



Project Manual

Williamsburg Fire Station Restroom Renovations

444 North Boundary Street
Williamsburg, VA 23185

March 5, 2013

Guernsey/Tingle Architects
4350 New Town Ave. Suite 101
Williamsburg, Virginia 23188



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PRICING SCHEDULE

The City of Williamsburg will make the award on a total sum basis to the lowest responsive and responsible bidder.

Lump Sum Bid price for the Williamsburg Fire Station – Restroom Renovations - City of Williamsburg.

\$ _____

RETURN THIS PAGE WITH YOUR BID OFFER

GENERAL TERMS AND CONDITIONS AND INSTRUCTIONS TO BIDDERS

DEFINITIONS

Bid: The term “bid” as used herein includes written substantive response to a Request for Quotes, Invitation to Bid or Request for Proposals.

Bidder: one who submits a bid (defined above) pursuant a written Request for Quotes, Invitation to Bid or Request for Proposals issued by the City’s Purchasing Agent.

Competitive Bidding: The offer of firm bids submitted in response to an Invitation for Bids, Request for Quotes or Request for Proposals.

Competitive Negotiation: A method for purchasing goods and services, usually of a complex and technical nature whereby qualified individuals or firms are solicited by means of a Request for Proposals (RFP). Negotiations are conducted with selected bidders.

Invitation for Bids (IFB): A document, containing or incorporating by reference the specifications or scope of work and all contractual terms and conditions, that is used to solicit written bids for a specific requirement for goods or nonprofessional services. This type of solicitation is also referred to as an Invitation to Bid (“IFB”).

Late Bid: A bid which is received at the place designated in the Invitation for Bids or Request for Proposals after the deadline established by the solicitation.

Potential Bidder: A person who, at the time the City awards or proposes to award a contract, is engaged in the sale or lease of goods, or the sale of services, insurance or construction of the type to be procured under such contract, and who at such time is eligible and qualified in all respects to perform that contract, and who would have been eligible and qualified to submit a bid had the contract been procured through competitive sealed bidding or competitive negotiation (*Code of Virginia, § 2.2-4301*).

Request for Proposals (RFP): All documents, whether attached or incorporated by reference, utilized for soliciting proposals; the RFP procedure requires negotiation with bidders (to include prices) as distinguished from competitive bidding in response to an Invitation for Bids.

Responsible Bidder: A bidder who has the capability, in all respects, to perform fully the contract requirements and the moral and business integrity and reliability which will assure good faith performance, and who has been prequalified, if required (*Code of Virginia, § 2.2-4301*).

Responsive Bidder: A bidder who has submitted a bid which conforms in all material respects to the Invitation for Bids (*Code of Virginia, § 2.2-4301*).

Specification: A description of the technical requirements for a material, product, or service that includes the criteria for determining whether these requirements are met. A specification may describe the performance parameters which a supplier has to meet, or it may provide a complete design disclosure of the work or job to be done. Specifications for service contracts normally take the form of a statement of work.

Vendor: One who sells goods or services.

PURCHASING MANUAL: This solicitation is subject to the provisions of the City of Williamsburg Purchasing Manual and any changes or revisions thereto, which are hereby incorporated into this contract in their entirety. A copy of the manual is normally available for review at the City of Williamsburg Purchasing Office and is accessible on the Internet at www.williamsburgva.gov .”

Bidders. These CONDITIONS AND INSTRUCTIONS TO BIDDERS shall be binding on all Bidders and are incorporated by reference in all contracts resulting from any written Request for Quotes, Invitation to Bid or Request for Proposals issued, collectively the (“Request”), to which they are attached. The Purchasing Agent is responsible for the purchasing activity of City of Williamsburg, a municipal corporation of the Commonwealth of Virginia. Bidders and their authorized representatives must inform themselves fully as to the conditions, requirements, and specifications before submitting bids. Failure to do so will be at the Bidder’s risk and except as otherwise provided by law, relief cannot be secured on the plea of error.

Subject to all Federal, State and local laws, policies, resolutions, regulations, rules, limitations and legislation including the City of Williamsburg Purchasing Manual, bids in response to solicitations issued by the Purchasing Agent shall bind Bidders to applicable conditions and requirements herein set forth unless otherwise specified in the solicitation.

Cooperative Purchasing--The City of Williamsburg issues this solicitation in accordance with Section 2.2-4304 of the Virginia Public Procurement Act and Chapter 1, Section 5 of the City of Williamsburg Purchasing Manual, and on behalf of the members of the Southeastern Virginia Governmental Purchasing Cooperative (SVGPC), as well as other public bodies, governmental jurisdictions and school divisions.

Bidders are advised that subject to the Bidder’s authorization, all resultant contracts will be extended to other public bodies, governmental jurisdictions and school divisions as may be interested. Should other entities decide to use the final contract, the contractor shall deal directly with that jurisdiction or political subdivision concerning the placement of orders, issuance of purchase orders, contractual disputes, invoicing and payments. The City of Williamsburg acts only as the “Contracting Agent” for these jurisdictions and political subdivisions. Failure to extend a contract to any jurisdiction will have no effect on consideration of the Bidder’s bid or offer.

The contractor shall be responsible to notify the public bodies, jurisdictions and political subdivisions of the availability of the contract.

Each participating public body, jurisdiction and political subdivision has the option of executing a separate contract with the contractor. Such contracts may contain general terms and conditions unique to those jurisdictions and political subdivisions. If, when preparing such a contract, the general terms and conditions of a jurisdiction are unacceptable to the contractor, the contractor may withdraw its extension of the award to that jurisdiction.

The City of Williamsburg shall not be held liable for any costs or damages incurred by another public body or jurisdiction as a result of any award extended to that public body, jurisdiction or political subdivision by the contractor.

SVGPC members reserve the right to make awards to the lowest responsive and responsible

Bidder during the contract term. SVGPC members not explicitly named in the IFB are not obligated to participate, nor is the successful Bidder obligated to contract with other SVGPC members. The following is a list of current SVGPC members:

City of Chesapeake	Newport News Public Schools
City of Hampton	Williamsburg/James City County Public Schools
City of Newport News	York County Public Schools
City of Norfolk	Christopher Newport University
City of Portsmouth	College of William & Mary
City of Virginia Beach	Norfolk State University
City of Williamsburg	Tidewater Community College
County of Gloucester	Jamestown/Yorktown Foundation
County of James City	Southeastern Public Service Authority
County of King William	County of York
Thomas Nelson Community College	Portsmouth Redevelopment & Housing
Newport News Redevelopment & Housing Authority	CAS Norfolk Regional Office
	DDS Tidewater Regional Office

1. AUTHORITY AND COOPERATIVE

PURCHASING: The City Purchasing Agent has the sole responsibility and authority for negotiating, placing and when necessary modifying every solicitation, contract and purchase order issued by the City of Williamsburg. The City Purchasing Agent may be assisted by assigned buyers in the discharge of these responsibilities. Unless specifically delegated by the City Purchasing Agent, or by the City Manager no other City officer or employee is authorized to order supplies or services, enter into purchase negotiations or contracts, or in any way obligate the City of Williamsburg for any indebtedness for the purchase of supplies or services. Any purchase order or contract made which is contrary to these provisions and authorities shall be of no effect and void and the City shall not be bound thereby.

2. COMPETITION INTENDED: The City intends that Bid solicitations afford reasonable opportunities for competition. Bidders shall be responsible to advise the Purchasing Agent in writing if in the Bidder's opinion any language, requirement, specification, etc., of a solicitation stifles competition or inadvertently restricts or limits the requirements stated in the solicitation to a single source. The Purchasing Agent must receive such

notification not later than five (5) business days prior to the deadline set for submission of the bids.

