASTM C 482: 87.4 psi.

e. Thermal Resistance: ASTM C518: 2.06 at 1.038 inches of thickness.

f. Freeze/Thaw: ASTM C 67, no disintegration and less than 3 percent weight loss.

g. Fire Hazard Test UL 723: flame spread: 0, smoke development: 0

h. Maximum Veneer Unit Weight: 11 psf.(ASTM C1670)

2.2 MORTAR MATERIALS

A. Portland Cement: Comply with ASTM C 1329.

B. Hydrated Lime: ASTM C 207, Type S.

C. Color pigment: ASTM C979, mineral oxide pigments.

D. Aggregate: ASTM C 144 and as follows:

1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.

2. White Aggregates: Natural white sand or ground white stone.

3. Colored Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.

E. Latex Additive: Manufacturer's standard acrylic-resin or styrene-butadiene-rubber water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement mortar bed, and not containing a retarder.

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

a. Bonsal American, an Oldcastle company.

b. Laticrete International, Inc.

c. Parex USA, Inc.

d. Southern Grouts & Mortars, Inc.

F. Water: Potable.

2.3 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with SMACNA's "Architectural Sheet Metal Manual and as follows:

1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.

B. Flexible Flashing: For flashing unexposed to the exterior, use the following unless otherwise indicated:

1. Copper-Laminated Flashing: 7-oz./sq. ft. copper sheet bonded with asphalt between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.

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

1) Advanced Building Products Inc.; Copper Fabric Flashing.

2) Dayton Superior Corporation, Dur-O-Wal Division; Copper Fabric Thru-Wall Flashing.

3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.

4) Phoenix Building Products; Type FCC-Fabric Covered Copper.

5) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.

6) York Manufacturing, Inc.; Multi-Flash 500.

2.4 MISCELLANEOUS MASONRY ACCESSORIES

A. Cementitious Dampproofing: Cementitious formulation recommended by ILI and nonstaining to stone, compatible with joint sealants, and noncorrosive to veneer anchors and attachments.

B. Weep Products: Use the following unless otherwise indicated:

1. Mesh Weep Holes: Free-draining mesh; made from polyethylene strands, full width of head joint and 2 inches high by thickness of stone masonry; in color selected from manufacturer's standard.

C. Drainage plane: Use at locations indicated on drawings

1. Description: 0.024 inch thick, high impact polystyrene sheets formed with corrugations and a spunbond polypropylene fabric on one side with a 4 inch on one edge.

2. Fungi Resistance: No Growth; ASTM C 1338.

3. Ultra-Violet (UV) Exposure: No Peeling, chipping, cracking, flaking, pitting, crazing, erosion or other deleterious effects were observed under a 5X magnification; ASTM G 154.

2.5 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.

2.6 FABRICATION

A. Select stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and pattern specified in "Setting Stone Masonry" Article.

B. Thickness of Stone: Provide thickness indicated, but not less than the following:

1. Thickness: 1-2 inch plus or minus 1/4 inch.

C. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples.

2.7 MORTAR MIXES

A. General: Do not use admixtures unless otherwise indicated.

1. Do not use calcium chloride.

2. Use portland cement-lime mortar unless otherwise indicated.

3. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for one to two hours. Add remaining water in small portions until mortar reaches required consistency. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.

B. Mortar for Stone Masonry: Comply with ASTM C 270, Proportion Specification.(ANSI A118.4 for Polymer modified –Dry Stack)

1. Mortar for Setting Stone: Type S.

2. Mortar for Pointing Stone: Type N.

C. Latex-Modified Portland Cement Setting Mortar: Proportion and mix portland cement, aggregate, and latex additive to comply with latex-additive manufacturer's written instructions.

D. Cement-Paste Bond Coat: Mix either neat cement and water or cement, sand, and water to a consistency similar to that of thick cream.

1. For latex-modified, portland cement, setting-bed mortar, substitute latex admixture for part or all of water, according to latex-additive manufacturer's written instructions.

E. Mortar for Scratch Coat over Unit Masonry: 1 part portland cement, 1 part lime, 7 parts loose damp sand, and enough water to produce a workable consistency.

PART 3 - EXECUTION

3.1 SETTING STONE MASONRY

A. Perform necessary field cutting and trimming as manufactured stone as per manufacturers instructions.

B. Arrange stones in preselected pattern, as per manufacturers design and as shown on drawings.

C. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any.

D. Provide sealant joints of widths and at locations indicated.

1. Keep sealant joints free of mortar and other rigid materials.

2. Sealing joints is specified in Section 079200 "Joint Sealants."

E. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

1. At multiwythe masonry walls, extend flashing through stone masonry, turned up a minimum of 4 inches and extend into or through inner wythe to comply with requirements in Section 042000 "Unit Masonry."

2. At lintels and shelf angles, extend flashing full length of angles but not less than 6 inches into masonry at each end.

3. Cut flexible flashing flush with wall face after completing masonry wall construction.

F. Place weep holes in joints where moisture may accumulate, including above shelf angles and at flashing.

1. Use mesh weep holes to form weep holes.

3.2 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 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 or 1/2 inch in 40 feet or more.

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 or 1/2 inch in 40 feet or more.

C. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet or 3/4 inch in 40 feet or more.

3.3 INSTALLATION OF ADHERED STONE MASONRY VENEER

A. Install in compliance with manufacturer's instructions and with ASTM C1780.

B. Install flashing over sheathing and behind weather-resistant barrier by fastening through sheathing into framing.

C. Install drainage plane in locations indicated on drawing. Primary location for drainage plains are on framed wall installation and are not required on masonry or concrete back-up walls.

D. Install continuous installation as indicated on drawings.

E. Coat backs of stone units and face of masonry backup with cement-paste bond coat, then butter both surfaces with setting mortar. Use sufficient setting mortar so a slight excess will be forced out the edges of stone units as they are set. Tap units into place, completely filling space between units and masonry backup.

3.4 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone 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.

4. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.

5. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.

3.5 EXCESS MATERIALS AND WASTE

A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.

B. Disposal as Fill Material: Dispose of clean masonry waste, including mortar and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches of finished grade.

END OF SECTION 04 43 13.16

SECTION 04 72 00 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-stone trim.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For cast-stone units, include dimensions and finishes.

B. Shop Drawings: Show fabrication and installation details for cast-stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

C. Samples:

1. For each color and texture of cast stone required.

2. For colored mortar.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C 1364, including test for resistance to freezing and thawing.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of cast-stone units similar to those indicated for this Project that has sufficient production capacity to manufacture required units, and is a plant certified by the Cast Stone Institute.

PART 2 - PRODUCTS

2.1 CAST-STONE UNITS

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

a. Arriscraft.

b. Boral Stone Products LLC.

c. Coronado Stone Products.

d. Continental Cast Stone Manufacturers Inc.

e. Custom Cast Stone

B. Cast-Stone Units: Comply with ASTM C 1364.

1. Units shall be manufactured using the vibrant dry tamp or wet-cast method.

2. Units shall be resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666/C 666M, Procedure A, as modified by ASTM C 1364.

C. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.

2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.

3. Provide drips on projecting elements unless otherwise indicated.

D. Cure Units as Follows:

1. Cure units in enclosed, moist curing room at 95 to 100 percent relative humidity and temperature of 100 deg F (38 deg C) for 12 hours or 70 deg F (21 deg C) for 16 hours.

2. Keep units damp and continue curing to comply with one of the following:

a. No fewer than five days at mean daily temperature of 70 deg F (21 deg C) or above.

b. No fewer than six days at mean daily temperature of 60 deg F (16 deg C) or above.

c. No fewer than seven days at mean daily temperature of 50 deg F (10 deg C) or above.

d. No fewer than eight days at mean daily temperature of 45 deg F (7 deg C) or above.

E. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

F. Colors and Textures: As selected by Architect from manufacturer's full range.

2.2 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from steel complying with ASTM A 36/A 36M and hot-dip galvanized to comply with ASTM A 123/A 123M.

B. Dowels: 1/2-inch-diameter round bars, fabricated from steel complying with ASTM A 36/A 36M and hot-dip galvanized to comply with ASTM A 123/A 123M.

C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cast-stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

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

a. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions.

b. EaCo Chem, Inc.

c. PROSOCO, Inc.

2.3 MORTAR

A. Comply with requirements in Section 042000 "Unit Masonry" for mortar mixes.

1. For setting mortar, use Type N.

2. For pointing mortar, use Type N.

B. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

PART 3 - EXECUTION

3.1 SETTING CAST STONE IN MORTAR

A. Install cast-stone units to comply with requirements in Section 042000 "Unit Masonry."

B. Set units in full bed of mortar with full head joints unless otherwise indicated.

1. Fill dowel holes and anchor slots with mortar.

2. Fill collar joints solid as units are set.

3. Build concealed flashing into mortar joints as units are set.

4. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.

5. Keep joints at shelf angles open to receive sealant.

C. Rake out joints for pointing with mortar to depths of not less than 3/4 inch (19 mm). Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

D. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch (10 mm). Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

E. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.

F. Provide sealant joints at expansion, control, and pressure-relieving joints; and at locations indicated.

3.2 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet , or 1/2 inch maximum.

B. Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.

C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.

D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch (1.5 mm), except where variation is due to warpage of units within tolerances specified.

3.3 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Section 042000 "Unit Masonry."

D. Final Cleaning: Section 042000 "Unit Masonry."

1. Clean cast stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

END OF SECTION 04 72 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.

2. Framing with engineered wood products.

3. Wood blocking, cants, and nailers.

4. Wood furring and grounds.

5. Wood sleepers.

6. Plywood backing panels.

B. Related Requirements:

1. Section 061063 "Exterior Rough Carpentry" for elevated decks and other exterior construction made of wood.

2. Section 061600 "Sheathing."

3. Section 061753 "Shop-Fabricated Wood Trusses" for wood trusses made from dimension lumber.

4. Section 313116 "Termite Control" for site application of borate treatment to wood framing.

1.3 DEFINITIONS

A. Exposed Framing: Framing not concealed by other construction.

B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

C. Timber: Lumber of 5 inches nominal or greater in least dimension.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.

2. NLGA: National Lumber Grades Authority.

3. RIS: Redwood Inspection Service.

4. SPIB: The Southern Pine Inspection Bureau.

5. WCLIB: West Coast Lumber Inspection Bureau.

6. WWPA: Western Wood Products Association.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

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

1.5 INFORMATIONAL SUBMITTALS

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

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

2. Engineered wood products.

3. Power-driven fasteners.

4. Powder-actuated fasteners.

5. Expansion anchors.

6. Metal framing anchors.

1.6 QUALITY ASSURANCE

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

1.7 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.

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

4. Provide dressed lumber, S4S, unless otherwise indicated.

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

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

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

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

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

D. Application: Treat items indicated on Drawings, and the following**:**

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.

5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.

1. Application: Interior partitions not indicated as load-bearing.

2. Species:

a. Spruce-pine-fir; NLGA.

b. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

c. Southern pine or mixed Southern pine; SPIB.

B. Ceiling Joists: Construction or No. 2 grade.

1. Species:

a. Southern pine; SPIB.

b. Spruce-pine-fir; NLGA.

c. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade.

1. Species:

a. Southern pine; SPIB.

D. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Application: Exposed exterior and interior framing indicated to receive a stained or natural finish.

2. Species and Grade: As indicated above for load-bearing construction of same type.

2.4 ENGINEERED WOOD PRODUCTS

A. Engineered Wood Products, General: Products shall contain no urea formaldehyde.

B. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.

C. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

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

a. Boise Cascade Corporation.

b. Finnforest USA.

c. Georgia-Pacific.

d. Jager Building Systems Inc.

e. Louisiana-Pacific Corporation.

f. Pacific Woodtech Corporation.

g. Roseburg Forest Products Co.

h. Standard Structures Inc.

i. Stark Truss Company, Inc.

j. West Fraser Timber Co., Ltd.

k. Weyerhaeuser Company.

2. Extreme Fiber Stress in Bending, Edgewise: 2600 psi for 12-inch nominal-depth members.

3. Modulus of Elasticity, Edgewise: 1,900,000 psi.

D. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

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

a. Louisiana-Pacific Corporation.

b. Weyerhaeuser Company.

2. Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal- depth members.

3. Modulus of Elasticity, Edgewise: 2,000,000 psi.

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.

2. Nailers.

3. Rooftop equipment bases and support curbs.

4. Cants.

5. Furring.

6. Grounds.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber and any of the following species:

1. Southern pine; SPIB.

2. Spruce-pine-fir; NLGA.

3. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.7 METAL FRAMING ANCHORS

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

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Cleveland Steel Specialty Co.

2. KC Metals Products, Inc.

3. Phoenix Metal Products, Inc.

4. Simpson Strong-Tie Co., Inc.

5. USP Structural Connectors.

C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

2.8 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

G. Do not splice structural members between supports unless otherwise indicated.

H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.

2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal-thickness.

3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.

4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.

J. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

K. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.

2. Use copper naphthenate for items not continuously protected from liquid water.

L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

N. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with indicated fastener patterns where applicable.

2. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD GROUND, SLEEPER, BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 WALL AND PARTITION FRAMING INSTALLATION

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.

1. Size and spacing indicated on drawings.

B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

3.4 CEILING JOIST AND RAFTER FRAMING INSTALLATION

A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal- size or 2-by-4-inch nominal- size stringers spaced 48 inches o.c. crosswise over main ceiling joists.

B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against valley rafters.

2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.

C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal- size boards between every third pair of rafters, but not more than 48 inches o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.5 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Wall sheathing.

2. Roof sheathing.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for plywood backing panels.

2. Section 072500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

A. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

B. Oriented Strand Board: DOC PS 2.

C. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

D. Factory mark panels to indicate compliance with applicable standard.

2.2 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.3 WALL SHEATHING

A. Plywood Wall Sheathing: Exposure 1 sheathing.

1. Span Rating: Not less than 24/0.

2. Nominal Thickness: Not less than 1/2 inch.

B. Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing.

1. Span Rating: Not less than 24/0.

2. Nominal Thickness: Not less than 1/2 inch.

2.4 ROOF SHEATHING

A. Plywood Roof Sheathing: Exposure 1 sheathing.

1. Span Rating: Not less than 32/16.

2. Nominal Thickness: Not less than 5/8 inch.

B. Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing.

1. Span Rating: Not less than 32/16.

2. Nominal Thickness: Not less than 5/8 inch.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail to wood framing.

END OF SECTION 06 16 00

SECTION 06 17 53 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Wood roof trusses.
2. Wood girder trusses.
3. Wood truss bracing.
4. Metal truss accessories.

B. Related Requirements:

1. Section 061600 "Sheathing" for roof sheathing and subflooring.
2. Section 313116 "Termite Control" for site application of borate treatment to wood trusses.

C. Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 012100 "Allowances."

1.3 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.

4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.

5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.

6. Show splice details and bearing details.

C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer.

B. Evaluation Reports: For the following, from ICC-ES:

1. Metal-plate connectors.

2. Metal truss accessories.

1.6 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.

2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations in TPI BCSI**,** "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.

2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.

3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.

2. Maximum Deflection Under Design Loads:

a. Roof Trusses: Vertical deflection of 1/240 of span, unless noted otherwise on drawings.

C. Comply with applicable requirements and recommendations of the following publications:

1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."

2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."

3. TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.

3. Provide dressed lumber, S4S.

4. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

B. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

2.3 METAL CONNECTOR PLATES

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

1. Alpine Engineered Products, Inc.; an ITW company.

2. Cherokee Metal Products, Inc.; Masengill Machinery Company.

3. CompuTrus, Inc.

4. Eagle Metal Products.

5. Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.

6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.

7. Robbins Engineering, Inc.

8. Truswal Systems Corporation; an ITW company.

B. Source Limitations: Obtain metal connector plates from single manufacturer.

C. General: Fabricate connector plates to comply with TPI 1.

D. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

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

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Cleveland Steel Specialty Co.

2. KC Metals Products, Inc.

3. Phoenix Metal Products, Inc.

4. Simpson Strong-Tie Co., Inc.

5. USP Structural Connectors.

C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 94 percent zinc dust by weight.

2.7 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

2.8 SOURCE QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections.

1. Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.

2. Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

B. Correct deficiencies in Work that special inspections indicate does not comply with the Contract Documents.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

H. Securely connect each truss ply required for forming built-up girder trusses.

1. Anchor trusses to girder trusses as indicated.

I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Section 061000 "Rough Carpentry."

2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

J. Install wood trusses within installation tolerances in TPI 1.

K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

L. Replace wood trusses that are damaged or do not meet requirements.

1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.2 REPAIRS AND PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

C. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

END OF SECTION 06 17 53

SECTION 06 20 13 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior composite wood trim.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each type of product involving selection of colors, profiles, or textures.

1.3 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.

2. For preservative-treated wood that is not marked with treatment-quality mark.

PART 2 - PRODUCTS

2.1 EXTERIOR TREATED COMPOSITE TRIM

A. Composite Trim: exterior treated wood composite trim.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MiraTEC (Craftmaster Manufacturering, Inc) or a comparable product approved by Architect.

2. Description: Exterior-grade, treated wood composite trim for non-structural applications.

3. Material:

a. Wood fibers combined with phenolic resins, zinc borate slurry, and water repellent.

b. No added urea formaldehyde.

4. Surface:

a. Clear wood grain texture on 1 side, smooth surface on other side.

b. Factory-primed on 4 sides with low VOC primer containing mildewcide.

5. Substrate:

a. 1-piece solid substrate.

b. No knots or voids.

6. Thickness: Indicated on the drawing.

7. Trim: Provide trim pieces in the sizes and shapes indicated on the drawings. Do not cross-cut composite lumber to field fabricate trim pieces. All cutting must be per manufacturer's recommendations.

B. Properties, 4/4 Thickness.

1. Density, ASTM D 1037: 47.6 pcf.

2. Modulus of Rupture, ASTM D 1037: 2,860 psi.

3. 24-Hour Soak, ASTM D 1037:

a. Water Absorption: 6.6 percent.

b. Thickness Swell: 2.8 percent.

4. Accelerated Aging Test, 6-Cycle, ASTM D 1037: Retained 90 percent of original strength.

5. Termite Resistance and Decay, AWPA E7 Rating Scale, 3-Year Exposure: 7.8 out of 10.

6. Rot Resistance, AWPA E16: 1.0 out of 5.

7. ANSI/UL 723 (ASTM E84-01):

a. Flame Spread: 125.

b. Smoke Developed: 110.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.

B. Sealants: Latex, complying with ASTM C 834 Type OP, Grade NF and with applicable requirements in Section 079200 "Joint Sealants," recommended by sealant manufacturer and manufacturer of substrates for intended application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed. Cut to required lengths and prime ends. Comply with requirements in Section 099113 "Exterior Painting."

a. Flame Prime and paint exposed field-cut edges of composite trim using high-quality exterior oil/alkyd solvent-based or acrylic-latex primer recommended by paint manufacturer for application over composite wood substrates.

b. Finish composite trim with 2 coats of paint within 90 days after installation.

c. If material is not painted within 90 days, reprime composite trim using exterior primer recommended for use on composite wood products and is compatible with topcoat to be used.

d. Apply total field-applied dry film paint thickness of a minimum of 2-1/2 mils on composite trim.

3.2 INSTALLATION, GENERAL

A. Install exterior composite trim level, plumb, true, and aligned with adjacent materials. Install accordance with manufacturer's instructions at locations indicated on the Drawings.

1. Scribe and cut exterior composite trim to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.

B. Fastening:

1. Fasten composite trim in accordance with manufacturer's instructions.

2. Set nails a minimum of 1/2 inch from edge.

3. Do not nail into edges.

4. Set nails flush or slightly countersunk not more than 1/8 inch.

5. Apply spackling putty. Reapply putty as needed for desired appearance.

6. 5/8-Inch Fascia and Soffit Applications: Include trim sub-fascia and nail 16 inches on center to rafter ends or sub-fascia.

7. All Other Horizontal and Vertical Applications: Double nail 16 inches on center, falling on studs.

8. Fasten trim from one end to the other.

9. Do not nail towards the center from both ends.

10. Use adhesives in accordance with adhesive manufacturer's instructions.

C. Butt Joints:

1. Ensure joints fall over framing members.

2. Miter, scarf, or bevel composite trim as required.

3. Runs Less than 30 Feet in Length: Install butt joints to lightly touch.

4. Runs Over 30 Feet in Length: Space butt and scarf joints 1/8 inch apart and apply joint sealants into full depth of 1/8-inch joint.

5. Double nail on both sides of joint, a minimum of 1/2 inch from edge.

D. Flashing and Moisture Control:

1. Do not apply composite trim to wet sheathing.

2. Do not apply composite trim closer than 6 inches to finished grade or final landscaping.

3. Do not allow composite trim to stand in water.

4. Do not allow direct contact of composite trim with masonry or concrete.

5. Do not allow water to stand on or leak behind composite trim.

6. Properly flash and space composite trim a minimum of 1/2 inch from concrete flatwork or horizontal brick ledge.

7. Separate composite trim at foundations or brick veneer from masonry by metal flashing, polyethylene film, 30-lb. felt, or 1/4-inch to 1/2-inch air space using masonry standoffs.

8. Horizontal Applications including Window and Door Headers: Flash in accordance with siding manufacturer's, window manufacturer's, or door manufacturer's instructions.

9. Maintain a minimum angle of 100 degrees from vertical to provide positive drainage.

E. Joint Sealants: Apply joint sealants at butt joints and where composite trim abuts siding, windows, doors, or other materials.

F. Paint Application:

1. Prime and paint exposed field-cut edges of composite trim using high-quality exterior oil/alkyd solvent-based or acrylic-latex primer recommended by paint manufacturer for application over composite wood substrates.

2. Coat exposed surfaces including bottom edge.

3. Finish composite trim with 2 coats of paint within 90 days after installation.

4. If material is not painted within 90 days, reprime composite trim using exterior primer recommended for use on composite wood products and is compatible with topcoat to be used.

5. Use same primer for repair of damage to original factory-applied primer.

6. Apply total field-applied dry film paint thickness of a minimum of 2-1/2 mils on composite trim.

3.3 STANDING AND RUNNING TRIM INSTALLATION

A. Install Composite trim to comply with manufacturer's written instructions.

1. Provide shop fabricated trim pieces in the sizes and shapes indicated on the drawings. Do not cross-cut composite lumber to field fabricate trim pieces. All cutting must be per manufacturer’s recommendations.

B. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long except where necessary.

1. Use scarf joints for end-to-end joints.

2. Stagger end joints in adjacent and related members.

C. Fit exterior joints to exclude water. Cope at returns and miter at corners.

END OF SECTION

SECTION 06 20 23 - INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior trim.

2. Shelving.

B. Related Requirements:

1. Section 064400 "Ornamental Woodwork."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each type of paneling.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20.

1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

a. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.

B. Softwood Plywood: DOC PS 1.

C. Hardboard: AHA A135.4.

D. MDF: ANSI A208.2, Grade 130 .

E. Particleboard: ANSI A208.1, Grade M-2.

F. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

1. Color: White.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent respectively.

B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

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

C. Application: Where indicated.

2.3 INTERIOR TRIM

A. Hardwood Lumber Trim:

1. Species and Grade: YELLOW PINE MATCH EXISTNG

2. Maximum Moisture Content: 10 percent.

B. Hardwood Moldings for Transparent Finish (Stain or Clear Finish): WMMPA HWM 2, N-grade wood moldings made to patterns included in WMMPA HWM 1.

1. Species: YELLOW PINE MATCH EXISTING

2. Maximum Moisture Content: 10 percent.

C. Moldings for Opaque Finish (Painted Finish): Made to patterns included in WMMPA WM 12.

1. Softwood Moldings: WMMPA WM 4, P grade.

a. Species: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine.

b. Maximum Moisture Content: 15 percent.