BIDDING REQUIREMENT AND CONDITIONS

3. USE OF CITY BID FORM; CONDITIONS OF USE AND ACCEPTANCE:

Failure to submit a bid in response to an IFB on the official form provided for that purpose shall be a cause for rejection of the bid. Modification of or additions to any portion of the IFB or the official bid form may be cause for rejection of the bid if the price, quality, quantity, delivery, necessary assurances, performance of the contract or other factors deemed by the City as important to the solicitation will be affected. The City reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such bid as non responsive. As a precondition to its acceptance, the City may, in its sole discretion, request that the Bidder withdraw or modify non responsive portions of a bid which do not affect quality, quantity, price, or delivery. No modification of or addition to the provisions of any contract awarded under the solicitation shall be effective unless reduced to writing and signed by the parties. The City will not be responsible for any errors or omissions of a Bidder. The solicitation must be signed by a

representative authorized to legally bind the Bidder. By signing the solicitation, the Bidder shall be deemed to agree to the terms and conditions of the solicitation and to certify that the Bidder has inspected the job site(s) and is aware of the conditions under which the work must be accomplished. Claims, as a result of failure to inspect the job site, shall not be considered by the City.

4. PRECEDENCE OF TERMS; CLARIFICATION OF TERMS:

In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions in this solicitation, the Special Terms and Conditions shall apply. Any prospective Bidder that has questions about the specifications or other solicitation documents should contact the Purchasing Agent whose name appears on the face of the solicitation. Such contact must be made no later than five working days before the date set for bid opening or receipt of proposals. Questions must be submitted in writing. Any revisions to the solicitation will be made only by addendum issued by the Purchasing Agent. Notifications regarding specifications may not be considered if received in less than five (5) business days of the date set for opening of bids/receipt of proposals.

5. BID ACCEPTANCE PERIOD: Any bid in response to a solicitation shall be valid for sixty (60) calendar days after the closing date stated in the IFB. At the end of the sixty (60) days the bid may be withdrawn at the Bidder's written request. If the bid is not withdrawn at that time it remains in effect until an award is made or the solicitation is canceled.

6. IDENTIFICATION OF BID/PROPOSAL ENVELOPE: The signed bid shall be returned in a separate envelope or package, sealed and identified as follows:

From:

Name of Bidder

Street or box number:

City, State & Zip Code

IFB No _____

Project Name

City Purchasing Agent: Julie Phares

The envelope shall be addressed as directed on Page 1 of the solicitation.

Bids may be hand delivered to the location designated in the solicitation. No other correspondence or other bid or proposal should be placed in the envelope. Sealed Bids received after the closing date and time will not be accepted. Electronic Bids will not be accepted.

7. DELIVERY: The Bidder should state its earliest firm delivery or performance date on the IFB/RFP Cover Page. Unless otherwise specified, calendar days shall be presumed. Unless otherwise specified, the Bidder should state the earliest reasonable delivery date, as this may be a factor considered in making award. Delivery expressed in calendar days may be given preference over such general terms as "stock immediately," and "as soon as possible." As time will be of the essence for any orders placed as a result of the bid, the City reserves the right to cancel such orders, or any part thereof, without obligation, if delivery is not made at the time(s) specified on bid form.

8. WARRANTY INFORMATION: By submitting its bid, the Bidder shall be deemed to agree that the goods or services furnished under any award resulting from the solicitation shall be covered by the most favorable commercial warranties that the Bidder gives to any customer for such

goods or services and that the rights and remedies provided therein are in addition to and do not limit those available to the City by any other clause of the solicitation. Copies of all proposed warranties shall be furnished with the bid.

9. LATE BIDS/PROPOSALS & MODIFICATION OF BIDS:

Any bid or modification received at the place designated in the solicitation after the exact time specified therein for receipt thereof shall be considered a Late Submission.

The City is not responsible for delays in the delivery of the mail by the U.S. Postal Service, private carriers or the inter-office mail system. It is the Bidder's sole responsibility to ensure that the Bidder's Submission reaches the place designated in the solicitation by the prescribed date and time.

a. The official time used for the receipt of responses is determined by reference to the clock designated by the Purchasing Agent. The Purchasing Agent shall determine when the Bid Receipt Deadline has arrived and shall announce that the Deadline has arrived and that no further bids or bid modifications will be accepted. All bids and bid modifications in the possession of the Purchasing Agent and such Agent's assistants at the time the announcement is completed are deemed to be timely, whether or not the bid envelope has been physically date/time stamped or otherwise marked by the time the Purchasing Agent makes the deadline announcement.

b. Late Submissions will be returned to the Bidder UNOPENED, if solicitation number, acceptance date and Bidder's return address is shown on the container.

c. If the City closes its offices due to inclement weather or emergency, scheduled bid openings or receipt of proposals will be extended to the next business day at the same place and time.

d. Bidders may modify their Submissions prior to the date and time specified for the bid opening. Facsimile modification of Submissions shall not be accepted unless specifically allowed by the terms of the solicitation.

10. ERRORS IN BIDS:

When an error is made in extending total prices, the unit bid price will govern. Erasures in bids must be initialed by the Bidder. Carelessness in quoting prices, or any other detail of a bid, will not relieve the Bidder of responsibility to provide the goods or services. Bidders are cautioned to recheck their bids for possible errors. Errors discovered after public opening cannot be corrected and the Bidder will be required to perform in accordance with the bid if accepted.

11. IDENTIFICATION OF BID ENVELOPE:

The signed bid and requested copies must be returned to the Purchasing Agent in a separate envelope or package, sealed and addressed as specified in Page 1 of the solicitation. Such envelope or package must be identified on its face as provided in paragraph 6 hereinabove.

If a bid does not comply with the above requirements, the Bidder takes the risk that the envelope may be inadvertently opened and the information compromised, which may cause the bid to be disqualified.

12. BID PRICING: The following applies to bid prices:

a. The Bidder warrants by virtue of submitting its bid that prices, terms, and conditions quoted therein are firm for acceptance for a period of sixty (60) days from the date of opening of such bid unless otherwise stated by the City or the Bidder.

b. Prices shall be stated in units of quantity as specified in the bid form.

c. Life cycle cost analysis may be considered when determining the lowest responsive and responsible bid. Such analysis may consider, in addition to

purchase price, any proposed upward or downward escalator clauses proposed for the initial contract term and any potential renewal terms; operating and related costs over the life of the item including maintenance, down time, energy costs, salvage value, etc.

d. Prices stated in a bid shall be for complete installation ready for the City's use and shall include all applicable freight and installation charges; extra charges will not be allowed.

e. When an annual contract is not requested in the solicitation and the bid is for products or services to be delivered on a one-time only or staggered basis, only firm pricing shall be given consideration. General terms such as "price in effect at time of delivery" shall not be considered for award.

13. CONDITIONAL BIDS: Conditional bids are subject to rejection in whole or in part if the price, quality, quantity, delivery, necessary assurances, performance of the contract and other factors deemed important to the solicitation will be affected.

14. OPENING OF BIDS: At the time fixed for the opening of bids, all properly submitted bids will be opened and in the case of competitive bids (as opposed to responses to Requests for Proposals), the names of the bidders and the amount thereof shall be read aloud and made readily available to the public. Bids will be opened at the time and place stated in the Invitation for Bids or as modified by subsequent Addenda, and their contents publicly announced. The Purchasing Agent shall decide when the specified time for bid opening has arrived. No responsibility will be attached to any officer or agent of the City for the premature opening of a bid not properly addressed and identified. Bid opening shall be no sooner than 24 hours after the time set for receipt of bids.

If a public opening of bids in response to a

Request for Proposals is held, only the names of the Bidders will be read publicly.

15. RESPONSE TO SOLICITATIONS: If a vendor cannot submit a bid on a solicitation, the vendor is requested to return the solicitation cover sheet with an explanation as to why the vendor is unable to bid. Because of the large number of firms listed on the City's Bidders List, it may be necessary to delete therefrom the names of potential bidders who fail to respond after having been invited to bid on three (3) successive solicitations. Such deletion will be made only after formal notification of the intent to remove the potential bidder from the City's Bidder's List.

16. BIDDER INTERESTED IN MORE THAN ONE BID: If more than one bid is offered by any one Bidder, either directly or by or in the name of any officer, member, partner, employee, agent, affiliate or any other person or entity acting on behalf of or in concert with the Bidder, all such bids may be rejected. A party who has quoted prices on work, materials, or supplies to a Bidder is not thereby disqualified from quoting prices to other Bidders that submit a bid directly in response to the solicitation.

17. STATE REGISTRATION OF CONTRACTORS (IF APPLICABLE) AND CITY BUSINESS LICENSE: Attention is directed to Chapter 11, title 54.1 of the Code of Virginia (State registration of contractors), which requires that a contractor must show evidence of proper licensure as required by such chapter as a condition of consideration of such contractor's bid.

All persons doing business in the City of Williamsburg are required to be licensed in accordance with the City's "Business, Professional, and Occupational Licensing ("BPOL Tax") as set forth in Chapter 18, Article X of the Williamsburg Code. Wholesale and retail merchants without a business location in the City are exempt from this requirement. Questions

concerning the BPOL Tax should be directed to the Commissioner of the Revenue for the City of Williamsburg, telephone (757) 220-6151.

18. PROPRIETARY INFORMATION:

Section 2.2-4342F of the Code of Virginia states: "Trade secrets or proprietary information submitted by a bidder, offeror, or contractor in connection with a procurement transaction shall not be subject to public disclosure under the Virginia Freedom of Information Act; however, the bidder, offeror, or contractor must invoke the protections of this section prior to or upon submission of the data or other materials, and must identify the data or other materials to be protected and state the reasons why protection is necessary." Declaring an entire bid or proposal response as proprietary is unacceptable.

19. TAX EXEMPTION: The City is exempt from the payment of any federal excise or Virginia sales tax. The price bid must be net, exclusive of taxes. Tax exemption certificates will be furnished if requested by the Bidder.

20. DEBARMENT STATUS: A Bidder that submits a bid in response to a solicitation shall be deemed to certify that the Bidder is not currently debarred by the City of Williamsburg, the Commonwealth of Virginia, the Federal Government, any local government or government agency, entity or authority from submitting bids or proposals on contracts for the type of goods and/or services covered by the solicitation, nor is the Bidder an agent of any person or entity that is currently so debarred.

21. ANTI-DISCRIMINATION: By submitting their (bids/proposals), Bidders certify to the City that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the

Virginia Public Procurement Act (VPPA). If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the City. (*Code of Virginia*, § 2.2-4343.1E). The Contractor hereby reconfirms such certification.

In every contract over \$10,000 the provisions in 1. and 2. below apply:

1. During the performance of this contract, the contractor agrees as follows:

a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of

meeting these requirements.

2. The Contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

22. ETHICS IN PUBLIC CONTRACTING:

The provisions contained in Sections 2.2-4367 through 2.2-4377, Code of Virginia, as amended, are applicable to all contracts solicited or entered into by the City of Williamsburg. A Bidder by submitting a bid is deemed to certify that the bid is made without collusion or fraud and that the Bidder has not offered or received any kickbacks or inducements from any other Bidder, supplier, manufacturer or subcontractor in connection with the bid; that the Bidder has not conferred with any public employee having official responsibility for the procurement transaction, nor has the Bidder demanded or received from any supplier or subcontractor, as an inducement for the award of a subcontractor or order, any payment, loan, subscription, advance, deposit of money, services or anything, present or promised, unless consideration of substantially equal or greater value is exchanged.

The Bidder is further deemed to certify that to the best of its knowledge, no employee of the City, nor any member thereof, nor any public agency or official impacted by the solicitation or resulting contract has any pecuniary interest in the Bidder's business and that no person associated with the Bidder has any interest that would conflict in any manner with the performance of the contract resulting from the solicitation.

23. PERFORMANCE AND PAYMENT BONDS:

When provided for in the solicitation, the successful Bidder shall furnish to the City a performance bond and labor and material payment bond with surety satisfactory to the City Attorney in the amount of the contract price. Such

bond(s) shall be furnished at a time of or prior to execution of the contract.

24. NO CONTACT POLICY: No Bidder shall initiate or otherwise have contact related to the solicitation with any City employee, other than the Purchasing Officer, after the date and time established for receipt of bids. Any contact initiated by a Bidder with any City representative, other than the Purchasing Agent, concerning the solicitation is prohibited and may cause the disqualification of the Bidder from the procurement process.

25. LICENSES, PERMITS, AND FEES: All bids submitted shall have included a list of any business and professional licenses, permits, or fees required by City or the Commonwealth of Virginia.

26. INSURANCE: By signing and submitting its bid/proposal, the Bidder certifies that if awarded the contract, at the time that the contract is awarded, it will have in force and maintain in force throughout the term of the contract the following insurance coverages unless otherwise specified in the solicitation.

1. Workers' Compensation - Statutory requirements and benefits.
2. Employer's Liability - \$100,000.
3. Commercial General Liability – \$500,000 combined single limit. Commercial General Liability is to include Premises/Operations Liability, Products and Completed Operations Coverage, and Independent Contractor's Liability or Owner's and Contractor's Protective Liability. The City of Williamsburg must be named as an additional insured when requiring a contractor to obtain Commercial General Liability coverage. When the requirement is for parking facilities and garages for motor vehicle maintenance contracts, these coverages are to include Products, Completed Operations Coverage and Garagekeeper's Liability.or

4. Motor Vehicle Liability - \$500,000 - Combined single limit. (If motor vehicle is to be used in performance of the contract.)

5. In addition, various Professional Liability/Errors and Omissions coverages are required in soliciting those services as follows:

- Accounting** \$1,000,000 per occurrence, \$3,000,000 aggregate
- Architecture** \$2,000,000 per occurrence, \$6,000,000 aggregate
- Asbestos Design, Inspection/Abatement** \$1,000,000 per occurrence, \$3,000,000 aggregate
Health Care Practitioner (to include: Dentists, licensed Dental Hygienists, Optometrists, Registered or Licensed Practical Nurses, Pharmacists, Doctors, Podiatrists, Chiropractors, Physical Therapists, Physical Therapist Assistants, Clinical Psychologists, Clinical Social Workers, Professional Counselors, Hospitals, or Health Maintenance Organizations.) \$1,650,000 per occurrence, \$3,000,000 aggregate
- Insurance/Risk Management** \$1,000,000 per occurrence, \$3,000,000 aggregate
- Landscape/Architecture** \$500,000 per occurrence, \$1,000,000 aggregate
- Legal** \$1,000,000 per occurrence, \$5,000,000 aggregate
- Professional Engineer** \$2,000,000 per occurrence, \$6,000,000 aggregate
- Surveying** \$100,000 per occurrence, \$300,000 aggregate

The above coverages are required of all contractors performing work or services in or on City of Williamsburg facilities. The limits are minimums and may be increased. The requirement for Professional Liability/Errors and Omissions coverage and limits applies only to the professions/services shown above. All other providers of services are specifically exempted from the requirement for providing Professional Liability/Errors and Omissions coverage under these General Terms and Conditions.

27. INVOICES AND CORRESPONDENCE:

If not otherwise provided in the Contract awarded pursuant to the solicitation, and

subject to the City's satisfaction with the product or service, the successful Bidder's invoices shall be paid within thirty (30) days of the City's receipt of invoice mailed to the payment address shown on the purchase order/contract. All invoices and other correspondence relating to this project shall show purchase order number.

28. ETHICS IN PUBLIC CONTRACTING:

By submitting their bids/proposals, Bidders certify that their bids/proposals are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other Bidder, supplier, manufacturer or subcontractor in connection with their bid/proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

SPECIFICATIONS

29. BRAND NAME OR EQUAL ITEMS:

Unless otherwise provided in the solicitation, the name of a certain brand, make or manufacturer will not restrict Bidders to the specific brand, make or manufacturer. The naming of a manufacturer without more, is intended to convey the general style, type, character and quality of the product desired, and any product which the City in its sole discretion determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, may be accepted by the City in its sole discretion. The Bidder is responsible to clearly and specifically indicate the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the offered product meets the requirements of the solicitation. Such data is required even if the Bidder proposes to

use the exact brand, make or manufacturer specified. Normally in competitive sealed bidding, only the information furnished with the bid will be considered in the evaluation. Failure to furnish adequate data to enable the City to determine if the product offered meets the requirements of the solicitation may result the bid being declared non-responsive. Unless the Bidder clearly indicates in its bid that the offered product is an "equal" product, such bid will be considered to offer the brand name product referenced in the solicitation.