2. Hardwood Moldings: WMMPA HWM 2, P-grade.

a. Species: Aspen, basswood, cottonwood, gum, magnolia, soft maple, tupelo, or yellow poplar.

b. Maximum Moisture Content: 9 percent.

3. Optional Material: Primed MDF.

D. Molding Patterns:

1. Base Pattern: As indicated on drawings.

2. Shoe-Mold Pattern: As indicated on drawings.

3. Casing Pattern: As indicated on drawings.

4. Mull-Casing Pattern: As indicated on drawings.

5. Chair-Rail Pattern: As indicated on drawings.

2.4 SHELVING

A. Shelving: Made from one of the following materials, 3/4 inch thick.

1. Softwood Boards: Eastern white, Idaho white, lodgepole, ponderosa, radiata, or sugar pine; D Select (Quality); NeLMA, NLGA, or WWPA; kiln dried.

2. Softwood Boards: Douglas fir-larch, Douglas fir south, or hem-fir; Superior or C & Btr finish; NLGA, WCLIB, or WWPA; or southern pine, B & B finish; SPIB; kiln dried.

B. Shelf Brackets with Rod Support: BHMA A156.16, B04051; prime-painted formed steel.

2.5 MISCELLANEOUS MATERIALS

A. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.

B. Paneling Adhesive: Comply with paneling manufacturer's written recommendations for adhesives.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.2 INSTALLATION, GENERAL

A. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.

2. Countersink fasteners, fill surface flush, and sand unless otherwise indicated.

3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining interior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.

4. Install stairs with no more than 3/16-inch variation between adjacent treads and risers and with no more than 3/8-inch variation between largest and smallest treads and risers within each flight.

3.3 STANDING AND RUNNING TRIM INSTALLATION

A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.

3.4 PANELING INSTALLATION

A. Plywood Paneling: Select and arrange panels on each wall to minimize noticeable variations in grain character and color between adjacent panels. Leave 1/4-inch gap to be covered with trim at top, bottom, and openings. Install with uniform tight joints between panels.

1. Attach panels to supports with manufacturer's recommended panel adhesive and fasteners. Space fasteners and adhesive as recommended by panel manufacturer.

2. Conceal fasteners to greatest practical extent.

B. Hardboard Paneling: Install according to manufacturer's written recommendations. Leave 1/4-inch gap to be covered with trim at top, bottom, and openings. Butt adjacent panels with moderate contact. Use fasteners with prefinished heads matching paneling color.

C. Board Paneling: Arrange in random-width pattern suggested by manufacturer unless boards or planks are of uniform width.

1. Install in full lengths without end joints.

2. Stagger end joints in random pattern to uniformly distribute joints on each wall.

3. Select and arrange boards on each wall to minimize noticeable variations in grain character and color between adjacent boards. Install with uniform tight joints between boards.

4. Fasten paneling by face nailing, setting nails, and filling over nail heads.

5. Fasten paneling with trim screws, set below face and filled.

6. Fasten paneling by blind nailing through tongues.

3.5 SHELVING AND CLOTHES ROD INSTALLATION

A. Cut shelf cleats at ends of shelves about 1/2 inch less than width of shelves and sand exposed ends smooth.

B. Install shelf cleats by fastening to framing or backing with finish nails or trim screws, set below face and filled. Space fasteners not more than 16 inches o.c.

C. Cut shelves to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled. Install shelves, fully seated on cleats, brackets, and supports.

END OF SECTION 06 20 23

SECTION 06 41 16 - PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-faced architectural cabinets.

2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product, including high-pressure decorative laminate adhesive for bonding plastic laminate and cabinet hardware and accessories.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

C. Samples:

1. Plastic laminates, for each color, pattern, and surface finish.

2. Thermoset decorative panels, for each color, pattern, and surface finish.

1.3 INFORMATIONAL SUBMITTALS

A. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:10 years experience and/or Certified participant in AWI's Quality Certification Program

B. Installer Qualifications: Fabricator of products

1.5 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

B. Grade: Custom.

C. Type of Construction: Face frame (European).

D. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

E. Reveal Dimension: As indicated

F. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.

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

a. Nevamar Decorative Surfaces.

b. Formica Corporation.

c. Lamin-Art, Inc.

d. Wilsonart International; Div. of Premark International, Inc.

G. Laminate Cladding for Exposed Surfaces:

1. Horizontal Surfaces: Grade HGS

2. Postformed Surfaces: Grade HGP.

3. Vertical Surfaces: Grade HGS

4. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels or as indicated.

H. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.

2. Drawer Sides and Backs: Solid-hardwood lumber

3. Drawer Bottoms: Hardwood plywood

I. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from laminate manufacturer's full range in the following categories:

   a. Solid colors, matte finish.

   b. Solid colors with core same color as surface, matte finish.

   c. Wood grains, matte finish.

   d. Patterns, matte finish.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

   1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated. Plywood substrates are to be used at all wet locations, fiberboard and composite may be used in “dry” locations.

   1. Medium-Density Fiberboard: ANSI A208.2, Grade 130.

   2. Particleboard: ANSI A208.1, Grade M-2.

   3. Softwood Plywood: DOC PS 1, medium-density overlay.

   4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

   5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

   1. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.

2.4 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087111 "Door Hardware (Descriptive Specification)."

B. Butt Hinges: 2-3/4-inch (70-mm), five-knuckle steel hinges made from 0.095-inch- (2.4-mm-) thick metal, and as follows:

1. Concealed Hinges for Flush Doors: BHMA A156.9, B01361.

C. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

D. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

E. Shelf Rests: BHMA A156.9, B04013; metal, two-pin type with shelf hold-down clip.

F. Drawer Slides: BHMA A156.9.

1. Grade 1 and Grade 2: Side mounted and extending under bottom edge of drawer; full-extension type; zinc-plated steel with polymer rollers.

2. For drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1.

3. For drawers more than 3 inches (75 mm) high but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1 .

4. For drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide Grade 1HD-100

5. For computer keyboard shelves, provide Grade 1.

6. For trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide, provide Grade 1HD-100.

G. Door Locks: BHMA A156.11, E07121.

H. Drawer Locks: BHMA A156.11, E07041.

I. Door and Drawer Silencers: BHMA A156.16, L03011.

J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Stainless Steel: BHMA 630.

2.5 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.6 FABRICATION

A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

3.2 INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

C. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

D. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

E. Cabinets: Install without distortion so 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 installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.

2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with [No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips or No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

END OF SECTION

SECTION 06 64 00 - PLASTIC PANELING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes plastic sheet paneling.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For plastic paneling and trim accessories.

1.3 QUALITY ASSURANCE

A. Testing Agency: Acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 PLASTIC SHEET PANELING

A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D 5319.

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

a. Marlite.

b. Nudo Products, Inc.

c. Parkland Plastics, Inc.

2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.

b. Smoke-Developed Index: 450 or less.

3. Nominal Thickness: Not less than 0.075 inch.

4. Surface Finish: Smooth.

5. Color: White.

2.2 ACCESSORIES

A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.

1. Color: Match panels.

B. Sealant: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.

C. Lay out paneling before installing. Locate panel joints so that trimmed panels at corners are not less than 12 inches wide.

3.2 INSTALLATION

A. Install plastic paneling according to manufacturer's written instructions.

B. Install panels in a full spread of adhesive.

C. Install trim accessories with adhesive and nails or staples.

D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.

E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 64 00

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass-fiber blanket insulation.

2. Glass-fiber sound attenuation batts.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Research/evaluation reports.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION (and Sound Attenuation Batts)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CertainTeed Corporation.

2. Guardian Building Products, Inc.

3. Johns Manville.

4. Knauf Insulation.

5. Owens Corning.

B. Unfaced, Glass-Fiber Sound Attenuation Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 10 and 10, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

C. R-Value(thickness): As indicated on drawings.

D. Sound Transmission Class: Minimum 49 or As indicated on drawings

E. Dimensional Stability: Linear shrinkage less than 0.1 percent

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

E. Spray polyurethane foam insulation: Shall be used to seal gaps and breeches in thermal barrier not accessible to other insulation products.

3.2 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Glass-Fiber: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.

4. For framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically.

5. For framed wall cavities that will not allow for “friction fitting” of insulation, installer shall support unfaced blankets mechanically.

C. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation.

END OF SECTION

SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Vapor-permeable, fluid-applied air barriers.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For air-barrier assemblies.

   1. Include details for substrate joints and cracks, counter flashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Mockups: Build mockups to set quality standards for materials and execution.

   1. Build integrated mockups of exterior wall assembly as indicated on Drawings, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.

a. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.
b. Include junction with roofing membrane, building corner condition, and foundation wall intersection.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa), when tested according to ASTM E 2357.

2.2 MEDIUM-BUILD AIR BARRIERS, VAPOR PERMEABLE

A. Medium-Build, Vapor-Permeable Air Barrier: Synthetic polymer material with an installed dry film thickness, according to manufacturer's written instructions, of 17 to 30 mils (0.4 to 0.8 mm) over smooth, void-free substrates.

1. Basis-of-Design Product: Subject to compliance with requirements, provide GE Construction Sealants; Momentive Performance Materials, Inc.; SEC2600 SilShield AWB.
2. Physical and Performance Properties:

a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E 2178.
b. Vapor Permeance: Minimum 10 perms (580 ng/Pa x s x sq. m); ASTM E 96/E 96M, Water Method, Procedure B.
c. Ultimate Elongation: Minimum 250 percent; ASTM D 412, Die C.
d. Adhesion to Substrate: Minimum 16 lbf/sq. in. (110 kPa) when tested according to ASTM D 4541.
e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly or per engineering analysis. Meets NFPA 285 exemption criteria for water-resistive barriers as defined by IBC 2015.
f. UV Resistance: Can be exposed to sunlight for 180 days according to manufacturer's written instructions.
g. Service Temperature Range: Minimum -55 deg F to 300 deg F (-48 deg C to 149 deg C).
h. Application Temperature Range: Minimum 0 deg F to 158 deg F (-18 deg C to 70 deg C).

2.3 ACCESSORY MATERIALS

A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.

D. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

F. Bridge isolation joints, expansion joints, and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.2 INSTALLATION

A. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate.
3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

C. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames, with not less than 1 inch (25 mm) of full contact.

D. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches (150 mm) beyond repaired areas in strip direction.

E. Medium-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply an increased thickness of air-barrier material in full contact around protrusions such as masonry ties.
   1. Vapor-Permeable, Medium-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, applied in one or more equal coats. Apply additional material as needed to achieve void- and pinhole-free surface, but do not exceed thickness on which required vapor permeability is based.

F. Do not cover air barrier until it has been tested and inspected by testing agency.

G. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Tests: As determined by testing agency from among the following tests:

   1. Air-barrier dry film thickness.
   2. Air-Leakage-Volume Testing: Air-barrier assemblies will be tested for air-leakage rate according to ASTM E 783.
   3. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D 4541 for each 600 sq. ft. (56 sq. m) of installed air barrier or part thereof.

C. Air barriers will be considered defective if they do not pass tests and inspections.

   1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
   2. Remove and replace deficient air-barrier components for retesting as specified above.

D. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

E. Prepare test and inspection reports.

3.4 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Remove masking materials after installation.

END OF SECTION 072726

SECTION 07411 - METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Standing-seam metal roof panels. **- Match existing camp roofing**

B. Related Sections:

   1. Division 7 Section "Sheet Metal Roofing" for custom-fabricated and on-site, roll-formed sheet metal roofing.
   2. Division 7 Section "Sheet Metal Flashing and Trim" for field-formed and other sheet metal work not part of metal roof panel assemblies.
   3. Division 7 Section "Manufactured Roof Specialties" for manufactured and other roof specialties not part of metal roof panel assemblies.
   4. Division 7 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

1.3 DEFINITIONS

A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Delegated Design: Design metal roof panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

C. Air Infiltration: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of roof area when tested according to ASTM E 1680 at the following test-pressure difference:

   1. Test-Pressure Difference: Negative 1.57 lbf/sq. ft.

2. Test-Pressure Difference: Positive and negative 1.57 lbf/sq. ft..
3. Positive Preload Test-Pressure Difference: Greater than or equal to 15.0 lbf/sq. ft. and the greater of 75 percent of building live load or 50 percent of building design positive wind-pressure difference.
4. Negative Preload Test-Pressure Difference: 50 percent of design wind-uplift-pressure difference.

D. Water Penetration: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft..
2. Test-Pressure Difference: 20 percent of positive design wind pressure, but not less than 6.24 lbf/sq. ft. (300 Pa) and not more than 12.0 lbf/sq. ft..
3. Positive Preload Test-Pressure Difference: Greater than or equal to 15.0 lbf/sq. ft. and the greater of 75 percent of building live load or 50 percent of building design positive wind-pressure difference.
4. Negative Preload Test-Pressure Difference: 50 percent of design wind-uplift-pressure difference.

E. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.

F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

G. FMG Listing: Provide metal roof panels and component materials that comply with requirements in FMG 4471 as part of a panel roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail Resistance: SH.

H. Structural Performance: Provide metal roof panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 1592:

1. Wind Loads: Determine loads based on the following minimum design wind pressures:

   a. Uniform pressure of 30 lbf/sq. ft., acting inward or outward.
   b. Uniform pressure as indicated on Drawings.

2. Snow Loads: Refer to structural drawings.
3. Deflection Limits: Metal roof panel assemblies shall withstand wind and snow loads with vertical deflections no greater than 1/180 of the span.

I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

J. Solar Reflectance: Confirm with LEED requirements - Initial solar reflectance of not less than 0.50 when tested according to ASTM E 903, and maintained, under normal conditions, solar reflectance of not less than 0.50 for 3 years after installation.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.

B. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.

1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:10):

a. Flashing and trim.
b. Gutters.
c. Downspouts.
d. Roof curbs.

C. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Roof : 12 inches long by actual panel width. Include fasteners, clips, battens, closures, and other metal roof panel accessories.
2. Trim and Closures: 12 inches long. Include fasteners and other exposed accessories.
3. Accessories: 12-inch- long Samples for each type of accessory.

E. Delegated-Design Submittal: For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Snow Retention System Calculations: Include calculation of number and location of snow guards based on snow load, roof slope, panel length and finish, and seam type and spacing.

F. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, based on input from installers of the items involved:

1. Roof panels and attachments.
2. Purlins and rafters.
3. Roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, snow guards, and items mounted on roof curbs.

G. Qualification Data: For qualified Installer.

H. Material Certificates: For thermal insulation and vapor retarders, from manufacturer.

I. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

J. Field quality-control reports.

K. Maintenance Data: For metal roof panels to include in maintenance manuals.

L. Warranties: Samples of special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

C. Source Limitations: Obtain each type of metal roof panels from single source from single manufacturer.

D. Surface-Burning Characteristics: Provide metal roof panels having insulation core material with the following surface-burning characteristics as determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

E. Fire-Resistance Ratings: Where indicated, provide metal roof panels identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
2. Combustion Characteristics: ASTM E 136.

F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical roof eave, including fascia, and soffit as shown on Drawings; approximately four feet wide by full eave width, including insulation, underlayment, attachments, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

G. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, deck Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
4. Examine deck substrate conditions for compliance with requirements, including flatness and attachment to structural members.
5. Review structural loading limitations of deck during and after roofing.
6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
8. Review temporary protection requirements for metal roof panel assembly during and after installation.
9. Review roof observation and repair procedures after metal roof panel installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

E. Protect foam-plastic insulation as follows:

1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.

B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.9 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of decks, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.

c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Weathertight Warranty Period: 10years from date of Substantial Completion.

D. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40; structural quality.
2. Surface: Smooth, flat finish.
3. Exposed Coil-Coated Finish:

a. 3-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

4. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

B. Panel Sealants:

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal roof panels and remain weathertight; and as recommended in writing by metal roof panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.2 UNDERLAYMENT MATERIALS

A. **Self-Adhering, High-Temperature Sheet**: 30 to 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
2. High-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Carlisle Coatings & Waterproofing Inc., Div. of Carlisle Companies Inc.; CCW WIP 300HT.
   b. Grace Construction Products; a unit of Grace, W. R. & Co.; Ultra.
   c. Henry Company; Blueskin PE200 HT.
   d. Metal-Fab Manufacturing, LLC; MetShield.
   e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

2.3 MISCELLANEOUS MATERIALS

A. Panel 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 metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities. Coating to be factory-applied to thermal insulation.

2.4 STANDING SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following

   a. AEP-Span.
   b. Berridge Manufacturing Company.
   c. Butler Manufacturing; a BlueScope Steel company.

d. CENTRIA Architectural Systems.
e. Copper Sales, Inc.
f. Englert, Inc.
g. Fabral.
h. IMETCO.
i. McElroy Metal, Inc.
j. Merchant & Evans.
k. Metal-Fab Manufacturing, LLC.
l. Metal Sales Manufacturing Corporation.
m. Metal Roofing Systems. Inc.
n. Metecno-Morin; Division of Metecno Inc.
o. Petersen Aluminum Corporation.

3. Profile: Vertical-rib, seamed -joint, as indicated on Drawings.
4. Material: Zinc-coated (galvanized) steel sheet, **0.028-inch** nominal thickness.

   a. Exterior Finish: 3-coat fluoropolymer.
   b. Color: As selected by Architect from manufacturer's full range.

5. Clips: Floating to accommodate thermal movement.

   a. Material: Metallic coated steel.

6. Joint Type: Double folded.
7. Panel Coverage: 18”
8. Panel Height: 2”

2.5 ACCESSORIES

A. Roof Panel Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

   1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
   2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
   3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

B. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 0.018 inch thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners,

bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.

2.6 FABRICATION

A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.

D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. End Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. End Seams for Other Than Aluminum: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

2.7 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.

B. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.

C. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

D. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.

E. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

B. Substrate Board: Install substrate boards over roof deck on entire roof surface. Attach with substrate-board fasteners.

1. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
2. Comply with UL requirements for fire-rated construction.
   a. .

3. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
4. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

3.3 METAL ROOF PANEL INSTALLATION, GENERAL

A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

B. Thermal Movement. Rigidly fasten metal roof panels to structure at one and only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction. Predrill panels for fasteners.

1. Point of Fixity: Fasten each panel along a single line of fixing located at ridge.
2. Avoid attaching accessories through roof panels in a manner that will inhibit thermal movement.

C. Install metal roof panels as follows:

1. Commence metal roof panel installation and install minimum of 300 sq. ft. in presence of factory-authorized representative.
2. Field cutting of metal panels by torch is not permitted.
3. Install panels perpendicular to purlins.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Provide metal closures at rake edges each side of ridge caps.
6. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.
7. Install ridge caps as metal roof panel work proceeds.
8. End Splices: Locate panel end splices over, but not attached to, structural supports. Stagger panel end splices to avoid a four-panel splice condition.
9. Install metal flashing to allow moisture to run over and off metal roof panels.

D. Fasteners:

1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.
2. Aluminum Roof Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior and aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
3. Copper Roof Panels: Use copper, stainless-steel, or hardware-bronze fasteners.

E. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

F. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

1. Coat back side of roof panels with bituminous coating where roof panels will contact wood, ferrous metal, or cementitious construction.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.

1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.4 METAL ROOF PANEL INSTALLATION

A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

3.5 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

C. Gutters: **match existing with Brackets 32" o.c** Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 32 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion. **Provide for slope drainage and coordinate installation of brackets**.

D. Downspouts: match existing **downspout bracket.** Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

E. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.

F. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

G. **Downspout Boot - Cast iron transition boot for each down spout to tie into drainage system pipe**.

3.6 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 CLEANING

A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07411

SECTION 07 46 00 - SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fiber-cement siding panels, trim and accessories.

1.2 ACTION SUBMITTALS

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

B. Samples: For siding including related accessories.

1.3 REFERENCES

A. ASTM C 1186- Standard Specification for Flat Fiber-Cement Sheets.

B. ASTM D3359- Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.

C. ASTM E136- Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degreesC.

1.4 SUBMITTALS

A. Qualification Data: For qualified siding Installer.

B. Product certificates.

C. Warranty: Sample of special warranty.

D. Maintenance data.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish full lengths of siding including related accessories, in a quantity equal to 2 percent of amount installed.

1.6 QUALITY ASSURANCE

A. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C 1186 by a qualified testing agency acceptable to authorities having jurisdiction.

B. Source Limitations: Obtain each type, color, texture, and pattern of siding, including related accessories, from single source from single manufacturer.

C. Preinstallation Conference: Conduct conference at Project site.

1.7 WARRANTY

A. Special Warranty: Standard form in which manufacturer agrees to repair or replace siding that fail(s) in materials or workmanship within specified warranty period(non-prorated).

1. Product warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIBER-CEMENT PANEL SIDING

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.

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

a. CertainTeed Corporation.

b. GAF Materials Corporation.

c. James Hardie Building Products, Inc.

2. Horizontal Pattern: NA

3. Vertical Pattern: Boards plain smooth style in patterns as indicated on drawings.

4. Panel Texture: Smooth texture unless indicated otherwise on drawings.

5. Texture: Smooth

6. Nominal Thickness: 5/16 inch

7. Factory Priming: Manufacturer's standard acrylic primer.

2.1 FIBER-CEMENT SOFFIT

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.

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

a. CertainTeed Corporation.

b. GAF Materials Corporation.

c. James Hardie Building Products, Inc.

2. Pattern: Soffit panels indicated on drawings with smooth texture.

3. Nominal Thickness: 5/16 inch

4. Factory Priming: Manufacturer's standard acrylic primer.

2.2 FIBER-CEMENT TRIM BOARDS

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.

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

a. CertainTeed Corporation.

b. GAF Materials Corporation.

c. James Hardie Building Products, Inc.

2. Horizontal Pattern: NA

3. Vertical Pattern: Boards plain smooth style in patterns as indicated on drawings.

4. Panel Texture: Smooth texture unless indicated otherwise on drawings.

5. Texture: Smooth

6. Nominal Thickness: 1 inch

2.3 Factory Priming: Manufacturer's standard acrylic primer.

2.4 ACCESSORIES

A. Siding Accessories, General: Provide starter strips, batten strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.

1. Provide accessories made from same material as matching color and texture of adjacent siding unless otherwise indicated.

2. Provide and install system flashing as required in manufactures installation instructions.

B. Aluminum Accessories: Where aluminum accessories are indicated, provide accessories complying with AAMA 1402.

C. Flashing: Provide aluminum flashing complying with Section 076200 "Sheet Metal Flashing and Trim" at window and door heads and where indicated.

1. Finish for Aluminum Flashing: High-performance organic finish, same color as siding.

D. Fasteners:

1. For fastening to wood, use siding nails or ribbed bugle-head screws of sufficient length to penetrate a minimum of 1 inch into substrate. Screw s used only where heads can be concealed (lap siding) unless otherwise noted.

2. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch , or three screw-threads, into substrate.

3. For fastening fiber cement, use hot-dip galvanized fasteners.

4. Final fastener selection and fastener panels are to be as detailed/required by the manufacturer for the loads and conditions present at the project location.

E. Insect Screening for Soffit Vents: Aluminum, 18-by-16 mesh.

F. Continuous Soffit Vents: Aluminum, hat-channel shape.

1. Net-Free Area: 6 sq. in./linear ft.

2. Finish: Mill finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of siding and related accessories.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with siding manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

1. Do not install damaged components.

B. Install fiber-cement siding and related accessories.

1. Install fasteners as per manufactures requirements for the loads noted (wind loads).

2. Install fastener to minimize visibility (screw heads should be cover by trim or lap siding).

3.3 ADJUSTING AND CLEANING

A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manufactured reglets.