30. FORMAL SPECIFICATIONS: When a solicitation contains a specification that states no substitutes, no deviation therefrom will be permitted and the Bidder will be required to furnish products in conformity with that specification.

31. TRANSPORTATION AND PACKAGING: By submitting their bids/proposals, all Bidders certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified in the bid/proposal, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.

32. OMISSIONS & DISCREPANCIES: Any items or parts of any equipment listed in the solicitation that are not fully described or are omitted from the solicitation's specifications, and which are clearly necessary for the completion of such equipment and its appurtenances, shall be considered a part of such equipment although not directly specified or called for in the specifications. The Bidder shall abide by and comply with the true intent of the specifications and not take advantage of any unintentional error or omission, but shall fully complete every part as the true intent and meaning of the specifications and drawings. Whenever the

mention is made of any products, material or workmanship to be in accordance with laws, ordinances, building codes, underwriter's codes, A.S.T.M. regulations or similar expressions, the requirements of those laws, ordinances, etc., shall be construed as the minimum requirements of the specifications.

33. EXCEPTIONS TO SPECIFICATIONS: A full explanation of the rationale for any exception to specifications must be itemized and included in the bid.

34. SILENCE OF SPECIFICATIONS: The City cannot be familiar with all various technical details of all Bidders' products. Therefore, any and all materials/equipment required to provide a functional product that meets the City's needs although not specifically mentioned in a solicitation shall, nevertheless, be provided by the successful Bidder without claim for additional payment; it being understood that the IFB/RFP contemplates and requires delivery of a safe, fully and properly functional product that meets with the solicitation and accompanying specifications.

35. PRODUCT STANDARDS. Unless otherwise indicated in the solicitation, any product delivered shall be standard new equipment, latest model, the best quality. All work performed shall be the highest grade work. Any part of nominal appurtenances which are usually provided in the manufacturer's stock model shall be furnished.

36. SAMPLES: Evidence in the form of samples may be requested if a brand being quoted upon is other than as specified. The City reserves the right to request that such samples be furnished at the time of bid opening. The City also reserves the right to request samples after the date of bid opening. Requested samples must be furnished to the City free of expense, and if not used in testing or destroyed, will, upon request, be returned at the Bidder's expense.

37. ANNUAL CONTRACT USAGE REQUIREMENTS:

Whenever a bid seeks a source of supply for an annual contract for products or services, the quantities or usage shown are estimates only. No guarantee or warranty is given or implied by the City as to the total amount that may be purchased under any resulting contract. Statements of quantities or usage are for the Bidder's information only and will be used for tabulation and presentation of bid.

38. PRODUCT INFORMATION:

The Bidder shall clearly and specifically identify the product being offered and enclose complete and detailed descriptive literature, catalog cuts and specifications with the bid to enable the City to determine if the offered product meets the solicitation. Failure to do so may cause the bid to be declared non responsive.

39. EXTRA CHARGES NOT ALLOWED:

The bid price shall be for complete delivery and installation of the product or work, as the case may be, ready for the City's use, and shall include all applicable charges. Extra charges will not be allowed.

40. ACCEPTANCE TESTING AND PROOF OF PERFORMANCE:

Following delivery, performance and operation tests shall be performed to verify the proper operation of all components in full compliance with these specifications.

41. TRAINING:

Training shall be provided by the successful Bidder to familiarize designated City personnel with the operation, maintenance and care of all products furnished.

42. NEGOTIATION WITH THE LOWEST BIDDER:

Unless all bids are cancelled or rejected, the City reserves the right granted by § 2.2-4318 of the *Code of Virginia* to negotiate with the lowest responsive, responsible bidder to obtain a contract price within the funds available to the City whenever such low bid exceeds the City's

available funds. For the purpose of determining when such negotiations may take place, the term "available funds" shall mean those funds which were budgeted by the City for the solicitation prior to the issuance thereof. Negotiations with the low bidder may include both modifications of the bid price and specifications of the product(s) to be furnished or the scope of work to be performed. The City shall initiate such negotiations by written notice to the lowest responsive, responsible bidder that its bid exceeds the available funds and that the City wishes to negotiate a lower contract price. The times, places, and manner of negotiating shall be agreed to by the City and the lowest responsive, responsible bidder.

AWARD

44. AWARD OR REJECTION OF BIDS:

The Purchasing Agent shall award the contract to the lowest responsive and responsible bidder complying with all provisions of the IFB, provided the bid price is reasonable and it is in the best interest of the City to accept it. Awards made in response to a RFP will be made to the most qualified Bidder whose proposal is determined, in writing, to be the most advantageous to the City taking into consideration the evaluation factors set forth in the RFP. The Purchasing Agent reserves the right to award a contract by individual items, in the aggregate, or in combination thereof, or to reject any or all bids and to waive any informality in bids received whenever such rejection or waiver is in the best interest of the City. Award may be made to as many Bidders as deemed necessary to fulfill the anticipated requirements of the City. The Purchasing Agent shall have the right to negotiate with the lowest responsive, responsible Bidder should bids exceed available funds. The Purchasing Agent shall reject the bid of the Bidder who is deemed to be a non-responsible or non-responsive.

43. DETERMINATION OF RESPONSI-

BILITY: Each Bidder shall be prepared if so requested by the City, to present evidence of its experience, qualifications and financial ability to carry out the terms of the contract.

Prior to award of the contract, under an IFB, an evaluation will be made to determine if the low Bidder, or the successful Bidder has the capability in all respects, to perform fully the contract requirements and moral and business integrity and reliability which will assure good faith performance, and who has been prequalified, if required. Factors to be evaluated include, but are not limited to:

a. Sufficient financial ability to perform the contract as evidenced by the Bidder's/Bidder's ability to obtain payment and performance bonds from an acceptable surety;

b. Appropriate experience to perform the Work described in the bid documents;

c. Any judgments entered against the Bidder, or any officers, directors, partners or owners for breach of a contract for construction;

d. Any substantial noncompliance with the terms and conditions of prior contracts with a public body without good cause where the substantial noncompliance is documented; or

e. A conviction of the Bidder or any officer, director, partner, project manager, procurement manager, chief financial officer, or owner in the last five years of a crime relating to governmental or nongovernmental construction or contracting;

f. Any current debarment of the Bidder, any officer, director or owner, from bidding or contracting by any public body of any state, any state agency, or any agency of the federal government.

The City reserves the right to disqualify or refuse to accept the bid of any Bidder who has been convicted, or entered a plea of guilty or nolo contendere, in any federal or state court to any charge involving any unlawful, corrupt or collusive practice involving a public contract whether federal, state, or local, or who has been determined in any judicial proceeding to have violated any antitrust, bid-rigging or collusive practice statute in connection with any public contract, or against whom such formal criminal prosecution or other judicial proceeding has been initiated.

A Bidder who, despite being the apparent low bidder, is determined not to be a responsible bidder shall be notified in writing in conformance with the procedures in §2.2-4359 of the Code of Virginia, as amended.

45. OTHER FACTORS CONSIDERED: In addition to price (when applicable), the following factors shall be considered in the City's award decision:

a. The total completion time proposed by the Bidder.

b. The quality of performance and workmanship of previous contracts, services or products, or references which attest to other specific experiences;

c. The timely completion of previous contracts or services or the timely delivery of past orders; or references which attest to other specific experiences;

d. The sufficiency of financial resources and its impact on ability of the bidder to perform the contract or provide the services;

e. The ability and availability of the Bidder to provide both quality and timely maintenance, service, and/or parts;

f. The resale value, life cycle costing, and value analysis of a product;

g. The availability and capability of local and regional vendor support as it affects the quantity, quality, and timeliness of the work or products required;

h. Delivery of a product and timely completion of a project as stated by vendor in bid;

i. Substantial compliance or noncompliance with specifications set forth in bid as determined by the City;

j. Product or parts inventory capability as it relates to a particular bid; and

k. Results of product testing.

In addition to, and not in limitation of the above, the City reserves the right to make such reasonable investigations as it deems necessary and proper to determine the ability of the Bidder to perform the work/furnish the product(s). The Bidder shall furnish to the City all such information and data for this purpose as may be requested. Further, the City reserves the right to conduct on-site inspections of any Bidder's facilities prior to award to satisfy questions regarding the Bidder's capabilities.. The results of said inspection will be considered in determining Bidder's capabilities of successfully performing the contract contemplated under the IFB or RFP. The City reserves the right to reject any bid or proposal if the evidence submitted by, or investigations of a Bidder fails to satisfy the City that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work/furnish the item(s) contemplated therein.

46. NOTICE OF REQUIRED DISABILITY LEGISLATION: The City of Williamsburg is required to comply with State and Federal disability legislation: The Rehabilitation Act of 1973 Section 504, The Americans with Disabilities Act (ADA) of 1990 Title II and the Virginia with Disabilities Act of 1990. Specifically, the City, may not, through its

contractual and/or financial arrangements, directly or indirectly avoid compliance with Title II or the Americans with Disabilities Act, Public Law 101-336, which prohibits discrimination by public entities on the basis of disability. Subtitle A protects qualified individuals with disability from discrimination on the basis of disability in the services, programs, or activities of all State and local governments. It extends the prohibition of discrimination in federally assisted programs established by the Rehabilitation Act of 1973 Section 504 to all activities of State and local governments, including those that do not receive Federal financial assistance, and incorporates specific prohibitions of discrimination on the basis of disability in Titles I, III, and V of the Americans with Disabilities Act. The Virginians with Disabilities Act of 1990 follows the Rehabilitation Act of 1973 Section 504.

47. TIE BIDS: In the case of a tie bid, the City may give preference to goods, services and construction produced in the City or provided by persons, firms or corporations having principal places of business in the City. If such choice is not available, preference shall then be given to goods and services produced in the Commonwealth pursuant to Code of Virginia § 2.2-4324. If no City or Commonwealth choice is available, the tie shall be decided by lot.

48. NONDISCRIMINATION OF CONTRACTORS: A Bidder or contractor shall not be discriminated against in the solicitations or award of a contract under this solicitation because of race, religion, color, sex, national origin, age or disability or against faith-based organizations. If the contract is awarded to a faith-based organization and an individual who applies for or receives goods, services, or disbursements provided pursuant to such contract objects to the religious character of the faith-based organization from which the individual receives or would receive the goods, services, or disbursements, the City shall offer the individual, within a reasonable

period of time after the date of his objection, access to equivalent goods, service, or disbursements from an alternative provider.

49. COPYRIGHTS OR PATENT RIGHTS:

The Bidder certifies by submission of its bid/proposal that there has been no violation of copyrights or patent rights in manufacturing, producing, or selling the product or services shipped or ordered as a result of its bid/proposal. The successful Bidder shall, at his own expense, defend any and all actions or suits charging such infringement, and will save the City of Williamsburg, its officers, employees, and agents harmless from any and all liability, loss, or expense occasioned by any such violation.

50. ANNOUNCEMENT OF AWARD:

Upon the award or the announcement of the decision to award a contract over \$30,000, as a result of the solicitation, the Purchasing Agent will publicly post such notice on the public posting notice board in the 1st floor hallway display case of the City of Williamsburg Municipal Building at 401 Lafayette Street for a minimum of 10 days.

51. ADVERTISING:

In the event a contract is awarded for supplies, equipment, or services resulting from this IFB/RFP, no indication of such sales or services to the City of Williamsburg will be used in the successful Bidder's/Bidder's product literature or advertising.

BIDDER REMEDIES

52. PROTEST OF AWARD OR DECISION

TO AWARD: Any Bidder who desires to protest the award or decision to award a contract, by the City shall submit such protest in writing to the Purchasing Agent no later than ten (10) days after public notice of the award or announcement of the decision to award, whichever comes first. No protest shall lie for a claim that the selected Bidder is not a responsible Bidder. The written protest shall include the basis for the protest and the relief sought. The Purchasing

Agent shall issue a decision in writing within ten (10) days stating the reasons for the action taken. This decision shall be final unless the Bidder appeals within ten (10) days of the written decision by instituting legal action. Nothing in this paragraph shall be construed to permit a Bidder to challenge the validity of the terms or conditions of the solicitation.

CONTRACT

The successful Bidder shall enter into a contract with City substantially in the form of the contract attached hereto and designated "Attachment A." The completed contract shall be subject to approval by the City Attorney.

**ADDENDUM A TO
CITY OF WILLIAMSBURG
GENERAL TERMS AND CONDITIONS AND INSTRUCTIONS TO BIDDERS**

**CONTRACT FOR PERFORMANCE OF CONSTRUCTION
OR THE FURNISHING OF GOODS AND/OR SERVICES
TO THE CITY OF WILLIAMSBURG, VIRGINIA**

This AGREEMENT, dated this _____ day of _____, 20____, by and between the CITY OF WILLIAMSBURG, a Virginia municipal corporation, hereinafter called the City; and _____ (a corporation, limited liability company, or an unincorporated organization organized and existing under the laws of the State of _____ or, an individual trading under the above name) hereinafter called the Contractor.

WITNESSETH: The Owner and Contractor, for the consideration stated herein, agree as follows:

1. SCOPE OF WORK; TYPE OF GOODS; SERVICES

Construction: The Contractor shall perform all required Work and shall provide and furnish all labor, materials, necessary tools, expendable equipment and utility and transportation service and all else required to complete the construction of the _____ project all in strict accordance with the Drawings and Specifications, including any and all Addenda, and in strict compliance with the Contract Documents, the terms of which are incorporated herein by reference. It is understood and agreed that said labor, materials, tools, equipment and service shall be furnished and said Work performed and completed under the direction and supervision of the Contractor and subject to the approval of the City or its authorized representative.

Goods: The type(s) and quantity(ies) of goods to be furnished are: _____

Services: The services to be provided are: _____

2. CONTRACT PRICE Depending upon the nature of the Work The City shall pay the Contractor as follows:

Construction: As just compensation for the satisfactory performance of the Work, subject to any additions or deductions as provided in the Contract Documents, the unit and/or lump sum price as contained in the Bid Schedule attached hereto. The Contract Price is _____ (\$_____) based upon unit and/or lump sum prices extended as herein contained.

Goods: The Price for goods contracted for is _____ Dollars(\$_____) determined as follows:_____

Services: As just compensation for the satisfactory performance of the services contracted for is _____ Dollars (\$_____), determined as follows _____

3. TIME

Construction: The Contractor agrees to commence Work within _____ Days after the date of Notice to Proceed and further agrees to substantially Complete all Work under this Contract within _____ Days from the date of the Notice to Proceed and to reach Final Completion of all Work under this Contract within _____ Days from the date of the Notice to Proceed.

Goods: All goods shall be delivered to the designated location not later than the ___ day of _____, 20__.

Services: All services shall be provided in accordance with the following schedule:

4. PAYMENT:

Construction: The following applies to payments to be made by the City to the Contractor and by the Contractor to its subcontractors, materialmen and suppliers:

• To Prime Contractor:

a. Invoices for items ordered, delivered and accepted shall be submitted by the Contractor directly to the payment address shown on the purchase order/contract. All invoices shall show the City contract number and/or purchase order number; social security number (for individual contractors) or the federal employer identification number (for proprietorships, partnerships, and corporations).

b. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not

affect offers of discounts for payment in less than 30 days, however.

c. All goods or services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the contractor at the contract price, regardless of which public agency is being billed.

d. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail, or the date of offset when offset proceedings have been instituted as authorized under the Virginia Debt Collection Act.

e. Unreasonable Charges. Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, contractors should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be researched and challenged, and that portion of the invoice held in abeyance until a settlement can be reached. Upon determining that invoiced charges are not reasonable, the City of Williamsburg shall promptly notify the contractor, in writing, as to those charges which it considers unreasonable and the basis for the determination. A contractor may not institute legal action unless a settlement cannot be reached within thirty (30) days of notification. The provisions of this section do not relieve an agency of its prompt payment obligations with respect to those charges which are not in dispute (*Code of Virginia*, § 2.2-4363).