2. Formed roof-drainage sheet metal fabrications.

3. Formed steep-slope roof sheet metal fabrications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.

2. Distinguish between shop- and field-assembled work.

3. Include identification of finish for each item.

4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. Mockups: Build mockups to verify selections made under Sample submittals to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

1.7 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Color: As selected by Architect from manufacturer's full range.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.4 MANUFACTURED REGLETS

A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Cheney Flashing Company.

b. Fry Reglet Corporation.

c. Heckmann Building Products, Inc.

d. Hickman Company, W. P.

e. Hohmann & Barnard, Inc.

f. Keystone Flashing Company, Inc.

2. Material: Aluminum, 0.024 inch thick.

3. Finish: With manufacturer's standard color coating.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Obtain field measurements for accurate fit before shop fabrication.

2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.

3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

2. Use lapped expansion joints only where indicated on Drawings.

C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

D. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

E. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- long sections. Furnish flat-stock gutter brackets and gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

1. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Hanger Style: As indicated on drawings

2. Fabricate from the following materials:

a. Aluminum: 0.024 inch thick.

2.7 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.

B. Drip Edges: Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.

C. Eave, and Rake: Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.

4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.

5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.2 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters: Join sections with riveted joints or joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.

2. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.

C. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c. Tie downspouts to underground storm drainage system using CPVC “boot”, contractor to coordinate with civil documents.

D. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches in direction of water flow.

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches.

C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

3.5 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturers written installation instructions.

END OF SECTION

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Nonstaining silicone joint sealants.
4. Mildew-resistant joint sealants.
5. Latex joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Preconstruction laboratory test reports.

C. Preconstruction field-adhesion-test reports.

D. Field-adhesion-test reports.

E. Sample warranties.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.

3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with stone or masonry substrates.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1.6 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

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

a. Dow Corning Corporation.

b. GE Construction Sealants; Momentive Performance Materials Inc.

c. May National Associates, Inc.; a subsidiary of Sika Corporation.

d. Pecora Corporation.

e. Sika Corporation.

B. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

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

a. Dow Corning Corporation.

b. GE Construction Sealants; Momentive Performance Materials Inc.

c. Polymeric Systems, Inc.

d. Schnee-Morehead, Inc., an ITW company.

e. Sherwin-Williams Company (The).

C. Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.

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

a. Dow Corning Corporation.

b. Soudal USA.

2.3 URETHANE JOINT SEALANTS

A. Urethane, M, P, 50, T, NT: Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 50, Uses T and NT.

2.4 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

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

a. Dow Corning Corporation.

b. GE Construction Sealants; Momentive Performance Materials Inc.

c. May National Associates, Inc.; a subsidiary of Sika Corporation.

d. Pecora Corporation.

e. Tremco Incorporated.

2.5 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

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

a. Dow Corning Corporation.

b. GE Construction Sealants; Momentive Performance Materials Inc.

c. May National Associates, Inc.; a subsidiary of Sika Corporation.

d. Soudal USA.

e. Tremco Incorporated.

C. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

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

a. BASF Corporation-Construction Systems.

b. May National Associates, Inc.; a subsidiary of Sika Corporation.

c. Pecora Corporation.

d. Sherwin-Williams Company (The).

e. Tremco Incorporated.

2.6 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

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

a. BASF Corporation-Construction Systems.

b. Construction Foam Products; a division of Nomaco, Inc.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove laitance and form-release agents from concrete.

2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.3 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.

b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory.

Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.4 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Control and expansion joints in brick pavers.

b. Isolation and contraction joints in cast-in-place concrete slabs.

c. Joints in stone paving units, including steps.

d. Tile control and expansion joints.

e. Joints between different materials listed above.

f. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, M, P, 50, T, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Construction joints in cast-in-place concrete.

b. Control and expansion joints in unit masonry.

c. Perimeter joints between materials listed above and frames of doors, windows and louvers.

d. Control and expansion joints in ceilings and other overhead surfaces.

e. Joints in stone cladding.

f. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

a. Isolation joints in cast-in-place concrete slabs.

b. Control and expansion joints in tile flooring.

c. Other joints as indicated on Drawings.

2. Joint Sealant: C. Silicone, S, NS, 50, T, NT:

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.

b. Tile control and expansion joints.

c. Vertical joints on exposed surfaces of unit masonry walls and partitions.

d. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, S, NS, 50, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.

1. Joint Locations:

a. Control joints on exposed interior surfaces of exterior walls.

b. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.

c. Other joints as indicated on Drawings.

2. Joint Sealant: Acrylic latex.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.

b. Tile control and expansion joints where indicated.

c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:

a. Aluminum thresholds.

b. Sill plates.

c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00

SECTION 07 92 19 - ACOUSTICAL JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each acoustical joint sealant.

B. Samples: For each kind and color of acoustical joint sealant required.

C. Acoustical-Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.

2. Joint-sealant manufacturer and product name.

3. Joint-sealant formulation.

4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.4 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E 90.

2.2 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C 834.

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

a. GE Construction Sealants; Momentive Performance Materials Inc.

b. Hilti, Inc.

c. Pecora Corporation.

d. Tremco Incorporated.

e. United States Gypsum Company.

2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

B. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.

C. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

D. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.

B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.

B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C 919, ASTM C 1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.

C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

END OF SECTION 07 92 19

SECTION 08 14 16 – RAISED PANEL SOLID WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.

2. Factory finishing raised panel wood doors.

3. Factory fitting raised panel wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 088000 "Glazing" for glass view panels in Raised panel wood doors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:

1. Dimensions and locations of blocking.

2. Dimensions and locations of mortises and holes for hardware.

3. Dimensions and locations of cutouts.

4. Undercuts and louvers.

5. Requirements for veneer matching.

6. Doors to be factory finished and finish requirements.

7. Fire-protection ratings for fire-rated doors.

C. Samples: For factory-finished doors.

1.3 INFORMATIONAL SUBMITTALS

A. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is a certified participant in AWI's Quality Certification Program.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Algoma Hardwoods, Inc.

2. Eggers Industries.

3. General Veneer Manufacturing Co.

4. Graham Wood Doors; an Assa Abloy Group company.

5. Marshfield Door Systems, Inc.

6. Oshkosh Door Company.

7. VT Industries, Inc.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with AWI's, AWMAC's, and WI's "Architectural Woodwork Standards.

1. Provide AWI Quality Certification Labels indicating that doors comply with requirements of grades specified.

B. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

C. WDMA I.S.1-A Performance Grade:

1. Heavy Duty unless otherwise indicated.

2. Standard Duty: Closets (not including janitor's closets) and where indicated.

D. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.

2. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.

3. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

E. Structural-Composite-Lumber-Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.

a. Screw Withdrawal, Face: 700 lbf (3100 N).

b. Screw Withdrawal, Edge: 400 lbf (1780 N).

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Custom (Grade A faces).

2. Species: **White Maple or Clear Birch- to match existing**.

3. Cut: Plain Sliced

4. Match between Veneer Leaves: Bookmatch.

5. Assembly of Veneer Leaves on Door Faces: Running match.

6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.

7. Core: Glued wood stave lumber.

8. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.

2.4 LIGHT FRAMES AND LOUVERS

A. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.

2.5 FABRICATION

A. Factory machine doors for hardware that is not surface applied.

B. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors that are indicated to receive transparent finish.

C. Transparent Finish:

1. Grade: Custom.

2. Finish: AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" System 11, catalyzed polyurethane.

3. Staining: As selected by Architect from manufacturer's full range.

4. Effect: Open-grain finish.

5. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hardware: Refer to Division 01 “Allowances”.

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

1. Install fire-rated doors according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.

a. Comply with NFPA 80 for fire-rated doors.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION

SECTION 081433.13 - WOOD TERRACE DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-clad hinged wood-framed glass entry doors. **Not a 3 point Patio door.**

1.2 ACTION SUBMITTALS

A. Product Data: For each type of hinged wood-framed glass door.

B. Shop Drawings: For hinged wood-framed glass doors.

C. Samples: For each type of hinged wood-framed glass door and for each color and texture specified, 12-inch-long section with weather stripping, glazing bead, and factory-applied color finish.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

1.6 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace hinged wood-framed glass doors that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Hinged Door: **Five** years from date of Substantial Completion.
b. Insulating Glass: **20** years from date of Substantial Completion.
c. Metal Finish: **20** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Product Certification: AMMA certified with label attached to each door.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: **Class CW**.
2. Minimum Performance Grade: **Grade 40**.

C. Thermal Transmittance: NFRC 100 maximum total fenestration product U-factor of **0.32 Btu/sq. ft. x h x deg F**.

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum total fenestration product SHGC of **0.30**.

2.2 ALUMINUM-CLAD HINGED WOOD-FRAMED GLASS DOORS – (Not patio doors)

A. Exterior Surfaces: Aluminum cladding with **manufacturer's standard fluoropolymer two-coat system with fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight and complying with AAMA 2605**.

1. Color: **match camp dark bronze**.

B. Interior Surfaces: **Manufacturer's standard stain-and-varnish finish**.

1. Wood Species: **Pine**.
2. Color: **As selected by Architect from manufacturer's full range**.

C. Frames and Door Panels: Fabricate from wood components complying with indicated requirements. Provide factory-assembled door panels with **wide-profile** stiles to accomodate hardware and **factory-assembled or field-assembled** frames.

D. Wood Components: Manufacturer's standard LVL or fine-grained wood lumber complying with AAMA/WDMA/CSA 101/I.S.2/A440; kiln dried to a moisture content of not more than 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide; water-repellent preservative treated.

E. Threshold: Provide **extruded aluminum threshold** of thickness, dimensions, and profile indicated; designed to comply with performance requirements indicated and to drain to exterior.

1. Color: **Bronze**.

2. Low-Profile Threshold: ADA-ABA compliant.

2.3 GLAZING

A. Glass and Glazing: Manufacturer's standard glazing system that produces weathertight seal.

1. Glass: ASTM C 1036, Type 1, q3, Category II safety glass complying with testing requirements in 16 CFR 1201.
2. Safety Glazing Labeling: Permanently mark safety glazing with certification label of **the SGCC or another certification agency acceptable to authorities having jurisdiction or the manufacturer**. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
3. Insulating-Glass Units: ASTM E 2190[**, certified through IgCC as complying with requirements of IgCC**].

   a. Filling: Fill space between glass lites with **air or argon**.
   b. Low-E coating.

2.4 HARDWARE

A. General: Provide manufacturer's standard hardware, fabricated from a corrosion-resistant material compatible with wood **and aluminum cladding** complying with AAMA 907; designed to smoothly operate, tightly close, and securely lock hinged wood-framed glass doors and sized to accommodate panel weight and dimensions.

B. Lock: Install hardware from hardware schedule.

2.5 FABRICATION

A. Fabricate hinged wood-framed glass doors in sizes indicated. Include a complete system for assembling components and anchoring doors.

B. Weather Stripping: Provide full-perimeter weather stripping for each door panel unless otherwise indicated.

C. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

D. Factory-Glazed Fabrication: Glaze hinged aluminum-framed glass doors in the factory.

2.6 WOOD FINISHES

A. Factory-Applied Primer: Provide manufacturer's standard factory-applied prime coat complying with WDMA T.M. 11. **Insert specific requirements for factory-applied prime coat if any** on exposed **interior** wood surfaces.

B. Factory-Applied Color Finish: Provide manufacturer's standard factory-applied finish **complying with WDMA T.M. 12**. Apply finish to exposed **interior** wood surfaces.

1. Color: **As selected by Architect from manufacturer's full range**.

2.7 ALUMINUM FINISHES

A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with **AAMA 2605** and containing not less than **70** percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color and Gloss: **As selected by Architect from manufacturer's full range**.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing hinged doors, hardware, accessories, and other components.

B. Windborne Debris Resistance: Anchor hinged wood-framed glass doors that have been tested for windborne debris resistance to structure using anchoring method, fastener type, and fastening frequency identical to that used in windborne debris resistance testing.

C. Install hinged wood-framed glass doors level, plumb, square, true to line; without distortion, warp, or rack of frames and panels, and without impeding thermal movement; anchored securely in place to structural support; and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction. Comply with ASTM E 2112.

D. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E 2112.

F. Adjust operating panels and screens to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and weathertight closure.

G. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.

END OF SECTION 081433.13

SECTION 08 31 13 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access doors and frames for walls and ceilings.

2. Pull down ceiling mounted access stair

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 tested according to the following test method:

1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.

2. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

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

1. Access Panel Solutions.

2. Babcock-Davis.

3. Jensen Industries; Div. of Broan-Nutone, LLC.

4. J. L. Industries, Inc.; Div. of Activar Construction Products Group.

5. Karp Associates, Inc.

6. Larsen's Manufacturing Company.

7. MIFAB, Inc.

8. Milcor Inc.

B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

C. Flush Access Doors with Exposed Flanges:

1. Basis-of-Design Product: Indicated on Drawings.

2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.

3. Locations: Wall.

4. Door Size: 24”x36” or as shown on drawings.

5. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch, 16 gage.

a. Finish: Factory prime.

6. Frame Material: Same material, thickness, and finish as door.

7. Hinges: Manufacturer's standard.

8. Hardware: Lock.

D. Hardware:

1. Lock: Cylinder.

a. Lock Preparation: Prepare door panel to accept cylinder specified by owner.

2.3 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Frame Anchors: Same type as door face.

E. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. For cylinder locks, furnish two keys per lock and key all locks alike.

2.5 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:

1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION

SECTION 085200 - WOOD WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. **This Section includes aluminum-clad wood-framed windows. Provide windows to match the design intent of what is shown on the exterior elevations. Ganged windows can be adjusted to allow space for trim. See window schedule and elevations for operable and fixed windows also**.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide wood windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of test size required by AAMA/WDMA 101/I.S.2/NAFS.

B. Structural Performance: Provide wood windows capable of withstanding the effects of the following loads based on testing units representative of those indicated for Project that pass AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Structural Test:

1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings.

   a. Basic Wind Speed: 85 mph.
   b. Importance Factor: II.
   c. Exposure Category: B

2. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less, at design pressure based on testing performed according to AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Deflection Test or structural computations.

1.3 SUBMITTALS

A. Product Data: For each type of wood window indicated.

B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, and installation details.

C. Samples: For each exposed finish.

D. Product Schedule: Use same designations indicated on Drawings.

E. Product test reports.

F. Maintenance data.

1.4 QUALITY ASSURANCE

A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.

B. Manufacturer Qualifications: A qualified manufacturer who is certified for chain of custody by an FSC-accredited certification body.

C. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

E. Preinstallation Conference: Conduct conference at Project site.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace wood windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
c. Faulty operation of movable sash and hardware.
d. Deterioration of wood, metals, vinyl, other materials, and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10 years from date of Substantial Completion.
b. Glazing: 20 years from date of Substantial Completion.
c. Metal Finish: 20 years from date of Substantial Completion.

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:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following: **Eagle Windows basis of design**

1. Aluminum-Clad Wood Windows:

a. Windsor Windows
b. Crestline; a brand of Peachtree Companies, Inc. (The); TPC Acquisition, Inc.
c. EAGLE Window & Door, Inc.; an American Architectural Products Corporation Company.
d. Hurd Millwork Company.
e. Kolbe & Kolbe Millwork Co., Inc.
f. Marvin Windows and Doors.
g. Norco Premium Collection; JELD-WEN, Inc.
h. Peachtree Doors and Windows; TPC Acquisition, Inc.
i. Pella Corporation.
j. Pozzi Custom Collection; JELD-WEN, Inc.

2.2 MATERIALS

A. Wood: Clear ponderosa pine or another suitable fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide; water-repellent preservative treated.

B. Aluminum Extrusions for Cladding, Baked-Enamel Finish: Manufacturer's standard baked enamel complying with AAMA 2603 or AAMA 620.

1. Color: As selected by Architect from manufacturer's full range.

C. Aluminum Extrusions , High-Performance Organic Finish: Two-coat thermocured system with fluoropolymer coats containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.

1. Color As selected by Architect from manufacturer's full range.

2.3 WINDOW

A. Window Type: Awning, Double hung, Fixed, - As indicated on Drawings. See elevations and schedule on dwgs.

B. Comply with AAMA/WDMA 101/I.S.2/NAFS.

1. Performance Class and Grade: R **20**.
2. Performance Class and Grade: LC **30**
3. Performance Class and Grade: C **35** .

4. Performance Class and Grade: HC **45**
5. Performance Class and Grade: AW **45**

C. Condensation-Resistance Factor (CRF): Provide wood windows tested for thermal performance according to AAMA 1503, showing a CRF of 45.

D. Thermal Transmittance: Provide wood windows with a whole-window, U-factor maximum indicated at 15-mph exterior wind velocity and winter condition temperatures when tested according to AAMA 1503, ASTM E 1423, NFRC 100.

1. U-Factor: summer 0.22 Btu/sq. ft. x h x deg F or less.

E. Solar Heat-Gain Coefficient (SHGC): Provide wood windows with a whole-window SHGC maximum of 0.27 determined according to NFRC 200 procedures.

2.4 GLAZING

A. Glass and Glazing Materials: Refer to Division 08 Section "Glazing" for glass units and glazing requirements applicable to glazed wood window units.

B. Glass Clear, insulating-glass units, argon gas filled, with low-E coating pyrolytic on second surface or sputtered on second or third surface complying with Division 08 Section "Glazing."

C. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal and complies with requirements for windborne-debris resistance.

2.5 INSECT SCREENS – Provide screens – subject to client preference on installation

A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Fabricate insect screens to fully integrate with window frame. Locate screens on outside of window and provide for each operable exterior sash or ventilator.

1. Aluminum Tubular Frame Screens: Comply with SMA 1004, "Specifications for Aluminum Tubular Frame Screens for Windows," Architectural C-24 class.

B. Aluminum Insect Screen Frames: Manufacturer's standard aluminum alloy complying with SMA 1004. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, adjustable rollers**,** and removable PVC spline/anchor concealing edge of frame.

1. Aluminum Tubular Framing Sections and Cross Braces: Roll formed from aluminum sheet with minimum wall thickness as required for class indicated.
2. Finish: Anodized aluminum in color selected by Architect from manufacturer's full range.
3. Finish: Manufacturer's standard.

C. Glass-Fiber Mesh Fabric: mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration; in the following color. Comply with ASTM D 3656.

1. Mesh Color: Silver gray

D. Wickets: Provide hinged wickets, framed and trimmed for a tight fit and for durability during handling.

2.6 ACCESSORIES

A. Hardware and Hardware accessories to be Dark Bronze.

B. Dividers (False Muntins): Provide dividers in designs indicated for each sash lite, one per sash, on the exposed surface of interior lite of the sash and exterior lites of the sash and one permanently located between glazing lites in the airspace, and exterior.

1. Material: Extruded aluminum on the exterior,, and wood on interior
2. Design: basis of design Eagle Window.
3. Color: Confirm with Architect

2.7 FABRICATION

A. Fabricate wood windows that are reglazable without dismantling sash or ventilator framing.

B. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator.

C. Factory machine windows for openings and for hardware that is not surface applied.

D. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.

E. Glazing Stops: Provide nailed or snap-on glazing stops coordinated with Division 08 Section "Glazing" and glazing system indicated. Provide glazing stops to match sash and ventilator frames.

2.8 WOOD FINISHES

A. Factory-Finished Windows: Provide manufacturer's standard factory finish complying with WDMA T.M. 12 manufacturer's standard finish. Apply finish to exposed interior wood surfaces.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

E. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

F. Clean exposed surfaces immediately after installing windows. **Avoid damaging protective coatings and finishes. Contractor to replace field damaged window units at own cost.** Remove excess sealants, glazing materials, dirt, and other substances.

G. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

H. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 085200

SECTION 08 71 11 - DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical door hardware for the following:

a. Swinging doors.

2. Cylinders for door hardware specified in other Sections.

B. Products furnished, but not installed, under this Section include the products listed below. Coordinating and scheduling the purchase and delivery of these products remain requirements of this Section.

1. Pivots, and lock cylinders to be installed under other Sections.

2. Permanent lock cores to be installed by Owner.

1.2 RELATED SECTIONS

A. Sections:

1. Section 012100 “Allowances”.

2. Allowances: Hardware is to be purchased under Allowances provided in Division 01. Specification is to serve as quality standard to be used in preparation of schedules and installation guides.

1.3 ACTION SUBMITTALS

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

B. Shop Drawings: Details of electrified door hardware.

C. Samples: For each exposed product and for each color and texture specified.

D. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.

b. Content: Include the following information:

1) Identification number, location, hand, fire rating, size, and material of each door and frame.

2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.

3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.

4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.

2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:

1. For door hardware, an Architectural Hardware Consultant (AHC) who is also an Electrified Hardware Consultant (EHC) or Architectural Openings Consultant (AOC).

C. Source Limitations: Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg) of water.

F. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction. Provide wiring diagram for all doors to have electric/electronic hardware (see Division 8 Hollow Metal Doors and Frames).

G. Security-Card Readers: Card readers are to be provided with Elevators. Additional security devices at the building exterior doors are to be owner provided and installed

H. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

I. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf

2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.

b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.

c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.

4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

J. Keying Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

a. Electromagnetic Locks: Five years from date of Substantial Completion.

b. Exit Devices: Two years from date of Substantial Completion.

c. Manual Closers: 10 years from date of Substantial Completion.

d. Concealed Floor Closers: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as shown on Drawings to comply with requirements in this Section:

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by descriptive titles corresponding to requirements specified in Part 2.

2.2 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Baldwin Hardware Corporation.

b. Hager Companies.

c. IVES Hardware; an Ingersoll-Rand company.

d. Lawrence Hardware Inc.

e. McKinney Products Company; an ASSA ABLOY Group company.

f. Stanley Commercial Hardware; Div. of The Stanley Works.

B. Antifriction-Bearing Hinges:

1. Mounting: Full mortise (butts).

2. Bearing Material: Ball bearing.

3. Grade: Grade 1 (heavy weight).

4. Base and Pin Metal:

5. Exterior Hinges: Stainless steel with stainless-steel pin.

   a. Interior Hinges: Stainless steel with stainless-steel pin.

   b. Hinges for Fire-Rated Assemblies: Stainless steel with stainless-steel pin.

6. Pins: Nonremovable.

7. Tips: Flat button.

8. Corners: Square 5/32-inch (4-mm) radius.

C. Double-Acting Pivot-Hinge Set: Grade 1; wrought, forged, or cast steel or malleable iron base metal; consisting of a top pivot and a bottom pivot, each with jamb brackets, and bottom pivot with thrust steel bearing.

2.3 SELF-CLOSING HINGES AND PIVOTS

A. Self-Closing Hinges and Pivots: BHMA A156.17.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Baldwin Hardware Corporation.

   b. Hager Companies.

   c. IVES Hardware; an Ingersoll-Rand company.

   d. Lawrence Hardware Inc.

   e. McKinney Products Company; an ASSA ABLOY Group company.

   f. Stanley Commercial Hardware; Div. of The Stanley Works.

B. Spring Hinges: Grade 1 wrought steel, with torsion spring.

1. Type: Singleacting.

2. Mounting: Full mortise (butts)

C. Gravity Pivot Sets: Grade 3; double acting; surface mounting; non-handed; consisting of bottom pivot with door and jamb bracket and top pivot assembly with jamb bracket.

1. Tension: Adjustable

2. Base Metal: Wrought brass or bronze.

2.4 CENTER-HUNG AND OFFSET PIVOTS

A. Center-Hung and Offset Pivots: BHMA A156.4.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. DORMA Architectural Hardware; Member of The DORMA Group North America.

b. IVES Hardware; an Ingersoll-Rand company.

c. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

B. Offset Pivot Sets: Grade 1.

1. Offset: 3/4 inch (19 mm).

2. Top Pivot: Full-mortise mounting; walking-beam type with retractable pin and oil-impregnated bronze bearing.

3. Knuckle: Standard.

a. Option: With screw holes designed to straddle lead in the center of lead-lined door.

4. Recessed-type bottom pivot in second option in first subparagraph below is not available in Grade 2.

5. Bottom Pivot: Surface floor mounted and mortised into door; with thrust ball bearing.

6. Base Metal: Stainless steel.

C. Offset Intermediate Pivots: Grade 1; for use with offset pivot sets; with oil-impregnated bronze bearings.

1. Mounting: Full mortise, 3/4 inch (19 mm) offset.

2. Knuckle: Standard.

3. Electric Option: Concealed power transfer for use with electrical panic devices and locks.

4. Base Metal: Stainless steel.

2.5 CONTINUOUS HINGES

A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch- thick, hinge leaves with minimum overall width of 4 inches fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

B. Pin-and-Barrel-Type Hinges:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following.

   a. Hager Companies.

   b. IVES Hardware; an Ingersoll-Rand company.

   c. Lawrence Hardware Inc.

   d. Markar Architectural Products, Inc.; a subsidiary of Adams Rite Manufacturing Co.

   e. McKinney Products Company; an ASSA ABLOY Group company.

   f. Select Products Limited.

   g. Zero International.

C. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Bommer Industries, Inc.

   b. Cal-Royal Products, Inc.

   c. Hager Companies.

   d. IVES Hardware; an Ingersoll-Rand company.

   e. McKinney Products Company; an ASSA ABLOY Group company.

   f. Select Products Limited.

   g. Stanley Commercial Hardware; Div. of The Stanley Works.

   h. Zero International.

2.

2.6 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.

2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.

3. Deadbolts: Minimum 1.25-inch (32-mm) bolt throw.

C. Lock Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

D. Lock Trim:

1. Description: Simpli Roseless Trim as Manufactured by Sargent, or Architect approved equal.

2. Levers: Sargent Odeon Series - MV.

3. Dummy Trim: Simpli Roseless Trim as Manufactured by Sargent, or Architect approved equal.

4. Operating Device: Lever

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Arrow USA; an ASSA ABLOY Group company.

b. Best Access Systems; Div. of Stanley Security Solutions, Inc.

c. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.

d. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

e. Schlage Commercial Lock Division; an Ingersoll-Rand company.

f. Yale Security Inc.; an ASSA ABLOY Group company.

G. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.

    b. Arrow USA; an ASSA ABLOY Group company.

    c. Best Access Systems; Div. of Stanley Security Solutions, Inc.

    d. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

    e. Schlage Commercial Lock Division; an Ingersoll-Rand company.

    f. Yale Security Inc.; an ASSA ABLOY Group company.

2.7 AUXILIARY LOCKS

A. Bored Auxiliary Locks: BHMA A156.5: Grade 1; with strike that suits frame.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following.

    a. Arrow USA; an ASSA ABLOY Group company.

    b. Best Access Systems; Div. of Stanley Security Solutions, Inc.

    c. Cal-Royal Products, Inc.

    d. Falcon Lock; an Ingersoll-Rand company.

    e. Hager Companies.

    f. K2 Commercial Hardware; a Black & Decker Corp. company.

    g. Marks USA.

    h. Medeco Security Locks, Inc.; an ASSA ABLOY Group company.

    i. PDQ Manufacturing.

    j. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

    k. Schlage Commercial Lock Division; an Ingersoll-Rand company.

    l. Weiser Lock Corp.; a Black & Decker Corp. company.

    m. Yale Security Inc.; an ASSA ABLOY Group company.

B. Mortise Auxiliary Locks: BHMA A156.5; Grade 1; with strike that suits frame.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Accurate Lock & Hardware Co.

   b. Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.

   c. Arrow USA; an ASSA ABLOY Group company.

   d. Best Access Systems; Div. of Stanley Security Solutions, Inc.

   e. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

   f. Schlage Commercial Lock Division; an Ingersoll-Rand company.

   g. Yale Security Inc.; an ASSA ABLOY Group company.

2. Narrow Stile Auxiliary Locks: BHMA A156.5; Grade [1] [2]; with strike that suits frame.

2.8 ELECTROMAGNETIC LOCKS

A. Electromagnetic Locks: BHMA A156.23; electrically powered; with electromagnet attached to frame and armature plate attached to door; full-exterior or full-interior type, as required by application indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Door Controls International, Inc.

   b. Dortronics Systems, Inc.

   c. DynaLock Corp.

   d. Rutherford Controls Int'l. Corp.

   e. Schlage Commercial Lock Division; an Ingersoll-Rand company.

   f. Securitron Magnalock Corporation; an ASSA ABLOY Group company.

   g. Security Door Controls.

2.9 EXIT LOCKS AND EXIT ALARMS

A. Exit Locks and Alarms: BHMA A156.29, Grade 1.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Arrow USA; an ASSA ABLOY Group company.

b. Detex Corporation.

c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

B. Exit Locks: Surface mounted; battery powered, housed in metal case; with manufacturer's standard strike that suits frame; with red-and-white lettering reading "EMERGENCY EXIT PUSH TO OPEN--ALARM WILL SOUND."

1. Single-Door or Pairs-of-Door Type: Activated by arm,

2. Options:

a. Low-battery alert.

b. Outside key control.

c. Audible alarm that sounds when unauthorized use of door occurs.

d. Silent alarm with remote signal capability for connection to remote indicating panel.

C. Stand-Alone Exit Alarms: Surface mounted on door.

1. Options:

a. Low-battery alert.

b. Outside key control.

c. Audible alarm that sounds when unauthorized use of door occurs.

d. Automatic rearming after authorized use.

e. Remote signal capability for connection to remote indicating panel.

2.10 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

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

a. Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.

b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.

c. Detex Corporation.

d. DORMA Architectural Hardware; Member of The DORMA Group North America.

e. Dor-O-Matic; an Ingersoll-Rand company.

f. Precision Hardware, Inc.; Division of Stanley Security Solutions, Inc.

g. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

h. Von Duprin; an Ingersoll-Rand company.

i. Yale Security Inc.; an ASSA ABLOY Group company.

B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

C. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

D. Rim Exit Devices: Grade 1.

1. Type: Type 1, rim.

2. Grade: Grade 1.

3. Actuating Bar: Push pad.

4. Material: Stainless steel.

E. Mortise Exit Devices: Grade 1.

1. Type: Type 3.

2. Grade: Grade 1.

3. Actuating Bar: Push pad.

4. Material: Stainless steel.

F. Tube-Steel Removable Mullions: With malleable-iron top and bottom retainers, and prepared for strikes as follows:

1. Strikes: Two standard recessed strikes.

2.11 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

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

a. Arrow USA; an ASSA ABLOY Group company.

b. ASSA, Inc.; an ASSA ABLOY Group company.

c. Best Access Systems; Div. of Stanley Security Solutions, Inc.

d. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.

e. Falcon Lock; an Ingersoll-Rand company.

f. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

g. Schlage Commercial Lock Division; an Ingersoll-Rand company.

h. Yale Security Inc.; an ASSA ABLOY Group company.

B. Standard Lock Cylinders: BHMA A156.5; Grade 1; permanent cores that are removable; face finished to match lockset.

1. Number of Pins: Six.

2. Type: Bored-lock type.

C. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.12 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.

1. Master Key System: Change keys and a master key operate cylinders.

2. Keyed Alike: Key all cylinders to same change key.

B. Keys: Nickel silver

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2. Quantity: In addition to one extra key blank for each lock, provide the following:

a. Cylinder Change Keys: Three.

b. Master Keys: Five.

2.13 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

2. American Key Boxes and Cabinets.

a. GE Security, Inc.

b. HPC, Inc.

c. Lund Equipment Co., Inc.

d. MMF Industries.

e. Tri Palm International.

3. Portable Cabinet: Tray for mounting in file cabinet, equipped with key-holding panels, envelopes, and cross-index system.

B. Key Lock Boxes: Designed for storage of two keys, with tamper switches to connect to intrusion detection system.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. GE Security, Inc.

b. HPC, Inc.

c. Knox Company.

C. Cross-Index System: Single-index system for recording key information. Include three receipt forms for each key-holding hook. Set up by Installer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Lund Equipment Co., Inc.

b. MMF Industries.

c. Tri Palm International.

D. Key Control System Software: BHMA A156.5, Grade 1; multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Best Access Systems; Div. of Stanley Security Solutions, Inc.

    b. GE Security, Inc.

    c. HPC, Inc.

2.14 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Forms + Surfaces.

    b. Hager Companies.

    c. Hiawatha, Inc.

    d. IVES Hardware; An Ingersoll-Rand Company.

    e. Rockwood Manufacturing Company.

    f. Trimco.

B. Flat Push Plates 1/8 inch (3.2 mm) thick, 4 inches wide by 16 inches high (102 mm wide by 406 mm high) with square corners and beveled edges; secured with exposed screws.

C. Push-Pull Plates: 1/8 inch (3.2 mm) thick, 3-1/2 inches wide by 15-3/4 inches high (89 mm wide by 400 mm high) with square corners, beveled edges, and raised integral lip; secured with exposed screws.

D. Straight Pull-Plate Door Pulls: 0.050-inch- (1.3-mm-) thick plate, 4 inches wide by 16 inches high (102 mm wide by 406 mm high) with square corners and beveled edges; pull with minimum clearance of 1-1/2 inches (38 mm) from face of door.

1. Type: 3/4-inch (19-mm) constant-diameter pull.

2. Mounting: Surface applied with concealed fasteners.

3. Overall Pull Length: 9 inches (229 mm).

2.15 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release; and with internal override.

B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.

C. Flat Overlapping Astragals: BHMA A156.22; flat primed steel metal bar, surface mounted on face of door with screws; minimum 1/8 inch (3.2 mm) thick by 2 inches (51 mm) wide by full height of door.

2.16 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.

b. DORMA Architectural Hardware; Member of The DORMA Group North America.

c. Dor-O-Matic; an Ingersoll-Rand company.

d. LCN Closers; an Ingersoll-Rand company.

e. Norton Door Controls; an ASSA ABLOY Group company.

f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

g. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

B. Surface Closer with Cover: Grade 1; Modern Type with mechanism enclosed in cover.

1. Mounting: Parallel arm.

2. Type: Regular arm.

3. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.

4. Cover Material: Aluminum.

5. Closing Power Adjustment: At least 35 percent more than minimum tested value.

2.17 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16; polished cast brass, bronze, or aluminum base metal.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Architectural Builders Hardware Mfg., Inc.

    b. Baldwin Hardware Corporation.

    c. Hager Companies.

    d. Hiawatha, Inc.

    e. IVES Hardware; an Ingersoll-Rand company.

    f. Rockwood Manufacturing Company.

    g. Stanley Commercial Hardware; Div. of The Stanley Works.

    h. Trimco.

B. Dome-Type Floor Stop: Grade 1 with minimum 1-inch- (25-mm-) high bumper for doors without threshold and 1-3/8-inch- (35-mm-) high bumper for doors with threshold; provide with extruded aluminum riser for carpet installations.

C. Wall Bumpers: Grade 1; with rubber bumper; 2-1/2-inch (64-mm) diameter, minimum 3/4-inch (19-mm) projection from wall; with backplate for concealed fastener installation; with convex bumper configuration.

2.18 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Hager Companies.

    b. M-D Building Products, Inc.

    c. National Guard Products.

    d. Pemko Manufacturing Co.; an ASSA ABLOY Group company.

    e. Reese Enterprises, Inc.

    f. Sealeze; a unit of Jason Incorporated.

    g. Zero International.

B. Adhesive-Backed Perimeter Gasketing: Vinyl bulb gasket material applied to frame rabbet with self-adhesive.

C. Door Sweeps: Nylon brush gasket material held in place by flat aluminum housing or flange; surface mounted to face of door with screws.

2.19 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hager Companies.

b. National Guard Products.

c. Pemko Manufacturing Co.; an ASSA ABLOY Group company.

d. Reese Enterprises, Inc.

e. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

B. Compressing-Top Thresholds: Metal member with compressible vinyl seal on top of threshold that seals against bottom of door; and base metal of stainless steel.

C. Saddle Thresholds:

1. Type: Fluted top.

2. Base Metal: Stainless steel.

D. Half-Saddle Thresholds: Fluted-top metal member; and base metal of aluminum.

2.20 CONCEALED CLOSERS

A. Concealed Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. DORMA Architectural Hardware; Member of The DORMA Group North America.

b. LCN Closers; an Ingersoll-Rand company.

c. Norton Door Controls; an ASSA ABLOY Group company.

d. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

e. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

B. Concealed-in-Door Closer: Grade 1mortised into top rail of minimum 1-3/4-inch- thick doors and track mortised into head frame; with double lever arm indicated.

C. Concealed Overhead Closer: Grade 1; mortised into head frame; with cast-metal body and exposed cover plate.

2.21 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Baldwin Hardware Corporation.

b. Hiawatha, Inc.

c. IVES Hardware; an Ingersoll-Rand company.

d. Rockwood Manufacturing Company.

e. Trimco.

B. Kick Plates10 inches (254 mm) high by door width with allowance for frame stops.

2.22 AUXILIARY DOOR HARDWARE

A. Auxiliary Hardware: BHMA A156.16.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Baldwin Hardware Corporation.

b. Cal-Royal Products, Inc.

c. Don-Jo Mfg., Inc.

d. Hager Companies.

e. Rockwood Manufacturing Company.

f. Stanley Commercial Hardware; Div. of The Stanley Works.

g. Trimco.

B. Coat Hooks: Grade 1 two curved hooks with rounded ends; 3-inch projection from wall; for surface-screw application; fabricated from burnished cast aluminum.

C. Wide-Angle Door Viewers: Grade 1solid brass with optical glass lenses; adjustable to door thickness and permitting 1-way observation with minimum 190-degree viewing angle.

D. Fire-Rated Door Viewers: Solid brass with optical glass lenses; listed and labeled for use in fire-rated door assemblies; adjustable to door thickness, and permitting 1-way observation with minimum 120degree viewing angle.

2.23 AUXILIARY ELECTRIFIED DOOR HARDWARE

A. Auxiliary Electrified Door Hardware:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. DynaLock Corp.

b. GE Security, Inc.

c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

d. Schlage Commercial Lock Division; an Ingersoll-Rand company.

e. Securitron Magnalock Corporation; an ASSA ABLOY Group company.

f. Security Door Controls.

B. Boxed Power Supplies: Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; listed and labeled for use with fire alarm systems.

C. Door Position Switches: Magnetically operated reed switch designed for concealed mounting.

D. Door and Frame Transfer Devices: Steel housing for mortise in hinge stile of door, with flexible tube for wiring bundle; accommodating doors that swing open to 120 degrees.

2.24 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Fire-Rated Applications:

a. Wood or Machine Screws: For the following:

1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.

2) Strike plates to frames.

3) Closers to doors and frames.

b. Steel Through Bolts: For the following unless door blocking is provided:

1) Closers to doors and frames.

2) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.25 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

C. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

2. Custom Steel Doors and Frames: HMMA 831.

3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

D. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

E. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

F. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.

G. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as indicated in keying schedule.

2. Furnish permanent cores to Owner for installation.

H. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

I. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings.Verify location with Architect.

1. Configuration: Provide one power supply for each door opening with electrified door hardware.

J. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

K. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

L. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

M. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

N. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

O. Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

END OF SECTION

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Glass for windows, doors, interior borrowed lites.

2. Glazing sealants and accessories.

1.2 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.

C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Preconstruction adhesion and compatibility test report.

1.5 QUALITY ASSURANCE

A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. AGC Glass Company North America, Inc.

2. Guardian Industries Corp.; SunGuard.

3. Pilkington North America.

4. PPG Industries, Inc.

5. Viracon, Inc.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the International Building Code and ASTM E 1300.

1. Design Wind Pressures: As indicated on Drawings.

2. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).

2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.

3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."

2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."

3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."

4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IgCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

B. Tinted Annealed Float Glass: ASTM C 1036, Type I, Class 2 (tinted), Quality-Q3.

C. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

D. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

E. Reflective-Coated Spandrel Glass: ASTM C 1376, Kind CS.

2.5 LAMINATED GLASS

A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.

2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.

3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.

1. Sealing System: Dual seals.

2. Spacer: Manufacturer's standard spacer material and construction.

2.1 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:

1. Neoprene complying with ASTM C 864.

2. EPDM complying with ASTM C 864.

3. Silicone complying with ASTM C 1115.

4. Thermoplastic polyolefin rubber complying with ASTM C 1115.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene EPDM silicone or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.

1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.2 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.

2.3 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.

2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.4 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Apply heel bead of elastomeric sealant.

F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.3 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

3.6 MONOLITHIC GLASS SCHEDULE

A. Glass Type GL-1: Clear fully tempered float glass.

1. Thickness: 1/4 inch (6.0 mm.)

2. Provide safety glazing labeling.

B. Glass Type GL-2: Clear heat-strengthened float glass.

1. Thickness: 1/4 inch (6.0 mm.)

2. Provide safety glazing labeling.

C. Glass Type GL-3: Reflective-coated spandrel glass; heat-strengthened float glass.

1. Coating Type: Pyrolytic.

2. Coating Color: As selected by Architect from manufacturers full range.

3. Glass: Clear float glass.

4. Minimum Thickness: 6 mm.

5. Coating Location: First surface.

6. Factory apply manufacturer's standard opacifier to coated second surface of lites, with resulting products complying with Specification No. 89-1-6 in GANA's "Engineering Standards Manual":

3.7 LAMINATED GLASS SCHEDULE

A. Glass Type GL-4 : Clear laminated glass with two plies of fully tempered float glass.

1. Minimum Thickness of Each Glass Ply: 6 mm.

2. Interlayer Thickness: 0.030 inch.

3.8 INSULATING GLASS SCHEDULE

A. Glass Type GL-5: Low-e-coated, clear insulating glass.

1. Overall Unit Thickness: 1 inch.

2. Minimum Thickness of Each Glass Lite: 6 mm.

3. Outdoor Lite: Annealed or fully tempered (as shown on drawings) float glass.

4. Interspace Content: Argon.

5. Indoor Lite: Annealed or fully tempered (as shown on drawings) float glass.

6. Low-E Coating: Pyrolytic on second surface.

7. U-Factor: .29 maximum.

8. Visible Light Transmittance: 60 percent minimum.

9. Solar Heat Gain Coefficient 0.40 maximum.

END OF SECTION 08 80 00

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.3 INTERIOR GYPSUM BOARD

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

1. American Gypsum.

2. CertainTeed Corp.

3. Georgia-Pacific Gypsum LLC.

4. Lafarge North America Inc.

5. National Gypsum Company.

6. USG Corporation.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.

2. Long Edges: Tapered

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch.

2. Long Edges: Tapered.

D. Flexible Gypsum Board: ASTM C 1396/C 1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.

1. Thickness: 1/4 inch.

2. Long Edges: Tapered.

E. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch.

2. Long Edges: Tapered.

F. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch , Type X.

2. Long Edges: Tapered.

3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

B. Aluminum Trim: ASTM B 221, Alloy 6063-T5.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

3. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.6 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing).

D. Acoustical Joint Sealant: ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings as demonstrated by testing according to ASTM E 90.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.

b. Grabber Construction Products; Acoustical Sealant GSC.

c. Pecora Corporation; AC-20 FTR or AIS-919.

d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.

e. USG Corporation; SHEETROCK Acoustical Sealant.

E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

F. Vapor Retarder: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

1. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

E. Prefill open joints, rounded or beveled edges, and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.

2. Level 2: Panels that are substrate for tile >.

3. Level 3: Where indicated on Drawings

4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated

5. Level 5: Where indicated on Drawings.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION

SECTION 09 30 00 – CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Porcelain Ceramic tile.

2. Stone thresholds.

3. Crack isolation membrane.

4. Metal edge strips.

1.2 ACTION SUBMITTALS

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

B. Samples:

1. Each type and composition of tile and for each color and finish required.

2. Assembled samples, with grouted joints, for each type and composition of tile and for each color and finish required.

3. Stone thresholds in 6-inch lengths.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup of each type of floor tile installation.

2. Build mockup of each type of wall tile installation.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.

2.2 TILE PRODUCTS

A. Ceramic Tile Type: Factory-mounted ceramic tile or porcelain ceramic tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Daltile, Inc.; or a comparable product, approved by the Architect, which may include but is not limited one of the following:

a. American Olean; a division of Dal-Tile Corporation.

b. Daltile.

c. Interceramic.

2.3 PORCELAIN TILE PRODUCTS

A. PT – see finish schedule

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface. Basis of Design to be verified with final selection.

B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish. Basis of Design to be verified with final selection.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2. Description: Match Architect's sample.

2.1 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

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

a. CertainTeed Corporation.

b. Georgia-Pacific Building Products.

c. National Gypsum Company.

d. Temple-Inland Building Products by Georgia-Pacific.

2. Core: As indicated on Drawings.

3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.2 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product (if required by tile manufacturer) that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

2.3 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, selected from the following, which complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Bostik, Inc.; Durabond D-222 Duraguard Membrane.

b. Custom Building Products; Redgard Waterproofing and Crack Prevention Membrane.

c. Mer-Kote Products, Inc.; Fracture-Guard 5000.

d. Southern Grouts & Mortars, Inc.; Southcrete 1100 Crack Suppression and Waterproofing.

e. TEC, a subsidiary of H. B. Fuller Company; HydraFlex - Waterproofing Crack Isolation Membrane.

C. Latex-Portland Cement: Flexible mortar consisting of cement-based mix and latex additive.

1. Products: Subject to compliance with requirements available products that may be incorporated into the Work include, but are not limited to, the following:

a. C-Cure; UltraCure 971.

b. MAPEI Corporation; Mapelastic (PRP 315).

c. TEC, a subsidiary of H. B. Fuller Company; Triple Flex Waterproofing, Crack Isolation Membrane & Mortar.

2.4 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

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

a. Boiardi Products; a QEP company.

b. Bonsal American; an Oldcastle company.

c. Custom Building Products.

d. Laticrete International, Inc.

e. MAPEI Corporation.

f. Southern Grouts & Mortars, Inc.

g. TEC; a subsidiary of H. B. Fuller Company.

2. Prepackaged, dry-mortar mix to which only water must be added.

3. For wall applications, provide nonsagging mortar.

B. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

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

a. Atlas Minerals & Chemicals, Inc.

b. Bonsal American; an Oldcastle company.

c. Custom Building Products.

d. Laticrete International, Inc.

e. MAPEI Corporation.

f. Southern Grouts & Mortars, Inc.

g. TEC; a subsidiary of H. B. Fuller Company.

2.5 GROUT MATERIALS

A. Standard Cement Grout: ANSI A118.6.

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

a. Boiardi Products; a QEP company.

b. Bonsal American; an Oldcastle company.

c. Custom Building Products.

d. Laticrete International, Inc.

e. MAPEI Corporation.

f. Southern Grouts & Mortars, Inc.

g. TEC; a subsidiary of H. B. Fuller Company.

B. Water-Cleanable Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D.

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

a. Atlas Minerals & Chemicals, Inc.

b. Boiardi Products; a QEP company.

c. Bonsal American; an Oldcastle company.

d. Custom Building Products.

e. Laticrete International, Inc.

f. MAPEI Corporation.

g. Southern Grouts & Mortars, Inc.

h. TEC; a subsidiary of H. B. Fuller Company.

2.6 ELASTOMERIC SEALANTS

A. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. DAP Inc.; Titanium Enriched Kitchen and Bath Sealant or 100 percent Silicone Kitchen and Bath Sealant.

b. Dow Corning Corporation; Dow Corning 786.

c. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.

d. Laticrete International, Inc.; Latasil Tile & Stone Sealant.

e. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.

f. Tremco Incorporated; Tremsil 600 White.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, white zinc alloy exposed-edge material.