• To Subcontractors:

a. The Contractor shall:

(1) Pay the subcontractor(s) within seven (7) days of the Contractor's receipt of payment from the City of Williamsburg for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or

(2) Notify the City and the subcontractor(s), in writing, of the Contractor's intention to withhold payment and the reason.

b. The Contractor is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the Contractor that remain unpaid seven (7) days following receipt of payment from the City of Williamsburg, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U. S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the City of Williamsburg.

Goods: City shall pay Contractor for Goods delivered in compliance with this Contract as follows: _____

Services: City shall pay Contractor for services provided under this Contract as

follows: _____

5. CONSTRUCTION GUARANTEE. If this Contract is for Construction, the Contractor guarantees that all materials and equipment, furnished by the Contractor, and all construction involved in this Contract shall be free from defects owing to faulty materials or workmanship for a period of one year after date of Substantial Completion of the Work. All Work that proves defective, by reason of faulty material or workmanship within said period of one year, shall be replaced by the Contractor free of cost to the Owner. These guarantees shall not operate as a waiver of any of the Owner's rights and remedies for default under or breach of this Contract which rights and remedies may be exercised at any time within the period of any applicable statute of limitations.

6. WARRANTIES; GOODS AND SERVICES. The following warranties apply to the furnishing of goods and services:

a. Contract for Sale of Goods: Unless otherwise provided in the award of bid signed by the City and the Contractor, the Contractor shall be bound by all warranties furnished to the City as part of its response to the City's IFB/RFP. If no warranties are furnished, then in addition to all warranties implied and expressly accorded by applicable law and not in limitation thereof, the Contractor warrants that such goods conform in all respects to the specifications and other requirements stated in the IFB/RFP and further warrants such goods against defects by reason of faulty materials or workmanship for a period of one year from the date of the City's acceptance thereof.

b. Contract to Provide Services: In addition to all warranties implied and expressly accorded by applicable law, and not in limitation thereof, the Contractor warrants that the Work performed under this Contract will meet and fully comply with all requirements and specifications set forth in the City's IFB/RFP, and that all Work shall be performed free of negligence and in accordance with generally standards for such Work and that such Work shall be fully satisfactory for the proposes intended.

7. FORCE MAGUERE. Under certain circumstances beyond the control of the Contractor, such as acts of God, sabotage, and fire or explosion not caused by negligence of the Contractor or its agent, the Purchasing Agent may extend the time limit for performance required by this Contract. Any such extension must be issued in writing and signed by the Purchasing Agent.

8. INCORPORATION OF TERMS: Unless otherwise provided in a writing signed by the City and the Contractor, all terms and conditions contained in the Solicitation pursuant to which this Contract is awarded are incorporated in the Contract.

9. IMMIGRATION REFORM AND CONTROL ACT OF 1986: The Contractor certifies that it does not and will not during the performance of this Contract employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986, as amended. The Contractor hereby reconfirms such certification.

10. OBLIGATIONS OF CITY AND CONTRACTOR: The City shall furnish to the Contractor all available information as listed in the Solicitation that may be useful for the Contract Work. To

the extent that performance of the Work here contracted for so requires, the City shall assist the Contractor in obtaining access to enter upon public and private property as required to perform the Contract Work. The City shall designate a representative who shall serve as the principal contact and give direction to the Contractor throughout the duration of the Contract. The Contractor represents that it has, or shall secure at its expense, all personnel, including subcontractors, required to satisfactorily perform and fully complete the Contract Work.

11. CONFIDENTIALITY AND OWNERSHIP OF DATA: Any reports, information, intellectual property, data, drawings, specifications, estimates and summaries given to or prepared or assembled by the Contractor in the performance of the Contract Work, shall not be made available to any individual or organization by the Contractor without prior written approval of the City. All such items shall become the property of the City upon payment of fees as required by the Contract.

12. REPORTS OF WORK: The City and the Contractor shall schedule progress meetings at appropriate intervals throughout the duration of the Contract in order to provide for the exchange of information related to the status of the Scope of Work, anticipated progress and any problems that have occurred or are anticipated.

13. ASSIGNMENT OF CONTRACT: This Contract shall not be assignable by the Contractor in whole or in part without the written consent of the City of Williamsburg.

14. CHANGES TO THE CONTRACT: Changes can be made to the Contract in any of the following ways:

A. The parties may agree in writing to modify the scope of the Contract. An increase or decrease in the price of the Contract resulting from such modification shall be agreed to by the parties as a part of their written agreement to modify the scope of the Contract.

B. The City of Williamsburg may order changes within the general scope of the Contract at any time by written notice to the contractor. Changes within the scope of the Contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. The Contractor shall comply with the notice upon receipt. The Contractor shall be compensated for any additional costs incurred as the result of such order and shall give the City of Williamsburg a credit for any savings. Said compensation shall be determined by one of the following methods:

i. By mutual agreement between the parties in writing; or

ii. By agreeing upon a unit price or using a unit price set forth in the Contract, if the work to be done can be expressed in units, and the Contractor accounts for the number of units of work performed, subject to the City's right to audit the Contractor's records and/or to determine the correct number of units independently; or

iii. By ordering the Contractor to proceed with the Work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the Contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The Contractor shall present the City of Williamsburg with all vouchers and records of expenses incurred and savings realized. The City of Williamsburg shall have the right to audit the records of the Contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the City of Williamsburg within thirty (30) days from the date

of receipt of the written order from the City of Williamsburg. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the Contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this Contract or, if there is none, in accordance with the disputes provisions of the City of Williamsburg *Purchase Procedures Manual*. Neither the existence of a claim nor a dispute resolution process, litigation or any other provision of this Contract shall excuse the Contractor from promptly complying with the changes ordered by the City of Williamsburg or with the performance of the Contract generally.

15. CONTRACTOR RESPONSIBILITY FOR CITY PROPERTY: The Contractor shall be responsible for damages to City property caused by Work performed by the Contractor or its subcontractors. The Contractor shall be responsible for maintaining the area surrounding and adjoining the work site in their current condition. Property damage to surrounding or adjoining areas caused directly or indirectly by actions or omissions of the Contractor shall be replaced or remedied by the Contractor, to the satisfaction of the City, at the Contractor's expense.

16. COPYRIGHTS OR PATENT RIGHTS: The Contractor certifies that there has been and shall be no violation of copyrights or patent rights in manufacturing, producing, or selling the product or services shipped or ordered as pursuant to this Contract or in its bid/proposal submitted in pursuit of this Contract. The Contractor shall at its own expense, defend any and all actions or suits charging such infringement, and will save the City of Williamsburg, its officers, employees, and agents harmless from any and all liability, loss, or expense occasioned by any such violation.

17. INDEPENDENT CONTRACTOR: In its performance of this Contract, the Contractor is acting as an independent contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the City of Williamsburg. At no time shall the City shall be at responsible for any negligence or other wrongdoing by the Contractor, its employees or agents. The City shall not withhold from payments to the Contractor under this Contract, any federal or state unemployment taxes, federal or state income taxes, Social Security tax, or any other amounts for benefits to the Contractor, its employees or agents. Further, the City shall not provide to the Contractor or its employees or agents, any insurance coverage or other benefits, including Worker's Compensation.

18. SUBCONTRACTS: No portion of the Work shall be subcontracted without prior written consent of the City's Purchasing Agent. In the event that the Contractor wishes to subcontract some part of the Work, the Contractor shall furnish the Purchasing Agent the names, qualifications and experience of the proposed subcontractor(s). Any consent to subcontract shall not waive the Contractor's responsibility and liabilities for the full, timely and satisfactory performance of this Contract and the Contractor shall remain fully liable and responsible for the Work to be done by its subcontractors and shall assure compliance with all requirements of the Contract.