C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:

a. Tile floors in wet areas.

b. Tile floors composed of tiles 8 by 8 inches or larger.

c. Tile floors composed of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. 1/4 inch (6.35 mm).

G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

H. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).

I. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

J. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

K. Install cementitious backer units and fiber-cement underlayment and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

L. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

M. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

3.4 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F125A-12(Full): Thin-set mortar on crack isolation membrane; TCA F125.

a. Thin-Set Mortar: Latex-portland cement mortar.

b. Grout: Standard sanded cement grout.

B. Interior Wall Installations, Metal Studs or Furring:

1. Tile Installation TCNA W245 or TCNA W248: Thin-set mortar on Glass-Mat, Water-Resistant Backing Board units; TCNA W245 or TCNA W248.

    a. Thin-Set Mortar: Latex-portland cement mortar.

    b. Grout: Sand-portland cement grout.

END OF SECTION

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid vinyl floor tile.
2. Vinyl composition floor tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of special patterns.

C. Samples: Full-size units of each color and pattern of floor tile required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 SOLID VINYL FLOOR TILE

A. Tile Standard: ASTM F 1700.

1. Class: **Class I, monolithic vinyl tile**.
2. Type: **B, embossed surface**.

B. Thickness: SEE FINISH SCHEDULE

C. Size: SEE FINISH SCHEDULE

D. Colors and Patterns: SEE FINISH SCHEDULE

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than **9** pH.
4. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:

    a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft.** in 24 hours.
    b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum **75** percent relative humidity level.

C. Access Flooring Panels: Remove protective film of oil or other coating using method recommended by access flooring manufacturer.

D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

E. Do not install floor tiles until they are the same temperature as the space where they are to be installed.

F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.2 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor 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 tile at perimeter.

1. Lay tiles **in pattern indicated**.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles **with grain running in one direction**.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply **two** coat(s).

C. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes modular carpet tile.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

C. Samples: For each exposed product and for each color and texture required.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.7 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Provide the following: SEE FINISH SCHEDULE
1. Location: See finish schedule.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Concrete Slabs:

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

B. Wood Subfloors: Verify that underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

3.2 PREPARATION

A. General: Comply with CRI's "CRI Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom, then vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

I. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

J. Protect carpet tile against 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 carpet tile manufacturer.

END OF SECTION 096813

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Fiber-cement board.

2. Steel and iron.

3. Galvanized metal.

4. Wood.

1.2 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

B. Samples: For each type of paint system and each color and gloss of topcoat.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

    a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).

    b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Behr Process Corporation.

2. Benjamin Moore & Co.

3. Glidden Professional.

4. PPG Architectural Finishes, Inc.

5. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

D. Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.

2. Fiber-Cement Board: 12 percent.

3. Masonry (Clay and CMUs): 12 percent.

4. Wood: 15 percent.

5. Portland Cement Plaster: 12 percent.

6. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

A. Cement Board Substrates:

1. Latex System MPI EXT 3.3A:

a. Prime Coat: Latex, exterior, matching topcoat.

b. Prime Coat: Primer, alkali resistant, water based, MPI #3.

c. Intermediate Coat: Latex, exterior, matching topcoat.

d. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

e. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.

f. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.

g. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.

2. Alkyd System MPI EXT 3.3B:

a. Prime Coat: Primer, latex for exterior wood, MPI #6.

b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

c. Topcoat: Alkyd, exterior, flat (MPI Gloss Level 5), MPI #8.

d. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5), MPI #94.

e. Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.

B. Steel and Iron Substrates:

1. Water-Based Light Industrial Coating System MPI EXT 5.1C:

a. Prime Coat: Primer, alkyd, anti-corrosive for metal, MPI #79.

b. Prime Coat: Primer, rust inhibitive, water based MPI #107.

c. Prime Coat: Primer, epoxy, anti-corrosive MPI #101.

d. Prime Coat: Shop primer specified in Section where substrate is specified.

e. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

f. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.

g. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.

h. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.

2. Alkyd System MPI EXT 5.1D:

a. Prime Coat: Primer, alkyd, anticorrosive, for metal, MPI #79.

b. Prime Coat: Shop primer specified in Section where substrate is specified.

c. Prime Coat: Primer, metal, surface tolerant, MPI #23.

d. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

e. Topcoat: Alkyd, exterior, flat (MPI Gloss Level 1), MPI #8.

f. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5), MPI #94.

g. Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.

C. Galvanized-Metal Substrates:

1. Latex System MPI EXT 5.3H:

a. Prime Coat: Primer, galvanized, water based, MPI #134.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.

e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.

f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.

2. Alkyd System MPI EXT 5.3B:

a. Prime Coat: Primer, galvanized, cementitious, MPI #26.

b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

c. Topcoat: Alkyd, exterior, flat (MPI Gloss Level 5), MPI #8.

d. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5), MPI #94.

e. Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.

D. Wood Substrates: Wood trim and Architectural woodwork.

1. Latex over Latex Primer System MPI EXT 6.3L:

a. Prime Coat: Primer, latex for exterior wood, MPI #6.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.

e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.

f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.

2. Latex System MPI EXT 6.3A:

a. Prime Coat: Primer, alkyd for exterior wood, MPI #5.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.

e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.

f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.

3. Alkyd System MPI EXT 6.3B:

a. Prime Coat: Primer, alkyd for exterior wood, MPI #5.

b. Intermediate Coat: Exterior, alkyd enamel, matching topcoat.

c. Topcoat: Alkyd, exterior, flat (MPI Gloss Level 5), MPI #8.

d. Topcoat: Alkyd, exterior, semi-gloss (MPI Gloss Level 5), MPI #94.

e. Topcoat: Alkyd, exterior, gloss (MPI Gloss Level 6), MPI #9.

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates.

1.2 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

B. Samples: For each type of paint system and in each color and gloss of topcoat.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).

b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Behr Process Corporation.

2. Benjamin Moore & Co.

3. Glidden Professional.

4. PPG Architectural Finishes, Inc.

5. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction

1. Flat Paints and Coatings: 50 g/L.

2. Nonflat Paints and Coatings: 150 g/L.

3. Dry-Fog Coatings: 400 g/L.

4. Primers, Sealers, and Undercoaters: 200 g/L.

5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.

6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.

7. Pretreatment Wash Primers: 420 g/L.

8. Floor Coatings: 100 g/L.

9. Shellacs, Clear: 730 g/L.

10. Shellacs, Pigmented: 550 g/L.

D. Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.

2. Fiber-Cement Board: 12 percent.

3. Masonry (Clay and CMUs): 12 percent.

4. Wood: 15 percent.

5. Gypsum Board: 12 percent.

6. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 INTERIOR PAINTING SCHEDULE

A. CMU Substrates:

1. Latex System MPI INT 4.2A:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

2. Institutional Low-Odor/VOC Latex System MPI INT 4.2E:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 4), MPI #146.

d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.

3. Alkyd System MPI INT 4.2C:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

b. Sealer Coat: Primer sealer, latex, interior, MPI #50.

c. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5), MPI #47.

d. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.

B. Steel Substrates:

1. Latex System, Alkyd Primer MPI INT 5.1Q:

a. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.

b. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.

c. Prime Coat: Shop primer specified in Section where substrate is specified.

d. Intermediate Coat: Latex, interior, matching topcoat.

e. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

f. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

g. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

2. Latex over Shop-Applied Quick-Drying Shop Primer System MPI INT 5.1X:

a. Prime Coat: Primer, quick dry, for shop application, MPI #275.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

e. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

3. Institutional Low-Odor/VOC Latex System MPI INT 5.1S:

a. Prime Coat: Primer, rust inhibitive, water based MPI #107.

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 4), MPI #146.

d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.

e. Topcoat: Latex, interior, institutional low odor/VOC, gloss (MPI Gloss Level 6), MPI #148.

4. Alkyd System MPI INT 5.1E:

a. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.

b. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.

c. Prime Coat: Shop primer specified in Section where substrate is specified.

d. Intermediate Coat: Alkyd, interior, matching topcoat.

e. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5), MPI #47.

f. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.

5. Alkyd over Surface-Tolerant Primer System MPI INT 5.1T:

a. Prime Coat: Primer, metal, surface tolerant MPI #23.

b. Intermediate Coat: Alkyd, interior, matching topcoat.

c. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5), MPI #47.

d. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.

C. Galvanized-Metal Substrates:

1. Latex System MPI INT 5.3A:

a. Prime Coat: Primer, galvanized, water based, MPI #134.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

e. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

2. Institutional Low-Odor/VOC Latex System MPI INT 5.3N:

a. Prime Coat: Primer, galvanized, water based, MPI #134.

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 4), MPI #146.

d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.

e. Topcoat: Latex, interior, institutional low odor/VOC, gloss (MPI Gloss Level 6), MPI #148.

D. Wood Substrates: Architectural woodwork, Doors and Windows.

1. Latex over Latex Primer System MPI INT 6.3T:

a. Prime Coat: Primer, latex, for interior wood, MPI #39.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

e. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

2. Latex over Alkyd Primer System MPI INT 6.3U:

a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

e. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

3. Institutional Low-Odor/VOC Latex System MPI INT 6.3V:

a. Prime Coat: Primer, latex, for interior wood, MPI #39.

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 4), MPI #146.

d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.

e. Topcoat: Latex, interior, institutional low odor/VOC, gloss (MPI Gloss Level 6), MPI #148.

4. Water-Based Alkyd System MPI INT 6.3BB:

a. Prime Coat: Primer, latex, for interior wood, MPI #39.

b. Intermediate Coat: Alkyd, water based, matching topcoat.

c. Topcoat: Alkyd, water based, gloss (MPI Gloss Level 6-7), MPI #157.

5. Alkyd System MPI INT 6.3B:

a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.

b. Intermediate Coat: Alkyd, interior, matching topcoat.

c. Topcoat: Alkyd, interior, flat (MPI Gloss Level 1), MPI #49.

d. Topcoat: Alkyd, interior (MPI Gloss Level 3), MPI #51.

e. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5), MPI #47.

f. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.

E. Wood Substrates: Traffic surfaces, including floors and stairs.

1. Latex Porch & Floor Enamel System MPI INT 6.5G:

a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.

b. Intermediate Coat: Floor paint, latex, matching topcoat.

c. Topcoat: Floor paint, latex, low gloss (maximum MPI Gloss Level 3), MPI #60.

2. Alkyd Floor Enamel System MPI INT 6.5A:

a. Prime Coat: Floor enamel, alkyd, matching topcoat.

b. Intermediate Coat: Floor enamel, alkyd, matching topcoat.

c. Topcoat: Floor enamel, alkyd, gloss (MPI Gloss Level 6), MPI #27.

F. Gypsum Board and Plaster Substrates:

1. Latex over Latex Sealer System MPI INT 9.2A:

a. Prime Coat: Primer sealer, latex, interior, MPI #50.

b. Prime Coat: Latex, interior, matching topcoat.

c. Intermediate Coat: Latex, interior, matching topcoat.

d. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53.

e. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.

f. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52.

g. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

h. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

2. Latex over Alkyd Primer System (for Plaster Only) MPI INT 9.2K:

a. Prime Coat: Primer sealer, alkyd, interior, MPI #45.

b. Intermediate Coat: Latex, interior, matching topcoat.

c. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53.

d. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.

e. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52.

f. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

g. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

h. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

3. Institutional Low-Odor/VOC Latex System MPI INT 9.2M:

a. Prime Coat: Primer sealer, interior, institutional low odor/VOC, MPI #149.

b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

c. Topcoat: Latex, interior, institutional low odor/VOC, flat (MPI Gloss Level 1), MPI #143.

d. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 2), MPI #144.

e. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 3), MPI #145.

f. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 4), MPI #146.

g. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.

h. Topcoat: Latex, interior, institutional low odor/VOC, gloss (MPI Gloss Level 6), MPI #148.

4. Alkyd over Latex Sealer System MPI INT 9.2C:

a. Prime Coat: Primer sealer, latex, interior, MPI #50.

b. Intermediate Coat: Alkyd, interior, matching topcoat.

c. Topcoat: Alkyd, interior, flat (MPI Gloss Level 1), MPI #49.

d. Topcoat: Alkyd, interior (MPI Gloss Level 3), MPI #51.

e. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5), MPI #47.

f. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6), MPI #48.

END OF SECTION 09 91 23

SECTION 09 93 00 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and application of wood finishes on the following substrates:

1. Interior Substrates:

a. Dressed lumber (finish carpentry-molding and trim).

1.2 DEFINITIONS

A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

C. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

D. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

E. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.

B. Samples: For each type of finish system and in each color and gloss of finish indicated.

C. Product List: For each product indicated, include printout of current "MPI Approved Products List" for each product category specified in Part 2, with the product proposed for use highlighted.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. of each material and color applied.

1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.

b. Other Items: Architect will designate items or areas required.

2. Final approval of stain color selections will be based on mockups.

a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited:

1. Benjamin Moore & Co.

2. Behr Corp

3. Cabot Stains

4. ICI Paints.

5. Minwax

6. PPG Architectural Finishes, Inc.

7. Pratt & Lambert.

8. Sherwin-Williams Company (The).

2.2 MATERIALS, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each finish system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.

C. Stain Colors: Match Architect's samples.

2.3 WOOD FILLERS

A. Wood Filler Paste: MPI #91.

2.4 PRIMERS AND SEALERS

A. Alkyd, Sanding Sealer, Clear: MPI #102.

B. Shellac: MPI #88.

2.5 STAINS

A. Stain, Semi-Transparent, for Interior Wood: MPI #90.

2.6 WATER-BASED VARNISHES

A. Varnish, Water Based, Clear, Satin (Gloss Level 4): MPI #128.

B. Varnish, Water Based, Clear, Semi-Gloss (Gloss Level 5): MPI #129.

C. Varnish, Water Based, Clear, Gloss (Gloss Level 6): MPI #130.

2.7 SOLVENT-BASED VARNISHES

A. Varnish, Interior, Flat (Gloss Level 1): MPI #73.

B. Varnish, Interior, Semi-Gloss (Gloss Level 5): MPI #74.

C. Varnish, Interior, Gloss (Gloss Level 6): MPI #75.

2.8 POLYURETHANE VARNISHES

A. Varnish, Interior, Polyurethane, Oil-Modified, Satin (Gloss Level 4): MPI #57.

B. Varnish, Interior, Polyurethane, Oil-Modified, Gloss (Gloss Level 6): MPI #56.

C. Varnish, Polyurethane, Moisture-Cured, Gloss (Gloss Level 6): MPI #31.

D. Varnish, Aliphatic Polyurethane, Two-Component (Gloss Level 6 or 7): MPI #78.

2.9 OIL FINISH

A. Danish Oil: MPI #92.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

C. Maximum Moisture Content of Interior Wood Substrates: 10 percent, when measured with an electronic moisture meter.

D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

E. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.

2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

3.3 APPLICATION

A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Manual."

B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

A. Wood substrates, nontraffic surfaces, including wood trim, architectural woodwork, doors, and wood-based panel products.

1. Semitransparent Stain System:

a. Prime Coat: Stain, semi-transparent, matching topcoat.

b. Topcoat: Stain, semi-transparent, for interior wood, MPI #90.

2. Semitransparent Stain System:

a. Prime Coat: Stain, exterior, solvent based, semi-transparent, matching topcoat.

b. Topcoat: Stain, exterior, solvent based, semi-transparent, MPI #13.

3. Water-Based Varnish over Stain System:

a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.

b. First Intermediate Coat: Water-based varnish matching topcoat.

c. Second Intermediate Coat: Water-based varnish matching topcoat.

d. Topcoat: Varnish, water based, clear, satin (Gloss Level 4), MPI #128.

e. Topcoat: Varnish, water based, clear, semi-gloss (Gloss Level 5), MPI #129.

f. Topcoat: Varnish, water based, clear, gloss (Gloss Level 6), MPI #130.

4. Water-Based Varnish System:

a. Prime Coat: Water-based varnish matching topcoat.

b. Intermediate Coat: Water-based varnish matching topcoat.

c. Topcoat: Varnish, water based, clear, satin (Gloss Level 4), MPI #128.

d. Topcoat: Varnish, water based, clear, semi-gloss (Gloss Level 5, MPI #129

e. Topcoat: Varnish, water based, clear, gloss (Gloss Level 6), MPI #130.

5. Polyurethane Varnish over Stain System:

    a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.

    b. First Intermediate Coat: Polyurethane varnish matching topcoat.

    c. Second Intermediate Coat: Polyurethane varnish matching topcoat.

    d. Topcoat: Varnish, interior, polyurethane, oil-modified, satin (Gloss Level 4), MPI #57.

    e. Topcoat: Varnish, interior, polyurethane, oil-modified, gloss (Gloss Level 6), MPI #56.

6. Polyurethane Varnish System:

    a. Prime Coat: Polyurethane varnish matching topcoat.

    b. Intermediate Coat: Polyurethane varnish matching topcoat.

    c. Topcoat: Varnish, interior, polyurethane, oil-modified, satin (Gloss Level 4), MPI #57.

    d. Topcoat: Varnish, interior, polyurethane, oil-modified, gloss (Gloss Level 6), MPI #56.

7. Moisture-Cured Clear Polyurethane over Stain System:

    a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.

    b. First Intermediate Coat: Moisture-cured polyurethane matching topcoat.

    c. Second Intermediate Coat: Moisture-cured polyurethane matching topcoat.

    d. Topcoat: Varnish, polyurethane, moisture-cured, gloss (Gloss Level 6), MPI #31.

8. Moisture-Cured Clear Polyurethane System:

    a. Prime Coat: Moisture-cured polyurethane matching topcoat.

    b. Intermediate Coat: Moisture-cured polyurethane matching topcoat.

    c. Topcoat: Varnish, polyurethane, moisture-cured, gloss (Gloss Level 6), MPI #31.

9. Clear, Two-Component Polyurethane System:

    a. Prime Coat: Two-component polyurethane matching topcoat.

    b. Intermediate Coat: Two-component polyurethane matching topcoat.

c. Topcoat: Varnish, aliphatic polyurethane, two-component (Gloss Level 6 or Gloss Level 7), MPI #78.

10. Danish Oil System:

a. Prime Coat: Danish oil, MPI #92.

b. Topcoat: Danish oil, MPI #92.

END OF SECTION

SECTION 10191 - CUBICLE CURTAINS AND TRACKS

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. Curtain tracks and curtain carriers.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry Miscellaneous Carpentry" for wood blocking for mounting items requiring anchorage.
2. Division 9 Section "Gypsum Board Assemblies Acoustical Panel Ceilings Acoustical Tile Ceilings" for metal framing and furring for mounting items requiring anchorage.

1.3 PERFORMANCE REQUIREMENTS

1.4 SUBMITTALS

A. Product Data: Include durability, laundry temperature limits, fade resistance, and fire-test-response characteristics for each type of curtain fabric indicated.

1. Include data on each type of applied curtain treatment.

B. Shop Drawings: Show layout and types of cubicles, sizes of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.

1. Include details on blocking above ceiling and in walls.

C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which suspension systems will be attached.
3. Items penetrating finished ceiling, including the following:

a. Lighting fixtures.
b. Air outlets and inlets.
c. Speakers.
d. Sprinklers.
e. Access panels.

D. Samples for Initial Selection: For each type of curtain material indicated.

E. Samples for Verification: For each type of product required, prepared on Samples of size indicated below.
1. Mesh Top: Not less than 4 inches (102 mm) square.
2. Curtain Track: Not less than 4 inches (102 mm) long.
3. Curtain Carrier: Full-size unit.

F. Curtain and Track Schedule: Use same designations indicated on Drawings.

G. Manufacturer Certificates: Signed by manufacturers certifying that products comply with requirements.

H. Operation and Maintenance Data: For curtains, track, and hardware to include in operation and maintenance manual

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not install cubicles until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Curtain Carriers and Track End Caps: 1 units.

PART 2 - PRODUCTS

2.1 CURTAIN TRACKS

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:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:
   1. InPro Corporation

D. Extruded-Aluminum Track: Not less than 1-1/4 inches wide by 3/4 inch high (32 mm wide by 19 mm high) with minimum wall thickness of) 0.062 inch (1.57 mm).

   1. Straight Track: Factory-fabricated, **8' long**.
   2. Finish: **Clear anodized**

E. Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.

   1. Suspended Track Support: Not less than 7/8-inch- (22.2-mm-) OD tube.
   2. End Stop: Removable with carrier hook.
   3. Switch Unit: Shuttle and coupling device for rerouting and securing cubicle curtain, with pull chain for switching track.
   4. Hinged Loading Unit: Detachable hinge and lock unit factory assembled on 60-inch (1524-mm) section of manufacturer's extruded-aluminum track. Provide 1 operating wand for every 10 cubicles.

F. Curtain Carriers: Two nylon rollers and nylon axle with chrome-plated steel hook.

G. Curtain Carriers: One-piece nylon glide with chrome-plated steel hook.

H. Breakaway Curtain Carriers: One-piece nylon breakaway curtain carriers designed to allow curtains to detach from tracks with a pulling force of no more than 5 lbf (22.2 N).

I. Exposed Fasteners: Stainless steel.

J. Concealed Fasteners: Stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of work.

   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install tracks level and plumb, according to manufacturer's written instructions.

B. Up to 16 feet (4.9 m) 20 feet (6.0 m) in length, provide track fabricated from 1 continuous length.

1. Curtain Track Mounting: Surface.

C. Surface Track Mounting: Fasten surface-mounted tracks at intervals of not less than 24 inches (610 mm). Fasten support at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling as follows:

1. Mechanically fasten to furring through suspended ceiling with screw and tube spacer.
2. Mechanically fasten to suspended ceiling grid with screws.
3. Attach track to suspended ceiling grid with manufacturer's proprietary clip.

D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.

1. Provide one locking switch unit for each pair of beds.
2. Provide one hinged loading unit for each bed pair of beds with locking switch unit.

E. Curtain Carriers: Provide curtain carriers adequate for 6-inch (152-mm) spacing along full length of curtain plus an additional carrier.

3.3 PROTECTION

A. Protect installed recessed track openings with nonresidue adhesive tape to prevent construction debris from impeding carrier operation. Remove tape prior to Substantial Completion.

END OF SECTION 10191

SECTION 10 28 00 – TOILET AND CUSTODIAL ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.

2. Custodial accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.

2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

3. Material and finish descriptions.

4. Features that will be included for Project.

5. Manufacturer's warranty.

B. Samples: Full size, for each accessory item to verify design, operation, and finish requirements.

1. Approved full-size Samples will be returned and may be used in the Work.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.

2. Identify products using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

1.7 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.