19. INDEMNIFICATION: The Contractor hereby binds itself and its successors to indemnify, defend, and save harmless the City of Williamsburg, its officers, agents or employees, from all suits and actions of every name and description brought against it or them, and all costs or damages to which it or they may be put, on account of, or by reason of any injury or alleged injury to the person or property of another, resulting from or on account of the negligent acts, errors or omissions, recklessness or intentionally wrongful conduct of the Contractor or Contractor's agents in the performance of the Contract, including any and all liability, loss, or expense occasioned by any violation of any copyrights or patent rights by the Contractor or any

of its subcontractors in the performance of the Contract Work, and that the whole or so much of the moneys due to the Contractor under and by virtue of this Contract, as such or may be considered necessary by the City, shall and may be retained until all such suits and claims for damages as aforesaid shall have been settled, and evidence to that effect furnished to the satisfaction of the City. The said Contractor further agrees to indemnify and save harmless the City of Williamsburg against any and all claims, suits or demands that may accrue to, be suffered by, or adjudicated against it by reason of any injury sustained by any of the Contractor's employees in and about the said work, under and pursuant to the provisions of the Workman's Compensation Law or any amendments thereto, and the Contractor shall produce certificates or other satisfactory evidence of ample protection against such liability.

20. HOLIDAYS: In the case of construction performed under this Contract, the Contractor must obtain advance approval from the City to perform Work on the following holidays:

New Year's Day	1 st day of January
Martin Luther King's Birthday	3 rd Monday in January
President's Day	3 rd Monday in February
Memorial Day	Last Monday in May
Independence Day	4 th day in July
Labor Day	1 st Monday in September
Veteran's Day	11 th day in November
Thanksgiving Day	4 th Thursday in November
Day after Thanksgiving	4 th Friday in November
Christmas Eve	24 th day in December
Christmas Day	25 th day of December

21. TAXES: Sales to the City of Williamsburg is normally exempt from State sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request. Deliveries under this Contract shall usually be free of Federal excise and transportation taxes. The City's excise tax exemption registration number is 54-600168073.

22. USE OF BRAND NAMES: Unless otherwise provided in the solicitation for bids/proposals, the name of a certain brand, make or manufacturer does not restrict the Contractor to the specific brand, make or manufacturer named, but conveys the general style, type, character, and quality of the product desired. Any product which the City, in its sole discretion, determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The Contractor is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the City to determine if the product offered meets the requirements of the solicitation. Such submission is required even if offering the exact brand, make or manufacturer specified.

23. TRANSPORTATION AND PACKAGING: Freight charges quoted in the Contractor's bid for FOB destination shall include only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.

24. SHIPPING INSTRUCTIONS-CONSIGNMENT: Unless otherwise specified in the solicitation each case, crate, barrel, package, etc., delivered under this Contract must be plainly stenciled

or securely tagged, stating the Contractor's name, purchase order number, and delivery address as indicated in the order. Where shipping containers are to be used, each container must be marked with the purchase order number, name of the Contractor, the name of the item, the item number, and the quantity contained therein. Deliveries must be made within the hours of **8:00 a.m. – 3:00 p.m.** Deliveries at any other time will not be accepted unless specific arrangements have been previously made with the designated individual at the delivery point. No deliveries will be accepted on Saturdays, Sundays and holidays unless previous arrangements have been made. It shall be the responsibility of the contractor to insure compliance with these instructions for items that are drop-shipped.

25. RESPONSIBILITY FOR SUPPLIES TENDERED: The Contractor shall be responsible for the materials or supplies covered by the Contract until they are delivered at the designated point, and a physical inspection is made and material is requested or rejected, but the Contractor shall bear all risk on rejected materials or supplies after notice of rejection. Rejected materials or supplies must be removed by and at the Contractor's expense promptly after notification of rejection, unless public health and safety require immediate destruction or other disposal of rejected delivery. If rejected materials are not removed by the Contractor within ten (10) days after date of notification, the City may return the rejected materials or supplies to the Contractor at the Contractor's risk and expense or dispose of them as its own property.

26. TESTING AND INSPECTIONS: The City reserves the right to conduct any test/inspection it may deem advisable to assure supplies and services conform to the specification. Inspection and acceptance of materials or supplies will be made after delivery at destinations herein specified unless otherwise stated. If inspection is made after delivery at a destination herein specified, the City will bear the expense of inspection except for the value of samples used in case of rejection. Final inspection shall be conclusive except in regard to latent defects, fraud or such gross mistakes as to amount to fraud. Final inspection and acceptance or rejection of the materials or supplies will be made as promptly as practicable, but failure to inspect and accept or reject materials or supplies shall not impose liability on the City for such materials or supplies as are not in accordance with the specifications.

27. COMPLIANCE: Delivery must be made as ordered and in accordance with the solicitation or as directed by the Purchasing Agent when not in conflict with the bid. The decision as to reasonable compliance with delivery terms shall be final. Burden of proof of delay in receipt of goods by the City shall rest with the Contractor. Any request for extension of time of delivery from that specified must be approved by the Purchasing Agent, such extension applying only to the particular item or shipment affected. Should the Contractor be delayed by the City, there shall be added to the time of completion a time equal to the period of such delay caused by the City. However, the Contractor shall not be entitled to claim damages of extra compensation for such delay or suspension. These conditions may vary for construction contracts.

28. POINT OF DESTINATION: All materials shipped to the City must be shipped F.O.B. DESTINATION unless otherwise stated in the contract. The materials must be delivered to the "Ship To" address indicated on the purchase order.

29. REPLACEMENT: Materials or components that have been rejected by the Purchasing Agent, in accordance with the terms of the Contract, shall be replaced by the Contractor at no cost to the City.

30. PACKING SLIPS OR DELIVERY TICKETS: All shipments shall be accompanied by Packing Slips or Delivery Tickets and shall contain the following information for each item

delivered:

- Purchase Order Number/Contract Number
- Name of product and Stock Number
- Quantity Ordered,
- Quantity Shipped,
- Quantity Back Ordered,
- The Name of the Contractor.

Contractors are cautioned that failure to comply with these conditions shall be considered sufficient reason for refusal to accept the goods.

31. INSURANCE: Upon entering into the Contract and throughout the term thereof, the Contractor shall maintain in force the following insurance coverages. For construction contracts, if any subcontractors are involved, the subcontractor will have workers' compensation insurance in accordance with §§ 2.2-4332 and 65.2-800 et seq. of the *Code of Virginia*. The Contractor further certifies that it and any subcontractors shall maintain in force the required insurance coverages during the entire term of the Contract and that all insurance coverages will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission.

INSURANCE COVERAGES AND LIMITS REQUIRED:

1. Workers' Compensation - Statutory requirements and benefits.
2. Employer's Liability - \$100,000.
3. Commercial General Liability – \$500,000 combined single limit. Commercial General Liability is to include Premises/Operations Liability, Products and Completed Operations Coverage, and Independent Contractor's Liability or Owner's and Contractor's Protective Liability. The City of Williamsburg must be named as an additional insured when requiring a contractor to obtain Commercial General Liability coverage. When the requirement is for parking facilities and garages for motor vehicle maintenance contracts, these coverages are to include Products, Completed Operations Coverage and Garagekeeper's Liability.
4. Automobile Liability - \$500,000 - Combined single limit. (If motor vehicle is to be used in the Contract.) In addition, various Professional Liability/Errors and Omissions coverages are required in soliciting those services as follows:

<u>Profession/Service</u>	<u>Limits</u>
Accounting aggregate	\$1,000,000 per occurrence, \$3,000,000
Architecture	\$2,000,000 per occurrence, \$6,000,000 aggregate
Asbestos Design, Inspection or Abatement Contractors	\$1,000,000 per occurrence, \$3,000,000 aggregate
Health Care Practitioner (to include Dentists, licensed Dental Hygienists, Optometrists, Registered or Licensed Practical Nurses, Pharmacists, Doctors, Podiatrists, Chiropractors, Physical Therapists, Physical Therapist Assistants, Clinical Psychologists, Clinical Social	

Workers, Professional Counselors, Hospitals, or Health Maintenance Organizations.)	
	\$1,650,000 per occurrence, \$3,000,000 aggregate
Insurance/Risk Management	\$1,000,000 per occurrence, \$3,000,000 aggregate
Landscape/Architecture	\$ 500,000 per occurrence, \$1,000,000 aggregate
Legal	\$1,000,000 per occurrence, \$5,000,000 aggregate
Professional Engineer	\$2,000,000 per occurrence, \$6,000,000 aggregate
Surveying	\$ 100,000 per occurrence, \$ 300,000 aggregate

The above coverages are required of all contractors performing work or services in or on City of Williamsburg facilities. The limits are minimums and may be increased. The requirement for Professional Liability/Errors and Omissions coverage and limits applies only to the professions/services show above. All other providers of services are specifically exempted from the requirement for providing Professional Liability/Errors and Omissions coverage under these General Terms and Conditions.