B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

C. Install blocking (wood or metal strap) required to support toilet accessories at all accessories.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

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

1. American Specialties, Inc.

2. Bobrick Washroom Equipment, Inc.

3. Bradley Corporation.

B. Mirror(Wall mount 24”x36”):TA-1

1. Basis-of-Design Product: Bobrick #B-165 2436

2. Material and Finish: Stainless steel, No. 4 finish (satin).

C. Toilet paper dispenser: TA-2

1. Basis-of-Design Product: Owner furnished

D. Paper Towel Dispenser: TA-3

1. Basis-of-Design Product: Owner furnished

E. Soap Dispenser: TA-4

1. Basis-of-Design Product: Bobrick #B-2111

2. Material and Finish: Stainless steel, No. 4 finish (satin).

F. Grab Bars(36”): TA-5

1. Basis-of-Design Product: 36”L,1-1/4” diameter; Bobrick B6806.

2. Material and Finish: Stainless steel with peened gripping, No. 4 finish (satin).

G. Grab Bars(42”): TA-6

1. Basis-of-Design Product: 42”L,1-1/4” diameter; Bobrick B6806.

2. Material and Finish: Stainless steel with peened gripping, No. 4 finish (satin).

H. Grab Bars(18”): TA-7

1. Basis-of-Design Product: 18”L,1-1/4” diameter; Bobrick B6806.

2. Material and Finish: Stainless steel with peened gripping, No. 4 finish (satin).

I. Unit: TA-8

1. Basis-of-Design Product: Not used

J. Sanitary-Napkin Dispenser: TA-9

1. Basis-of-Design Product: Bobrick model B-254

2. Material and Finish: Stainless steel, No. 4 finish (satin).

K. Baby Changing Station: TA-10

1. Basis-of-Design Product: Bobrick (Koala)KB200-00

L. Wall Mounted Hand Dryer: TA-11

1. Basis-of-Design Product: Not used

M. Wall Mounted Hand Sanitizer: TA-12

1. Basis-of-Design Product: Owner furnished.

N. Waste Receptacle Unit(Recessed): TA-13

1. Basis-of-Design Product: Bobrick model #B-3644

2. Material and Finish: Stainless steel, No. 4 finish (satin).

O. Mop Holder: TA-14

1. Basis-of-Design Product: Bobrick B-223 x 24

2. Material and Finish: Stainless steel.

2.3 UNDERLAVATORY GUARDS

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

1. Plumberex Specialty Products, Inc.

2. Truebro by IPS Corporation.

B. Underlavatory Guard:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.

2. Material and Finish: Antimicrobial, molded plastic, white.

2.4 CUSTODIAL ACCESSORIES

A. Utility Shelf:

1. Basis-of-Design Product: Surface mounted, American Specialties – 0692 Series.

2. Material and Finish: Stainless steel, No. 4 finish (satin).

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N) typical, when tested according to ASTM F 446.

C. Install blocking required to support all toilet accessories

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

SECTION 10 44 13 - FIRE PROTECTION CABINETS – **match existing camp style**

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fire-protection cabinets for portable fire extinguishers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For fire-protection cabinets.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

1.5 SEQUENCING

A. Apply vinyl lettering on field-painted fire-protection cabinets after painting is complete.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

2.2 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

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

a. Guardian Fire Equipment, Inc.

b. JL Industries, Inc.; a division of the Activar Construction Products Group.

c. Kidde Residential and Commercial Division.

d. Larsens Manufacturing Company.

B. Cabinet Construction: Nonrated.

C. Cabinet Material: Aluminum sheet.

D. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4- to 1-1/2-inch backbend depth.

2. Rolled-Edge Trim: 2-1/2-inch backbend depth.

E. Cabinet Trim Material: Extruded-aluminum shapes.

F. Door Material: Aluminum sheet or Extruded-aluminum shapes.

G. Door Style: Fully glazed panel with frame.

H. Door Glazing: Tempered float glass (clear).

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

J. Accessories:

1. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.

2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet door.

2) Application Process: Pressure-sensitive vinyl letters.

3) Lettering Color: Red.

4) Orientation: Vertical.

K. Materials:

1. Aluminum: ASTM B 221 (ASTM B 221M), with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet. ASTM B 221 (ASTM B 221M) for extruded shapes.

a. Finish: Clear anodic.

2. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.3 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

B. Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

C. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

D. Identification: Apply vinyl lettering at locations indicated.

E. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

END OF SECTION 10 44 13

SECTION 10 44 16 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes portable, fire extinguishers and mounting brackets for fire extinguishers in locations indicated on floor plans.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.7 COORDINATION

A. Coordinate type, capacity, labeling and location of fire extinguishers with the local Fire Marshall to ensure fit and function.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.

b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, provide products, approved by the authority having jurisdiction, by one of the following:

a. Amerex Corporation.

b. Badger Fire Protection; a Kidde company.

c. J. L. Industries, Inc.; a division of Activar Construction Products Group.

d. Larsen's Manufacturing Company.

e. Potter Roemer LLC.

f. Pyro-Chem; Tyco Safety Products.

2. Valves: Nickel-plated, polished brass body.

3. Handles and Levers: Stainless steel.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.

B. F.E.-1(water-typical applications): UL-rated 2-A: 2.5 gallon nominal capacity, with water in stainless steel container with pressure indicating gage. Field verify locations(coordinate with local Fire Officials)

C. F.E.-2(non-water –typical applications): Provide UL rated 2A, 10BC extinguisher.Field verify locations(coordinate with local Fire Officials)

D. F.E.-3 (kitchens):20 lb, UL10B:C, w/ heavy duty bracket.Field verify locations(coordinate with local Fire Officials)

E. F.E.-4 (hazardous areas):10 lb, UL 4A:60B:C, w/ heavy duty bracket.Field verify locations(coordinate with local Fire Officials)

2.2 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers specified, or required by authority having jurisdiction, with plated finish.

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

a. Amerex Corporation.

b. Badger Fire Protection; a Kidde company.

c. J. L. Industries, Inc.; a division of Activar Construction Products Group.

d. Larsen's Manufacturing Company.

e. Potter Roemer LLC.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

a. Orientation: Vertical.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations compliant with requirements of authorities having jurisdiction.

1. Mounting Brackets: 54 inches (1372 mm) above finished floor to top of fire extinguisher.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

SECTION 11 31 00 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Refrigeration appliances.
2. Microwave appliances.
3. Washer Dryer Stackable combination unit

1.2 RELATED SECTIONS

A. Section Includes:
1. Section 012100 “Allowances”.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Field quality-control reports.

C. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Gas-Fueled Appliances: Certified by a qualified testing agency for each type of gas-fueled appliance according to ANSI Z21 Series standards.

2.2 MICROWAVE OVENS

A. Microwave Oven:

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

a. Electrolux Home Products (Frigidaire).

b. General Electric Company (GE Appliances).

c. KitchenAid; a division of Whirlpool Corporation.

d. Sears Brands LLC (Kenmore).

2. Mounting: As indicated.

2.3 REFRIGERATOR/FREEZERS

A. Refrigerator/Freezer: As indicated on drawings and complying with AHAM HRF-1.

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

a. Electrolux Home Products (Frigidaire).

b. General Electric Company (GE Appliances).

c. KitchenAid; a division of Whirlpool Corporation.

d. Sears Brands LLC (Kenmore).

2. Type: Freestanding.

2.4 ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.

2.5 WASHER DRYER STACKABLE COMBINATION UNIT

A. Washer dryer stackable : As indicated on drawings and complying with AHAM HRF-1.

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

a. Electrolux Home Products (Frigidaire).

b. General Electric Company (GE Appliances).

c. KitchenAid; a division of Whirlpool Corporation.

d. Sears Brands LLC (Kenmore).

2. Type: Freestanding.

3. ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.

2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.

3. Operational Test: After installation, start units to confirm proper operation.

4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.

B. An appliance will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 11 31 00

SECTION 21 13 13 - FIRE-SUPPRESSION PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following fire-suppression piping inside the building:

Wet and or Dry-pipe sprinkler systems. See attached fire protection spec sheet.

The spec sheet calls for wet sprinkler heads inside the building and dry sprinkler heads outside the building on porch and attic. The camps existing main office has wet inside and dry porch sprinkler system. Full NFPA 13 system. The camp water mains have adequate water pressure for the new Health Hut.

B. Related Sections include the following:

Division 28 Section "Fire Alarm" for alarm devices not specified in this Section.

1.2 SYSTEM DESCRIPTIONS

A. Wet and or Dry-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing compressed air. Opening of sprinklers releases compressed air and permits water pressure to open wet and or dry-pipe valve. Water then flows into piping and discharges from sprinklers that are open.

1.3 PERFORMANCE REQUIREMENTS

A. Standard Piping System Component Working Pressure: Listed for at least 175 psig.

B. Fire-suppression sprinkler system design shall be approved by authorities having jurisdiction.

Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.

Sprinkler Occupancy Hazard Classifications:

a. Refer to drawings.

Minimum Density for Automatic-Sprinkler Piping Design:

b. Refer to drawings

Maximum Protection Area per Sprinkler:

c. Per NFPA 13

Total Combined Hose-Stream Demand Requirement: According to NFPA 13, unless otherwise indicated:

d. Refer to drawings

C. Seismic Performance: Fire-suppression piping shall be capable of withstanding the effects of earthquake motions determined according to NFPA 13.

1.4 SUBMITTALS

A. Product Data: For each product indicated.

B. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations, if applicable.

C. Field test reports and certificates.

D. Field quality-control test reports.

E. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer's responsibilities include designing, fabricating, and installing fire-suppression systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.

B. NFPA Standards: Fire-suppression-system equipment, specialties, accessories, installation, and testing shall comply with the following:

NFPA 13, "Installation of Sprinkler Systems."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 STEEL PIPE AND FITTINGS

A. Threaded-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795, with factory- or field-formed threaded ends.

Cast-Iron Threaded Flanges: ASME B16.1.

Malleable-Iron Threaded Fittings: ASME B16.3.

Gray-Iron Threaded Fittings: ASME B16.4.

Steel Threaded Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, seamless steel pipe. Include ends matching joining method.

Steel Threaded Couplings: ASTM A 865.

B. Grooved-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795, with factory- or field-formed, square-cut- or roll-grooved ends.

Grooved-Joint Piping Systems:

a. Manufacturers:

1) Anvil International, Inc.

2) Central Sprinkler Corp.

3) Ductilic, Inc.

4) JDH Pacific, Inc.

5) National Fittings, Inc.

6) Shurjoint Piping Products, Inc.

7) Southwestern Pipe, Inc.

8) Star Pipe Products; Star Fittings Div.

9) Victaulic Co. of America.

10) Ward Manufacturing.

b. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.

c. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves, prelubricated rubber gasket listed for use with housing, and steel bolts and nuts.

2.3 SPRINKLER SPECIALTY FITTINGS

A. Sprinkler specialty fittings shall be UL listed or FMG approved, with 175-psig minimum working-pressure rating, and made of materials compatible with piping.

B. Outlet Specialty Fittings:

Manufacturers:

a. Anvil International, Inc.

b. Central Sprinkler Corp.

c. Ductilic, Inc.

d. JDH Pacific, Inc.

e. National Fittings, Inc.

f. Shurjoint Piping Products, Inc.

g. Southwestern Pipe, Inc.

h. Star Pipe Products; Star Fittings Div.

i. Victaulic Co. of America.

j. Ward Manufacturing.

Mechanical-T and -Cross Fittings: UL 213, ductile-iron housing with gaskets, bolts and nuts, and threaded, locking-lug, or grooved outlets.

C. Sprinkler Drain and Alarm Test Fittings: Cast- or ductile-iron body; with threaded or locking-lug inlet and outlet, test valve, and orifice and sight glass.

Manufacturers:

a. Central Sprinkler Corp.

b. Fire-End and Croker Corp.

c. Viking Corp.

d. Victaulic Co. of America.

D. Sprinkler Branch-Line Test Fittings: Brass body with threaded inlet, capped drain outlet, and threaded outlet for sprinkler.

Manufacturers:

a. Elkhart Brass Mfg. Co., Inc.

b. Fire-End and Croker Corp.

c. Potter-Roemer; Fire-Protection Div.

E. Sprinkler Inspector's Test Fitting: Cast- or ductile-iron housing with threaded inlet and drain outlet and sight glass.

Manufacturers:

a. AGF Manufacturing Co.

b. Central Sprinkler Corp.

c. G/J Innovations, Inc.

d. Triple R Specialty of Ajax, Inc.

F. Drop-Nipple Fittings: UL 1474, adjustable with threaded inlet and outlet, and seals.

Manufacturers:

a. CECA, LLC.

b. Merit.

c. Prior approved equal

2.4 SPECIALTY VALVES

A. Dry-Pipe Valves:

Manufacturers:

a. AFAC Inc

b. Globe Fire Sprinkler Corporation.

c. Reliable Automatic Sprinkler Co., Inc.

d. Tyco Fire & Building Products LP.

e. Venus Fire Protection Ltd.

f. Victaulic Company.

g. Viking Corporation.

Standard: UL 260

Design: Differential-pressure type.

Include UL 1486, quick-opening devices, trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill-line attachment.

Air-Pressure Maintenance Device:

h. Manufacturers:

1) AFAC Inc.

2) Globe Fire Sprinkler Corporation.

3) Reliable Automatic Sprinkler Co., Inc.

4) Tyco Fire & Building Products LP.

5) Venus Fire Protection Ltd.

6) Victaulic Company.

7) Viking Corporation.

i. Standard: UL 260.

j. Type: Automatic device to maintain minimum air pressure in piping.

k. Include shutoff valves to permit servicing without shutting down sprinkler piping, bypass valve for quick filling, pressure regulator or switch to maintain pressure, strainer, pressure ratings with 14- to 60-psig (95- to 410-kPa) adjustable range, and 175-psig outlet pressure.

Air Compressor:

l. Manufacturers:

1) Gast Manufacturing Inc.

2) General Air Products, Inc,

3) Viking Corporation.

4) Prior approved equal

m. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.

n. Motor Horsepower: Fractional.

o. Power: 120-V ac, 60 Hz, single phase.

2.5 SPRINKLERS

A. Sprinklers shall be UL listed or FMG approved, with 175-psig minimum pressure rating.

B. Manufacturers:

AFAC Inc.

Central Sprinkler Corp.

Firematic Sprinkler Devices, Inc.

Globe Fire Sprinkler Corporation.

Grinnell Fire Protection.

Reliable Automatic Sprinkler Co., Inc.

Star Sprinkler Inc.

Venus Fire Protection, Ltd.

Victaulic Co. of America.

Viking Corp.

Prior approved equal

C. Automatic Sprinklers: With heat-responsive element complying with the following:

UL 199, for nonresidential applications.

UL 1767, for early-suppression, fast-response applications.

D. Sprinkler Types and Categories: Nominal 1/2-inch orifice for "Ordinary" temperature classification rating, unless otherwise indicated or required by application.

E. Sprinkler types, features, and options as follows:

Pendent sprinklers.

Quick-response sprinklers.

Semi-Recessed sprinklers, including escutcheon.

Sidewall sprinklers.

Upright sprinklers.

F. Sprinkler Finishes: Chrome plated.

G. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

Ceiling Mounting: Chrome-plated steel, 2 piece, with 1-inch vertical adjustment.

Sidewall Mounting: Chrome-plated steel, one piece, flat.

H. Sprinkler Guards: Wire-cage type, including fastening device for attaching to sprinkler.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS, GENERAL

A. Flanges, flanged fittings, unions, nipples, and transition and special fittings with finish and pressure ratings same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.

3.2 SPRINKLER SYSTEM PIPING APPLICATIONS

A. NPS 1-1/2 and Smaller: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.

B. NPS 2 and Larger: Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

3.3 JOINT CONSTRUCTION

A. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread pipe smaller than NPS 8 (DN 200) with wall thickness less than Schedule 40 unless approved by authorities having jurisdiction and threads are checked by a ring gage and comply with ASME B1.20.1.

B. Grooved Joints: Assemble joints with listed coupling and gasket, lubricant, and bolts.

Ductile-Iron Pipe: Radius-cut-groove ends of piping. Use grooved-end fittings and grooved-end-pipe couplings.

Steel Pipe: Square-cut or roll-groove piping as indicated. Use grooved-end fittings and rigid, grooved-end-pipe couplings, unless otherwise indicated.

3.4 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

B. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

C. Install unions adjacent to each valve in pipes NPS 2 and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

D. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 and larger connections.

E. Install sprinkler piping with drains for complete system drainage.

F. Hangers and Supports: Comply with NFPA 13 for hanger materials.

Install sprinkler system piping according to NFPA 13.

G. Earthquake Protection: Install piping according to NFPA 13 to protect from earthquake damage.

H. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

I. Fill wet-pipe sprinkler system piping with water.

3.5 SPRINKLER APPLICATIONS

A. Drawings indicate sprinkler types to be used. Where specific types are not indicated, use the following sprinkler types:

Rooms with Suspended Ceilings: Semi-Recessed sprinklers.

Sprinkler Finishes:

a. Semi-Recessed Sprinklers: Bright chrome, with bright chrome semi-recessed escutcheon.

3.6 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of acoustical ceiling panels and tiles. Sprinklers shall have hard pipe connections to sprinkler piping; flex connectors will not be allowed or accepted.

B. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing. Use dry-type sprinklers with water supply from heated space.

3.7 LABELING AND IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13 and in Division 23 Section "Mechanical Identification."

3.8 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.

Flush, test, and inspect standpipe systems according to NFPA 14, "System Acceptance" Chapter.

Coordinate with fire alarm tests. Operate as required.

Verify that equipment hose threads are same as local fire department equipment.

B. Report test results promptly and in writing to Architect and authorities having jurisdiction.

END OF SECTION 21 1313

SECTION 270000 – Security System

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following security inside the building:

1.2 SYSTEM DESCRIPTIONS

Security system with (3) motion detectors with (2 total) control panel in the living room by the front door and by the back door. (2) Wired Door Contacts. Wiring to be concealed in walls and in conduit. No cameras are required.

1.3 PERFORMANCE REQUIREMENTS

A. Standard Security System Components compatible with existing camp system.

1.4 SUBMITTALS

A. Product Data: For each product indicated.

B. Approved location Drawings: Working plan, prepared for owner review.

C. Field test reports and certificates.

D. Field quality-control test reports.

E. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer's responsibilities include designing, and installing security systems and providing professional services needed to assume system responsibility.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 MOTION DETECTORS

A. Detectors shall be UL listed.

B. Manufacturers:

DMP BRAND SYSTEM.

2.3 SECURITY INSTALLATION

A. Install detectors in suspended ceilings in center of acoustical ceiling panels and tiles or on wall corners.

2.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

Coordinate tests to verify to operate as required.

B. Report test results promptly and in writing to Architect and authorities having jurisdiction.

END OF SECTION 270000

SECTION 31 31 16 - TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil treatment.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include the EPA-Registered Label for termiticide products.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Soil Treatment Application Report: Include the following:

1. Date and time of application.

2. Moisture content of soil before application.

3. Termiticide brand name and manufacturer.

4. Quantity of undiluted termiticide used.

5. Dilutions, methods, volumes used, and rates of application.

6. Areas of application.

7. Water source for application.

C. Bait-Station System Installation Report: Include the following:

1. Location of areas and sites conducive to termite feeding and activity.

2. Plan drawing showing number and locations of bait stations.

3. Dated report for each monitoring and inspection occurrence, indicating level of termite activity, procedure, and treatment applied before time of Substantial Completion.

4. Termiticide brand name and manufacturer.

5. Quantities of termiticide used.

6. Schedule of inspections for one year from date of Substantial Completion.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located and who employs workers trained and approved by manufacturer to install manufacturer's products.

1.6 WARRANTY

A. Soil Treatment Special Warranty: Manufacturer's standard form, signed by Applicator and Contractor, certifying that termite control work consisting of applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

A. Termiticide: EPA-Registered termiticide acceptable to authorities having jurisdiction, in an aqueous solution formulated to prevent termite infestation.

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

a. BASF Corporation.

b. Bayer Environmental Science.

c. Ensystex, Inc.

d. Syngenta.

2. Service Life of Treatment: Soil treatment termiticide that is effective for not less than three years against infestation of subterranean termites.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove extraneous sources of wood cellulose and other edible materials, such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated.

3.2 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Distribute treatment uniformly. Apply treatment at the product's EPA-Registered Label volume and rate for maximum specified concentration of termiticide to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.

1. Slabs-on-Grade and Basement Slabs: Underground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Soil adjacent to and along the entire inside perimeter of foundation walls; along both sides of interior partition walls; around plumbing pipes and electric conduit penetrating the slab; around interior column footers, piers, and chimney bases; and along the entire outside perimeter, from grade to bottom of footing.

3. Crawlspaces: Soil under and adjacent to foundations. Treat adjacent areas, including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.

4. Masonry: Treat voids.

5. Penetrations: At expansion joints, control joints, and areas where slabs and below-grade walls will be penetrated.

B. Post warning signs in areas of application.

C. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 31 31 16

Fire Protection Sprinkler System Specification Sheet

(Per §40-10-250)

Project Data			
Project name: Dr. Cary E. Stroud Camper Care Center			
Location in South Carolina:	Address (street # & street name): 4232 Highway 11		State project: ☐Yes ☒ No
	City: Marietta	County: Greenville	State project #:

Water Supply Information (flow test data must be less than 1 year old per §40-10-250(A)(1))			
Date test conducted: 3/ /2015	Static pressure (psi): 120	Residual pressure (psi): 65	Flow (gpm): 1350
Distances of test gauges relative to the base of the riser:	Horizontal (ft): 157	Vertical (elevation difference in ft): 7	
Source of water supply:	☐Municipal dead-end ☐Municipal circulation ☒ Other: Private dead end		Pipe Size (in.): 8
Test data by/from:	Name: Chief Cruell	Title: Fire Chief	
	Organization: Slater Marietta Fire Department		Telephone #:864-836-3243
Fire pump:	☐Yes ☒No	Pump Capacity (gpm): NA	Churn Pressure (psi): NA
	☐New ☐ Existing	Rated Pressure (psi): NA	Pressure @ 150% flow (psi): NA
On-site storage tank:	☐Yes ☒ No	☐New ☐ Existing	Tank capacity (gallons): NA

NFPA Hazard Classification
(attach continuation page when necessary)

Area #	Class or Code Reference	Description of Hazard Protected (commodity description, storage height, and arrangement as applicable.)
1	Light Hazard	Infirmary, Bedroom, Toilets, Triage, Drug Closet, Corridor
2	Light Hazard	Living Room
3	Ordinary Hazard Grp II	Storage rooms, Laundry
4	Light Hazard	Porches , Attic-Combustible

Design Parameters
(attach continuation page when necessary)

Area #	System Type	Density (gpm/ft^2) / Area (ft^2) or Other (reference code section)	Inside Hose (gpm)	Outside Hose (gpm)
1	Wet	.1 gpm per SF/ 1500 ft2	0	100
2	Dry	.1 gpm per Sf/ 1950 Sf-sloped ceiling	0	100
3	Wet	.2 gpm per Sf/1500 ft2	0	250
4	Dry	.1 gpm per SF/2535 ft2	0	100

Seismic Design Data: S_S= .368 S_S Derived from USGS Based on Zip Code

Codes and Standards
(attach continuation page when necessary)

Applicable Codes, Standards & Editions (i.e. "2006 IBC", "2007 NFPA 13", etc.) **for the Scope of Work on the Sprinkler System**

NFPA 13 -2010 Edition, IBC – 2012 Edition, and 1FC – 2012 Edition

Specifier's Information

Name: Michael J. Cromer, P.E.	SOUTH CAROLINA CROMER ENGINEERING LLC No. 4036 CERTIFICATE OF AUTHORIZATION	SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 6506 MICHAEL J. CROMER
Engineering services provided through a firm: ☒ Yes ☐ No		
Firm name: Cromer Engineering LLC.		
Address: 304 Cherry Hill Road		
City: Greenville		
State: South Carolina Zip: 29607		
Phone #: 864/288-3051 Fax #: 864/283-6329		
E-mail: mjcromer@charter.net	Certificate of Authorization	Professional Engineer's Seal

Revision No.: 1

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Signature: Michael J Cromer

Date: 12-18-15

Attachment B

GEOTRACK Technologies, Inc.

3620 Pelham Road, PMB #292 Phone: 864-329-0013
Greenville, SC 29615-5044 FAX: 864-329-0014

SUBSURFACE EXPLORATION

Pleasant Ridge County Park
Proposed Health Hut and Staff Parking Area
Greenville County, SC

Prepared For:

Greenville County Recreation District
4806 Old Spartanburg Road
Taylors, SC 29687

Attention: Mr. Donald Shuman

October 19, 2015

GEOTRACK Technologies, Inc.

3620 Pelham Road, PMB #292 Phone: 864-329-0013
Greenville, SC 29615-5044 FAX: 864-329-0014

October 19, 2015

Greenville County Recreation District
4806 Old Spartanburg Road
Taylors, SC 29687

Attention: Mr. Donald Shuman

Re: Report of Subsurface Exploration
Proposed Health Hut and Staff Parking Lot
Pleasant Ridge County Park
Greenville County, SC
GeoTrack Project No. 15-3789

Ladies and Gentlemen:

GeoTrack Technologies, Inc. has completed a subsurface exploration for the referenced project, as requested by Mr. Shuman. The purposes of the work were to evaluate the site soil conditions and provide geotechnically-related design and construction recommendations. This report presents our understanding of the project, the subsurface exploration performed, the results and our recommendations.

SUMMARY OF RECOMMENDATIONS

The following is an outline of our exploration and findings. These recommendations are discussed in more detail in the report text.

- Ten borings were performed at the project site. Five borings were performed in the proposed Health Hut area (A-1 through A-5) and five borings were performed in a proposed future staff parking area (B-1 through B-5). The borings were drilled to depths of 17 to 20 feet below existing grades.

- Existing fill was interpreted to be present in three of the Health Hut borings, to depths ranging from 2 to 4.5 feet. The fill ranged from sandy silt to silty sand, and wood (a stump, tree branch, etc.) was encountered in one sample.

- Natural, residual soils were encountered in the borings immediately beneath the fill and beneath the surface materials in the other two Health Hut borings. The residual soils are variable consistency silty sands.

- Residual soils were also encountered in the parking lot borings. The near-surface soils are sandy and clayey silts, and deeper soils are silty sands.

- The Health Hut borings penetrated to the planned depth of 20 feet without encountering weathered rock or auger refusal. Two parking lot borings met abrupt refusal at a depth of 17 feet, and the other three borings were terminated at 20 feet.

- Near-surface soils were moist due to recent prolonged rainfall. Ground water was not encountered in the upper 17 to 20 feet in any of the borings.

- The Health Hut structures may be supported on spread footings designed for an allowable net soil bearing pressure of 3,000 pounds per square foot (psf).

- The on-site soils, minus organic matter and debris, are assessed to be satisfactory for use as structural fill. Moisture changes (drying) will likely be required during construction.

- Based on the boring results, the site soil conditions are assessed to conform to IBC Seismic Site Class D.

PROJECT DESCRIPTION

The exploration was performed in two areas of the Retreat portion of the Pleasant Ridge County Park. The proposed Health Hut area is located directly across the Retreat roadway from the existing Luttrell Lodge in a cleared, undeveloped lawn area. The other area is a wooded ridge located to the south of the Retreat that has been identified as a potential staff parking lot.

Preliminary plans indicate that the Health Hut will consist of two buildings similar in size and construction as the existing “Pod” buildings at the Retreat. They are one-story wood-frame structures. Based on experience with similar structures, we anticipate column and wall loads will be in the range of 50 to 70 kips, and 1 to 3 kips per linear foot, respectively. We anticipate

that the building area will be graded to near the existing curb level, which will require excavations ranging up to about 10 feet deep.

The plans indicate that the future staff parking area will be centered on the existing ridge. It will include about 50 parking spaces. Based on our discussions with County personnel and observation of the area, we anticipate that excavations and fills on the order of 5 to 10 feet each would be needed to grade the parking area; however, additional excavation might be performed to supply soil to other construction projects, including possibly a dam to create a nearby pond.

SCOPE OF EXPLORATION

The subsurface exploration included a site reconnaissance, and ten soil test borings designated A-1 through A-5 in the Health Hut area and B-1 through B-5 in the parking lot. Attempts were made to locate the borings near the locations requested by County personnel. The A borings were relocated slightly to better evaluate the building area and based on field observations. The approximate boring locations are shown on the Boring Location Plans in the Appendix. The borings were located using existing topography, as well as by pacing distances from existing site features and estimating right angles. Because of the approximate methods used to locate the borings and the preliminary nature of the plans, ground surface elevations were not estimated, and the referenced locations are approximate.

The soil test borings were performed with two drill rigs mounted on all-terrain vehicles and were extended to depths of 17 to 20 feet below existing grades using hollow stem augers. Standard Penetration Tests were performed at selected depth intervals to estimate soil consistencies and collect soil samples.

Ground water levels were checked in most boreholes after they were drilled, and then the boreholes were backfilled with soil cuttings. A geotechnical engineer reviewed the data and visually classified the soil samples. The boring results are summarized in the attached Boring Records. A more detailed description of our exploration procedures is also attached.

EXPLORATION RESULTS

SITE CONDITIONS

The proposed Health Hut site is an open area within the Retreat campus. The site is currently clear and covered with grass. The ground surface slopes moderately steeply upward away from the existing curbs, and it is visually estimated to vary about 15 feet in elevation. The area appears to have been excavated during the Retreat construction; however, we understand some fill was also placed as a stockpile/disposal area during construction of the Luttrell Lodge across the road. Several rock outcrops of limited extent (rock pinnacles or boulders) are visible on the ground surface.

The proposed staff parking area is a narrow ridge that slopes moderately steeply downhill on the east and west flanks. The ridge is in a heavily wooded portion of the park, and the immediate area appears to have been partially cleared several years ago. The area is currently covered with widely scattered mature trees and dense growths of two to five year old saplings.

SUBSURFACE CONDITIONS

Surface Materials

Organic topsoil and root zone within the Health Hut site are limited to the upper couple of inches as grass has grown on the previously excavated and filled subgrade. Topsoil in the parking area was estimated to be several inches thick. Thicker surface materials may be present elsewhere, as a result of the previous development or in the wooded areas.

Existing Fill

Existing fill was encountered at the ground surface in borings A-1, A-2 and A-3. The fill was encountered to depths estimated to range from 2 to 4.5 feet. The fill soils were visually classified as sandy silts, and a several-inch long piece of wood (stump, tree branch, etc) was recovered in one sample in A-2. Standard penetration resistances ranged from 6 to 11 blows per foot (bpf), indicating at least a moderate degree of compaction occurred when the fill was placed

and spread. The moisture conditions of the recovered soil samples were qualitatively assessed to be neither excessively wet nor dry.

Residuum

Natural, residual soils were encountered beneath the fill, where present, and at the ground surface in A-4 and A-5. Residual soils are natural soils derived from the in-place weathering of the parent bedrock. The residual soils at the Health Hut were classified as micaceous silty sands. Standard penetration resistances ranged from 4 to 23 bpf. A low value of 4 bpf occurred in A-2 at a depth of 6 to 7.5 feet. Otherwise, the penetration resistances exceeded 6, with typical values of less than 10.

Residual soils were encountered beneath the topsoil in the parking lot borings (B-1 through B-5). In four of those borings, the upper zone was classified as sandy silts with varying amounts of clay. The surface materials were encountered to depths of 3 to 5 feet (typically 3 feet). The parking lot borings were performed after a prolonged period of rainfall, and the upper soils were noticeably more moist than the underlying materials.

Below the silty zone, the residual soils in the parking lot are similar in consistency and soils types as the residual soils in the Health Hut area. They include micaceous silty sands with penetration resistances ranging from 4 to 21 bpf.

Auger Refusal

All but two of the borings in the exploration extended to the planned termination depth of 20 feet without encountering weathered rock or auger refusal. Borings B-2 and B-4 encountered abrupt refusal at a depth of about 17 feet. The moderate penetration resistances above the refusal depths, and the results of the other borings, indicate that refusal may have occurred on isolated boulders or rock zones of limited extent. Also, the rig used to perform the parking lot borings was relatively small and light; therefore, refusal may have occurred shallower than would have occurred with a larger rig.

Groundwater

Groundwater was not encountered in any of the borings at the time of drilling, and soil moisture indicated ground water is unlikely to be present within the depths drilled.

RECOMMENDATIONS

LIMITATIONS

Our conclusions and recommendations are based on the project described above and the data obtained from our field work. The recommendations are based on generally accepted geotechnical engineering practice in South Carolina at the time of the report. No other warranties are expressed or implied.

The borings performed at this site represent the subsurface conditions only at the exploration and test locations. Some variation in the subsurface conditions should be expected between boring locations due to natural variations and previous site development activities. Consequently, subsurface conditions may be encountered during construction that will require alternative recommendations. Also, final selection of final grades and structural considerations may influence the applicability of these recommendations.

INTERNATIONAL BUILDING CODE SITE CLASSIFICATION

GeoTrack reviewed the boring results to classify the site according to the International Building Code (IBC). The boring depths in the Health Hut area were insufficient to definitively establish the site class. Since the soil consistencies at the termination depths were moderate relative to the site class, the boring results indicate that the building site conforms to IBC Site Class D.

The depth of bedrock can have a significant effect of the IBC site class. A more favorable site classification may be possible with additional exploration. If site class C will result in significant construction cost savings, we suggest drilling deeper borings to identify bedrock depth, and/or directly measuring shear wave velocities, to refine the site classification.

EARTHWORK

Site Preparation and Undercutting

We anticipate that the site stripping will average only a few inches in the Health Hut area and less than about a foot in the parking lot. Stripping should remove vegetation, roots and organic topsoil. The Health Hut area is several feet above desired grades at the boring locations; therefore, we anticipate that most of the existing fill will be removed during initial excavation. If any fill remains, it should be removed from the building areas due to its moderate consistency and uncertainty concerning vegetation debris and organic content.

Subgrade Evaluation

After the site is stripped, a qualified geotechnical representative should evaluate the exposed subgrade. The evaluation will help identify remaining fill or soft areas not identified during stripping, and should include proofrolling with a loaded dump truck or similar pneumatic tired vehicle, where possible. During the proofrolling, areas that excessively rut or deflect (pump) should be undercut to satisfactory soils, or other corrective actions should be implemented. The undercut materials should be replaced by properly compacted structural fill, or crushed stone if advantageous based on review of the specific unstable areas.

Fill Placement

After the site is stripped and undercut, new structural fill may be placed in the construction areas, if needed, including beneath the buildings, in pavement areas, in utility trenches, etc. Structural fill should be compacted to at least 95 percent of the soil's maximum dry density obtained from the Standard Proctor Compaction Test (ASTM D-698). To achieve the recommended compaction, the moisture content should generally be maintained within about three percent (plus or minus) of the optimum moisture content, and loose fill lifts should be limited to 8 to 10 inches in thickness.

The on-site, near-surface soils (excluding debris and organic matter) appear satisfactory for use as compacted fill. The residual soils and most of the existing fill are assessed to be satisfactory. Wood was encountered in one sample of the fill and it is anticipated that some organics may be present in excessive amounts in zones of the fill. The fill should be evaluated during excavation for excessive moisture or organic content and those zones, if present, should be wasted or used for landscaping.

The near-surface silty soils in the parking area were assessed to be several percent wet of their optimum moisture content, although that condition may be temporary as the result of recent heavy rainfall. Nevertheless, it may be necessary to adjust the moisture content of the site soils to achieve sufficient compaction, as a result of natural soil moisture or weather conditions immediately before construction.

If it is necessary to transport fill to the site, the fill should be relatively free of organic matter and debris, and have a maximum particle size of 6 inches in maximum dimension. The soil should have a liquid limit of less than 50 and a plasticity index of less than 20. The fill should have a maximum dry density of at least 90 pounds per cubic foot as determined by the Standard Proctor Compaction Test (ASTM D-698).

Our personnel should check the fill compaction during construction by performing periodic density tests. The test frequency can be selected by the geotechnical engineer based on the areas to be filled and the construction schedule.

Other Potential Fill Usage

We understand that a dam may be constructed in the future near the project site, and we were requested to evaluate the soils for potential use in the dam construction. Soils containing relatively high silt contents were encountered in the upper 2 to 4.5 feet in the parking lot borings. Those materials would be expected to exhibit significantly lower compacted permeability than the underlying sandy soils. Thus, the upper silty soils are assessed to be satisfactory dam core construction materials. The underlying soils have a contrastingly high sand content, and they would be expected to exhibit more moderate permeability and moderate to high compacted strength; therefore they are assessed to be more satisfactory for use as general dam construction materials for low height structures, and as embankment shell materials (outside the core) of larger structures.

Zoned dams are rare in the SC upstate due to the general absence of substantial volumes of natural clay, and because virtually all of the natural soils contain some silt (exhibiting moderate permeability). It might be possible to construct a dam of the on-site materials by blending the upper silty soils with the more sandy zones, or manipulating compaction characteristics to result in a satisfactory structure. We recommend that the site soils be further evaluated, with possible laboratory testing, when the dam design and final site grades have been further selected.

Excavation Difficulty

The borings encountered moderate consistency fill and residual soils to the termination depths in the Health Hut and in the upper 17 feet in the parking area. In the Health Hut area, excavation difficulty appears to be unlikely; although some boulders or isolated rock outcrops are possibilities. Two borings in the parking area met refusal at 17 feet. Difficult excavation may be experienced if excavation is extended below that depth, or due to isolated boulders or rock inclusions with in the residual zones between boring locations. Once a grading plan is complete for the parking area, we can better evaluate the potential for excavation difficulty in that area.

Slopes

Based on our experience with similar subsurface conditions, we recommend permanent cut and fill slopes no steeper than 2H:1V (horizontal to vertical). We further recommend that temporary slopes be inclined no steeper than about 1.5H:1V, depending on specific soil conditions in the excavations and OHSA requirements. If practical, permanent slopes should be flatter (on the order of 3H:1V) to allow ease of landscaping and reduce erosion.

FOUNDATION RECOMMENDATIONS

The boring results indicate that the residual soils are satisfactory for supporting the proposed buildings on shallow spread footings. We recommend that the foundations be designed for a maximum allowable net soil bearing pressure of 3,000 pounds per square foot (psf). Column and wall footings should have minimum dimensions of 24 inches and 18 inches, respectively, regardless of the applied foundation pressure. The foundation bottoms should be at least 18 inches below minimum adjacent grade for protection from frost or landscaping activities.

Zones of isolated loose residual soils were encountered in the borings. The footing excavations should be evaluated by the geotechnical engineer prior to concrete placement. Any unsatisfactory soils should be selectively removed from the footings under the guidance of a geotechnical engineer and replaced with crushed stone (No. 57 stone), compacted structural fill or additional concrete, as recommended.

The on-site soils are susceptible to loss in strength if exposed to excessive moisture or if disturbed during the construction process. Any disturbed or loosened soils should be removed from foundation excavations or re-compacted prior to placement of reinforcing steel. If the foundation subgrade soils are exposed to rainfall or freezing temperatures, it will likely be necessary to excavate disturbed soils and replace them with compacted structural fill, crushed stone or additional concrete. The foundation subgrades may be protected from inclement weather by pouring a thin concrete “mud-slab”, or over-excavating several inches and placing crushed stone over the subgrade soils.

FLOOR SLABS

Like the foundations, the on-grade concrete floor slabs may be supported in either compacted structural fill or firm natural soils. Based on experience with the encountered soils, we recommend a design modulus of subgrade reaction of 125 pounds per cubic inch (pci) for concrete slab design. We recommend that the floor slab be structurally isolated from the foundations to accommodate minor, routine differential settlements.

A crushed stone layer under the slabs will generally not be necessary to provide structural support. In excavation areas, we recommend placing a minimum 6-inch thick drainage layer and plastic vapor retarder beneath the lower slab level, particularly if adhesive-applied floor finishes are anticipated. Crushed stone might also be required by local codes for radon ventilation. The crushed stone layers are less susceptible to weather disturbance than the natural soils, so they may also be advantageous in minimizing construction disturbance of the exposed subgrades.

RETAINING WALLS

We do not anticipate that retaining walls will be needed based on the preliminary information provided to us. The following recommendations are provided in case retaining walls are needed to support the deeper cut areas. The following soil parameters can be used to design the portions of planned rigid (concrete or masonry) walls with essentially horizontal backfill:

Estimated angle of internal friction, Ø = 28 degrees
No soil cohesion, C
Vertical soil unit weight = 120 pounds per cubic foot (pcf)

Active earth pressure coefficient of horizontal backfill, Ka, = 0.36
Active lateral soil pressure (equivalent fluid pressure) = 45 pcf

At-rest earth pressure coefficient of horizontal backfill, Ka, = 0.53
At-rest lateral soil pressure (equivalent fluid pressure) = 65 pcf

Passive earth pressure coefficient, Kp, = 2.7
Passive (resisting) lateral soil pressure (equivalent fluid pressure) = 325 pcf

Friction coefficient between soil and foundation concrete = 0.35

The above soil parameters are ultimate values, and the walls should be designed utilizing appropriate safety factors (typically 1.5 to 2.5) for the various design modes. Walls that will be restrained at the top and not allowed to rotate should be designed utilizing the at-rest soil condition, and walls that will not be restrained at the top and allowed to rotate (potentially ½ to 1 inch over the height of the walls) should be designed for the active condition.

An effective drainage system should be used to minimize the possibility of water accumulating behind retaining walls. The drainage system should consist of a geosynthetic product specifically designed for that purpose or at least 12 inches of open-graded crushed stone (No. 57 stone) placed against the wall and separated from the backfill with a geotextile fabric designed for soil filtration. The drainage medium should extend from the foundation to within 2 feet of the backfill surface. The drainage medium should drain through a foundation drain which discharges to the storm drain system, or away from the retaining walls.

The above recommendations are for rigid structures that are cantilever or gravity structures. Segmental walls should also be designed using the soil properties above. Drainage systems, leveling courses, and other wall features should be specified based on accepted standards and practices for such structures.

PAVEMENTS

Detailed testing and analysis for design of pavement thicknesses was not included in our scope of work. We can perform testing and analyses, and provide detailed recommendations, if desired. In general, the soils encountered in the borings are assessed as moderate relative to pavement support characteristics. The soils can be expected to provide adequate pavement support when properly moisture-conditioned and compacted. We recommend that the pavement design be analyzed based on an estimated California Bearing Ratio (CBR) of about 4 to 6.

The micaceous, silty and clayey soils may be locally unstable under rubber-tired construction equipment and variations in surface moisture conditions. Therefore, it may be necessary to scarify and re-compact the subgrades immediately before pavement construction, or implement other measures to maintain subgrade stability before or during construction. The exposed subgrade should be evaluated in a manner described in the Earthwork Section, before placing crushed stone or pavement.

The soil subgrade should consist of firm natural soils or compacted structural fill. The soil subgrade (upper 1.5 to 2 feet) should be compacted to at least 98 percent of the soil's standard Proctor maximum dry density at moisture content generally at or below the optimum moisture content. Further, the fill and natural soil subgrade should be evaluated by proofrolling immediately before base course or initial asphalt placement. Any areas assessed to be unsatisfactory should be undercut to firm soils and replaced with structural fill or crushed stone. The aggregate base course (if present) and asphalt layers should also be properly compacted and tested.

CLOSING

GeoTrack Technologies, Inc. appreciates the opportunity to assist you during this phase of the project. Please call if there are any questions concerning this report, or if you need additional assistance.

Respectfully submitted,
GeoTrack Technologies, Inc.

David D. Wilson, P.E.
Senior Professional
South Carolina P.E. No. 11701

Kenneth W. Weinel, P.E.
Senior Professional

APPENDIX

Boring Location Plans
Boring Records
Exploration Procedures

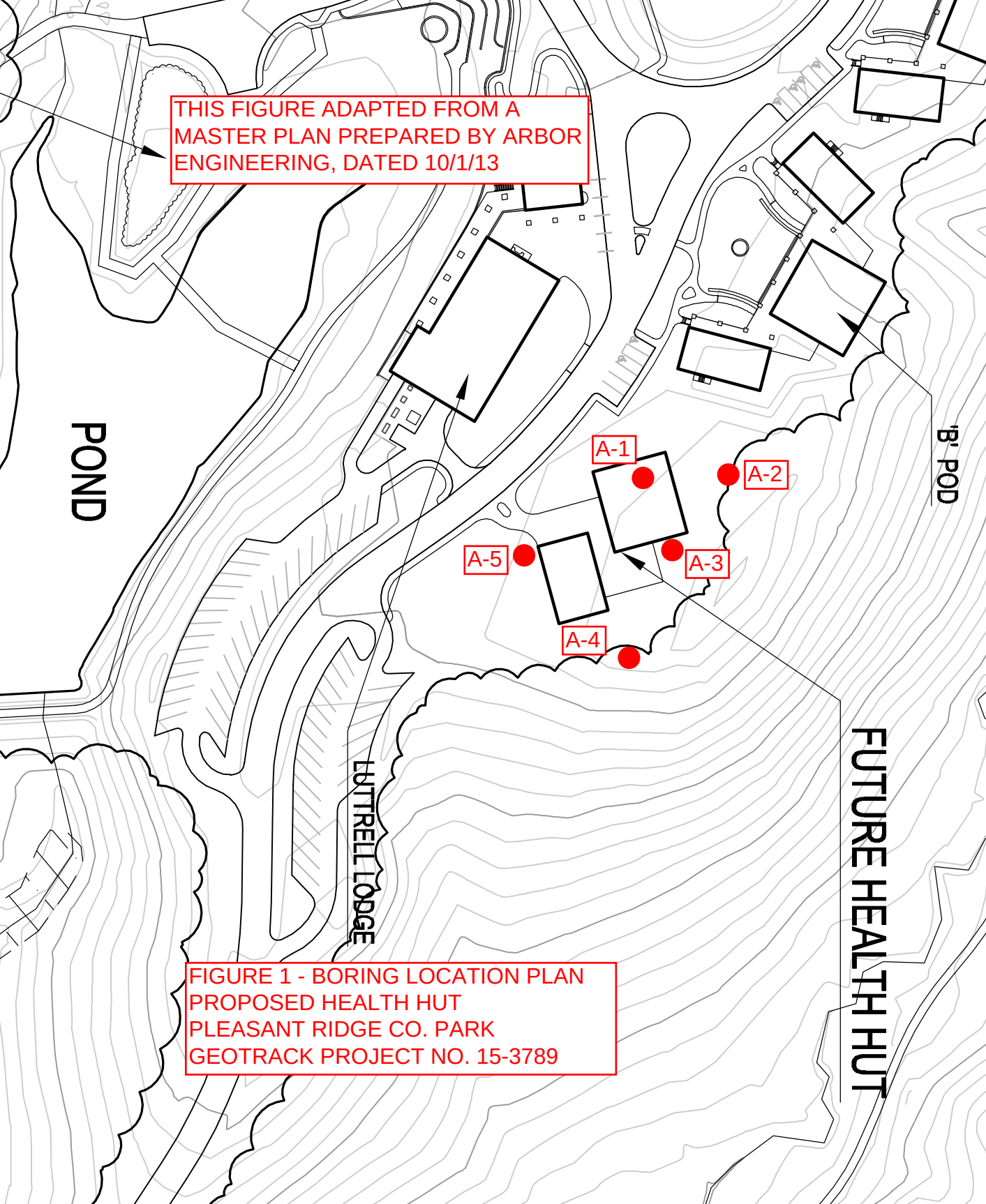


FIGURE 1 - BORING LOCATION PLAN
PROPOSED HEALTH HUT
PLEASANT RIDGE CO. PARK
GEOTRACK PROJECT NO. 15-3789

THIS FIGURE ADAPTED FROM A MASTER PLAN PREPARED BY ARBOR ENGINEERING, DATED 10/1/13

FIGURE 2 - BORING LOCATION PLAN
PROPOSED STAFF PARKING AREA
PLEASANT RIDGE CO. PARK
GEOTRACK PROJECT NO. 15-3789

BORING RECORD

GEOTRACK Technologies, Inc.

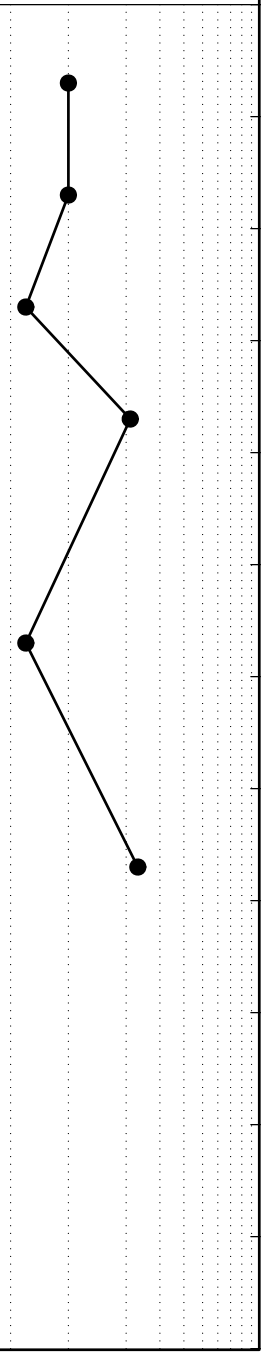
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. A-1** Boring Location: See Boring Location Plan

Date Drilled: 9/27/15	Ground Elevation:	Notes: Independence Drilling - CME-550
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Fill - Stiff Brownish Red Fine Sandy Silt (ML)		1.0					
	2.0	Residuum - Loose to Very Firm White, Grey, and Brown Slightly Micaceous Silty Fine to Coarse Sand (SM)			SS-1	2	2	8	10
				3.5					
					SS-2	5	4	6	10
				6.0					
					SS-3	2	3	3	6
				8.5					
					SS-4	5	14	7	21
				13.5					
					SS-5	2	3	3	6
				18.5					
					SS-6	5	7	16	23
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

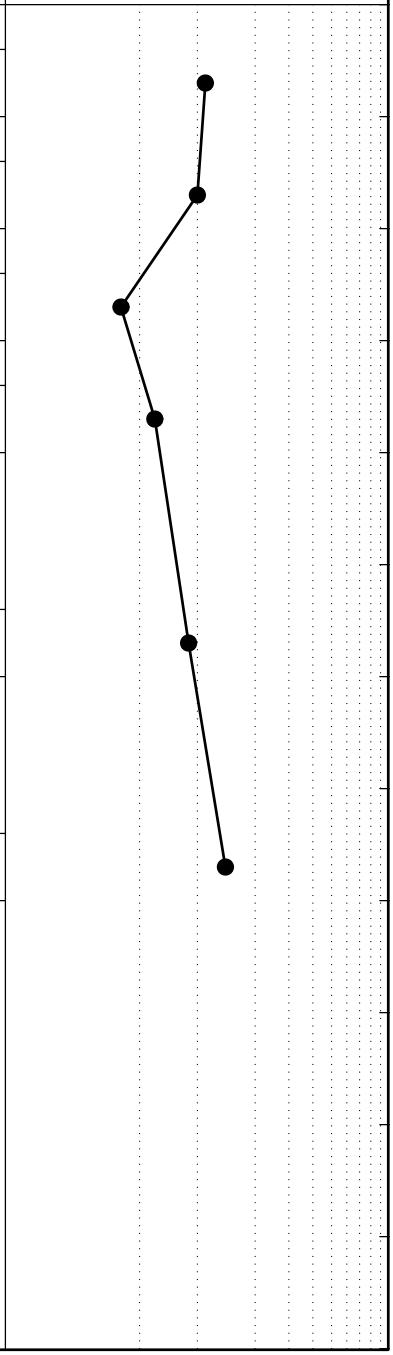
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. A-2** Boring Location: See Boring Location Plan

Date Drilled: 9/27/15	Ground Elevation:	Notes: Independence Drilling - CME-550
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Fill - Stiff Brownish Red Sandy Silt with Wood (ML)		1.0					
					SS-1	6	5	6	11
	3.0	Residuum - Very Loose to Firm White, Grey, and Brown Slightly Micaceous Silty Fine to Coarse Sand (SM)		3.5					
					SS-2	14	5	5	10
				6.0					
					SS-3	2	2	2	4
				8.5					
					SS-4	2	2	4	6
				13.5					
					SS-5	4	4	5	9
				18.5					
					SS-6	6	7	7	14
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

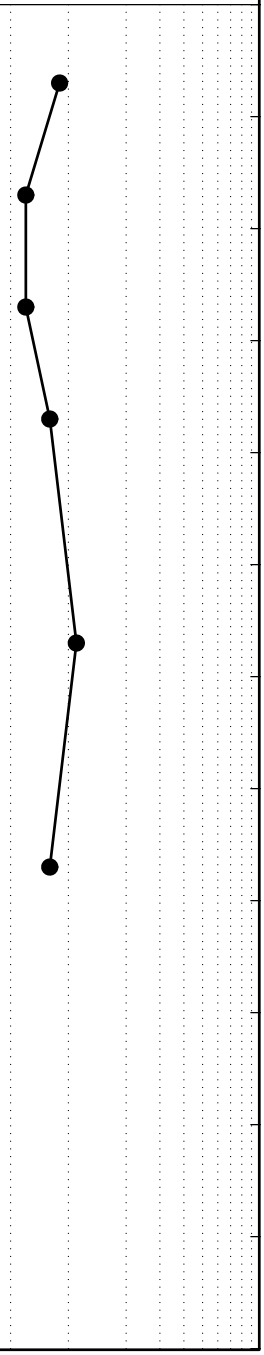
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. A-3** Boring Location: See Boring Location Plan
Date Drilled: 9/27/15	Ground Elevation:
Drilling Method: HSA	Hammer Type: Automatic
Water Level: Dry ATD	Boring Diameter: 6 in

Notes:
Independence Drilling - CME-550

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Fill - Firm to Stiff Brownish Red Sandy Silt with Gravel (ML)		1.0					
					SS-1	4	4	5	9
				3.5					
	4.5				SS-2	3	2	4	6
		Residuum - Loose to Firm White, Grey, and Brown Slightly Micaceous Silty Fine to Coarse Sand (SM)		6.0					
					SS-3	2	2	4	6
				8.5					
					SS-4	3	4	4	8
				13.5					
					SS-5	5	6	5	11
				18.5					
					SS-6	3	4	4	8
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

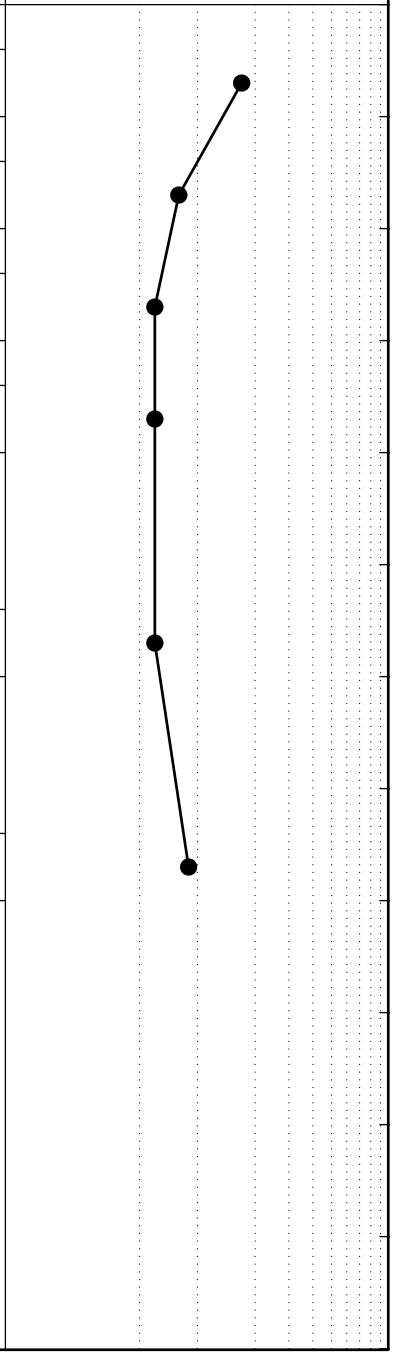
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. A-4** Boring Location: See Boring Location Plan

Date Drilled: 9/27/15	Ground Elevation:	Notes: Independence Drilling - CME-550
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Firm Brownish Red, Grey, and White Silty Fine Sand (SM)		1.0	SS-1	8	9	8	17
	3.0	Loose White, Grey, and Brown Slightly Micaceous Silty Fine to Coarse Sand (SM)		3.5	SS-2	4	4	4	8
				6.0	SS-3	3	3	3	6
				8.5	SS-4	2	2	4	6
				13.5	SS-5	3	3	3	6
				18.5	SS-6	3	4	5	9
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

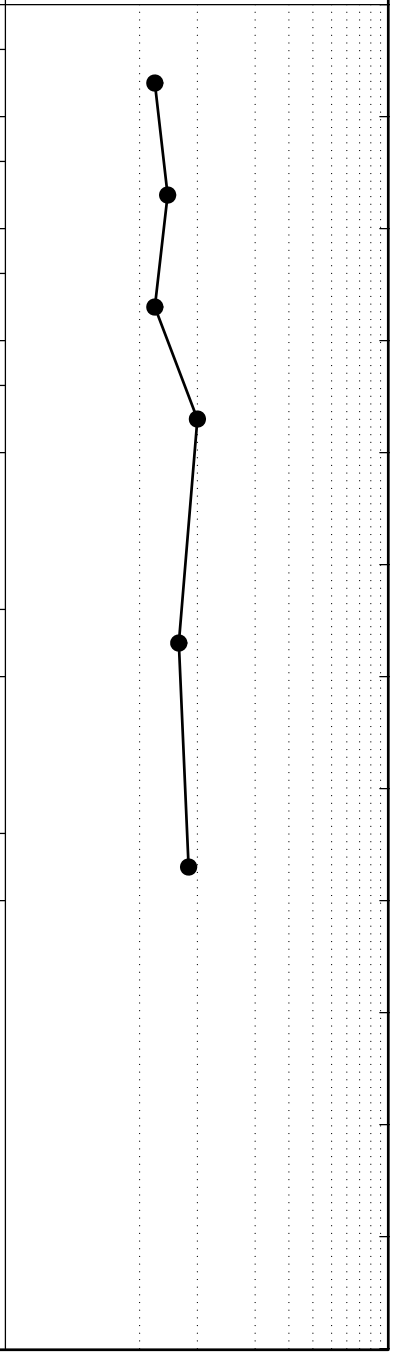
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. A-5** Boring Location: See Boring Location Plan

Date Drilled: 9/27/15	Ground Elevation:	Notes: Independence Drilling - CME-550
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Loose Light Brown, Light Reddish Brown, and White Micaceous Silty Fine to Medium Sand (SM)		1.0	SS-1	2	3	3	6
				3.5	SS-2	3	3	4	7
				6.0	SS-3	2	2	4	6
				8.5	SS-4	2	4	6	10
				13.5	SS-5	4	4	4	8
				18.5	SS-6	3	4	5	9
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

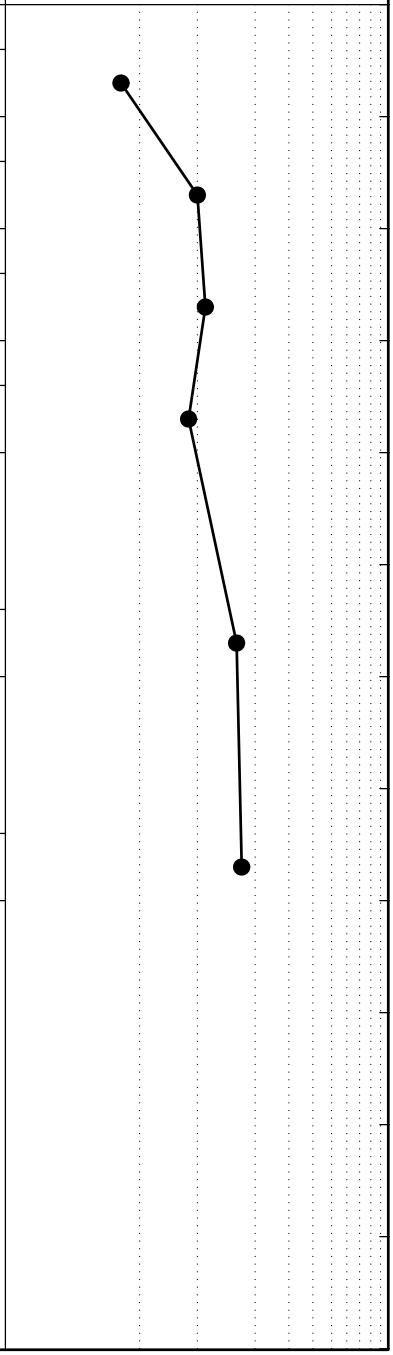
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. B-1** Boring Location: See Boring Location Plan

Date Drilled: 10/5/15	Ground Elevation:	Notes: AE Drilling - GeoProbe Crawler
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Soft Reddish Brown Fine Sandy Silt with Some Clay (Wet) (ML)		1.0	SS-1	2	1	3	4
	3.0	Stiff Reddish Brown Fine Sandy Silt with Some Clay (ML)		3.5	SS-2	3	4	6	10
	5.5	Loose to Firm Light Brown, Gray, and Light Reddish Brown Micaceous Silty Fine Sand (SM)		6.0	SS-3	5	5	6	11
				8.5	SS-4	4	4	5	9
				13.5	SS-5	15	9	7	16
				18.5	SS-6	6	7	10	17
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

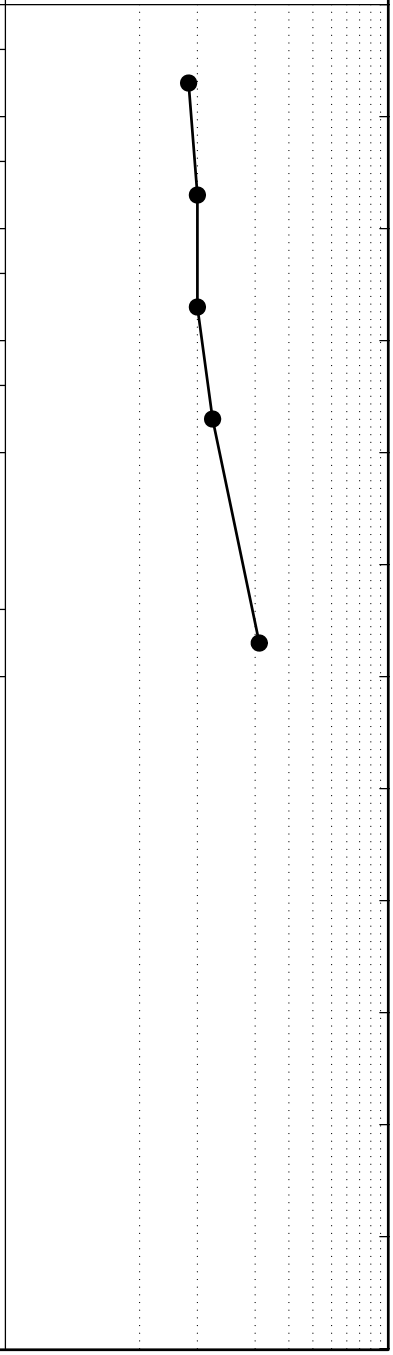
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. B-2** Boring Location: See Boring Location Plan

Date Drilled: 10/5/15	Ground Elevation:	Notes: AE Drilling - GeoProbe Crawler
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Stiff Reddish Brown Fine Sandy Silt with Some Clay (Moist) (ML)		1.0	SS-1	3	4	5	9
	3.0	Loose Light Brown, Gray, and Light Reddish Brown Slightly Micaceous Silty Fine Sand (SM)		3.5	SS-2	5	4	6	10
				6.0	SS-3	5	5	5	10
	8.0	Firm to Very Firm Brown, White, and Light Reddish Brown Slightly Micaceous Silty Fine Sand (SM)		8.5	SS-4	5	5	7	12
				13.5	SS-5	8	10	11	21
	17.0	Auger Refusal at 17 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

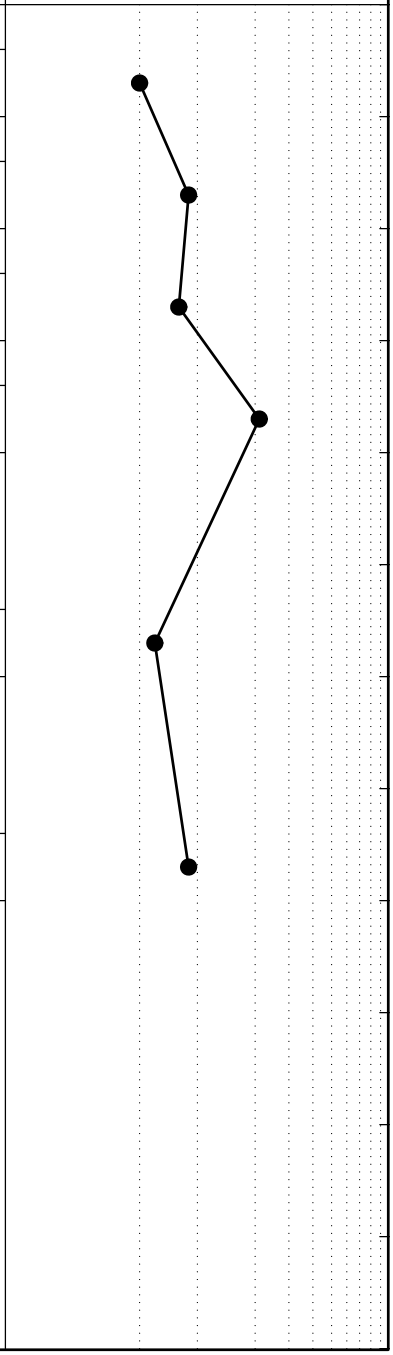
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. B-3** Boring Location: See Boring Location Plan

Date Drilled: 10/5/15	Ground Elevation:	Notes: AE Drilling - GeoProbe Crawler
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Firm Reddish Brown Fine Sandy Silt with Some Clay (Moist) (ML)		1.0	SS-1	2	2	3	5
	3.5	Loose Reddish Brown and Brown Slightly Micaceous Silty Fine Sand (SM)		3.5	SS-2	5	4	5	9
				6.0	SS-3	4	4	4	8
	8.0	Very Firm Brown and Gray Slightly Micaceous Silty Fine Sand (SM)		8.5	SS-4	16	13	8	21
	12.0	Loose Light Brown, Gray, and Light Reddish Brown Slightly Micaceous Silty Fine Sand (SM)		13.5	SS-5	3	3	3	6
				18.5	SS-6	6	5	4	9
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

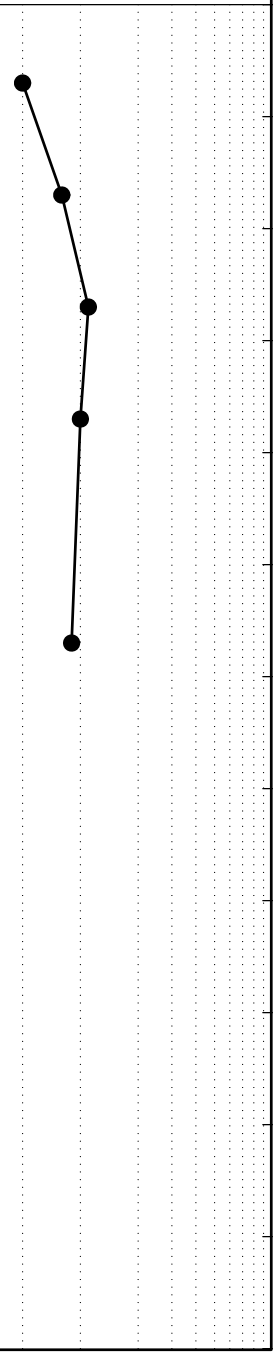
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. B-4** Boring Location: See Boring Location Plan

Date Drilled: 10/5/15	Ground Elevation:	Notes: AE Drilling - GeoProbe Crawler
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Loose Reddish Brown Silty Fine Sand with a Trace of Clay (ML)		1.0	SS-1	2	2	3	5
	3.0	Loose to Firm Brown and Gray Slightly Micaceous Silty Fine Sand with Quartz Layers (SM)		3.5	SS-2	5	4	4	8
				6.0	SS-3	6	6	5	11
				8.5	SS-4	3	5	5	10
				13.5	SS-5	3	3	6	9
	17.0	Auger Refusal at 17 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

BORING RECORD

GEOTRACK Technologies, Inc.

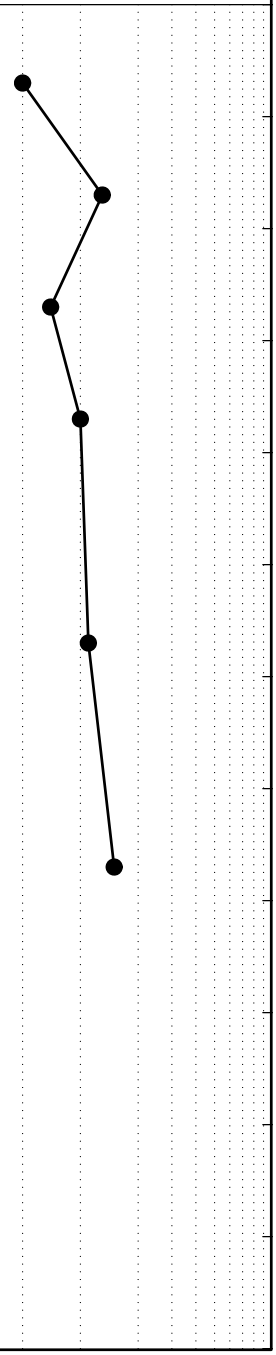
3620 Pelham Road, PMB #292
Greenville, SC 29615
(864) 329-0013

Pleasant Ridge County Park **Greenville County, SC** **GeoTrack Project No. 15-3789**	**BORING No. B-5** Boring Location: See Boring Location Plan

Date Drilled: 10/5/15	Ground Elevation:	Notes: AE Drilling - GeoProbe Crawler
Drilling Method: HSA	Hammer Type: Automatic	
Water Level: Dry ATD	Boring Diameter: 6 in	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6in	2nd 6in	3rd 6in	N Value
	0.0	Residuum - Firm to Stiff Reddish Brown Fine Sandy Silt with Some Clay (Moist) (ML)		1.0	SS-1	2	2	3	5
				3.5	SS-2	4	6	7	13
	5.0	Loose to Firm Light Reddish Brown and Gray Micaceous Silty Fine Sand (SM)		6.0	SS-3	2	3	4	7
				8.5	SS-4	4	4	6	10
				13.5	SS-5	2	5	6	11
				18.5	SS-6	7	7	8	15
	20.0	Boring Terminated at 20 Feet							

STD. PENETRATION TEST DATA (blows/ft)



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

EXPLORATION PROCEDURES

Soil Test Borings: Soil sampling and penetration testing for this project were performed in accordance with ASTM D 1586. The borings were advanced with hollow-stem, continuous flight augers and, at standard intervals, soil samples were obtained with a standard 1.4-inch I.D., 2 inch O.D., split-tube sampler. The sampler was first seated six (6) inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140 pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "Standard Penetration Resistance" (N-Value). The Standard Penetration Resistance, when properly evaluated, is an index to soil consistency, strength, density, and ability to support foundations.

Representative portions of each soil sample were placed in glass jars and taken to our laboratory. The samples were then visually classified by an engineer to supplement the driller's field classifications. Test Boring Records are attached indicating the soil descriptions and Standard Penetration Resistances.