32. ANTI-DISCRIMINATION: The Contractor certifies to the City that it will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the *Virginia Public Procurement Act (VPPA)*. If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to this Contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the City. (*Code of Virginia*, § 2.2-4343.1E).

In every contract over \$10,000 the provisions in 1. and 2. below apply:

1. During the performance of this contract, the contractor agrees as follows:

a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting these requirements.

2. The Contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

33. DRUG-FREE WORKPLACE: During the performance of every contract over \$10,000, the Contractor agrees to (i) provide a drug-free workplace for the Contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement

notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that the Contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "*drug-free workplace*" means a site for the performance of work done in connection with a specific contract awarded to a contractor, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

34. TERMINATION: Subject to the provisions below, the City may terminate the Contract upon thirty (30) days advance written notice to the Contractor. Upon receipt of a notice of termination, the Contractor shall cease all Work underway unless advised by the City to do otherwise. In the event of termination, the Contractor shall be compensated only for the services as set forth in the Contract that have been performed/provided to the City's satisfaction and expenses incurred as of the date of termination. Any Contract cancellation notice shall not relieve the Contractor of the obligation to deliver and/or perform on all outstanding orders issued prior to the effective date of cancellation.

a. Termination for Convenience: In the event that the Contract is terminated upon request and for the convenience of the City, without the required thirty (30) days advance notice, then the City shall be responsible for payment of services up to the termination date.

b. Termination for Cause: Termination by the City for cause, default or negligence on the part of the Contractor shall be excluded from the foregoing provisions and termination costs, if any shall not apply. However, pursuant to the Default paragraph of these General Conditions, the City may hold the Contractor responsible for any resulting additional purchase and administrative costs. Any payment due to the Contractor at the time of termination may be adjusted to the extent of any additional costs occasioned to the City by reason of the Contractor's default. The thirty (30) days advance notice requirement is waived in the event of Termination for Cause.

c. Termination Due to Unavailability of Funds in Succeeding Fiscal Years: When funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal year, the Contract shall be canceled.

35. DEFAULT: In case of failure to deliver goods or services, or to perform construction work in accordance with the Contract terms and conditions, the City of Williamsburg, after due oral or written notice, may procure them from other sources and hold the Contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the City may have.

36. DISPUTES; CLAIMS. Written notice of a contractor to file a claim must be given at the time of the occurrence or beginning of the work upon which the claim is based. Such claims, whether for money or other relief, shall be submitted in writing to the City's Purchasing Agent no later than sixty (60) days after final payment. The Purchasing Agent shall give written notification of the final decision on such claim to the contractor within thirty (30) days of the date

the claim was received. The contractor may not institute legal action before receiving the Purchasing Agent's final written decision, unless the Purchasing Agent fails to render such decision within the specified time. Pendency of claims shall not delay payment of amounts agreed due in the final payment. (Code of Virginia, § 2.2-4363).

37. COMPLIANCE WITH ALL LAWS. The Contractor shall comply with all federal, state and local statutes, ordinances, and regulations, now in effect or hereafter adopted, in the performance of this Contract. The Contractor represents that it possesses all necessary licenses and permits required to conduct its business and will acquire any additional license and permits necessary for performance of this Contract prior to the initiation of Work. If the Contractor is a corporation or limited liability company, the Contractor further expressly represents that it is in good standing in the Commonwealth of Virginia and will remain in good standing throughout the term of this Contract. The Contractor shall at all times observe all health and safety measures and precautions necessary for the sanitary and safe performance of the contract Work.

38. APPLICABLE LAWS AND COURTS: This Contract shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns and shall be governed in all respects by the laws of the Commonwealth of Virginia and any litigation with respect thereto shall be brought in the Circuit or General District Courts of the City of Williamsburg and City of James City, Virginia. The Contractor shall comply with applicable federal, Virginia and City of Williamsburg laws and regulations.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and first above written in (_____) counterparts each of which shall for all purposes be deemed an original.

CITY:

CONTRACTOR:

CITY OF WILLIAMSBURG

Insert Name of Contractor

By: _____
Name

By: _____
Name

Title: _____

Title: _____

Address: _____

Address: _____

Contractor's Registration

No.: _____

(If Contractor is a corporation or an unincorporated organization, attach evidence of authority to sign)

[Corporate Seal]

APPROVED AS TO FORM:

City Attorney

SECTION 00 7300

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

- A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

1.02 MODIFICATIONS TO GENERAL CONDITIONS

- A. Provide a performance and payment bond for the amount of the contract, in accordance with City requirements, and in a form acceptable to the City of Williamsburg.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF DOCUMENT



Technical Specifications

Williamsburg Fire Station Restroom Renovations

444 North Boundary Street
Williamsburg, VA 23185

March 5, 2013

Guernsey/Tingle Architects
4350 New Town Ave. Suite 101
Williamsburg, Virginia 23188



SECTION 01 1000

SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Fire Station Restroom Renovations.
- B. Owner's Name: City of Williamsburg.
- C. The Project consists of the Renovation of existing restrooms, and the renovation of one space into a new restroom.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is shown on drawings and specified in Section 02 4100.
- B. Scope of alterations work is shown on drawings.
- C. Plumbing: Alter existing system and add new construction, keeping existing in operation.
- D. HVAC: Alter existing system and add new construction, keeping existing in operation.
- E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.

1.04 OWNER OCCUPANCY

- A. Owner intends to occupy each portion of the Project as each part is completed.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Use of site and premises by the public.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Time Restrictions: as agreed upon with the Owner.

1.06 WORK SEQUENCE

- A. Construct Work in stages during the construction period:
 - 1. Stage 1: Men's restroom renovation.
 - 2. Stage 2: The remainder of the work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Submittals for review, information, and project closeout.
- C. Number of copies of submittals.
- D. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

1.03 PROJECT COORDINATION

- A. Project Coordinator: Owner.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for construction access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to the Project Coordinator:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Applications for payment and change order requests.
 - 5. Progress schedules.
 - 6. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.

4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract, the Construction Coordinator and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling and Construction Plan.
- D. Contractor shall record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Shop drawings, if needed.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Owner for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - CLOSEOUT SUBMITTALS.

3.03 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
1. Manufacturer's instructions.
 2. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.04 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Bonds.
 5. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

3.05 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches (215 x 280 mm): Submit the number of copies that Contractor requires, plus two copies that will be retained by Owner.
- B. Documents for Information: Submit two copies.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Owner.
1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.06 SUBMITTAL PROCEDURES

- A. Transmit each submittal with approved form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Owner review stamps.
- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Submittals for review, information, and project closeout.
- C. Number of copies of submittals.
- D. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

1.03 PROJECT COORDINATION

- A. Project Coordinator: Owner.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for construction access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to the Project Coordinator:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Applications for payment and change order requests.
 - 5. Progress schedules.
 - 6. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.

4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract, the Construction Coordinator and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling and Construction Plan.
- D. Contractor shall record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Shop drawings, if needed.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Owner for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - CLOSEOUT SUBMITTALS.

3.03 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
1. Manufacturer's instructions.
 2. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.04 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Bonds.
 5. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

3.05 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches (215 x 280 mm): Submit the number of copies that Contractor requires, plus two copies that will be retained by Owner.
- B. Documents for Information: Submit two copies.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Owner.
1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.06 SUBMITTAL PROCEDURES

- A. Transmit each submittal with approved form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Owner review stamps.
- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Control of installation.
- B. Tolerances.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Owner before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary sanitary facilities.
- B. Waste removal facilities and services.

1.02 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.03 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 7000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Closeout procedures, except payment procedures.
- G. General requirements for maintenance service.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition and removal sequence. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.03 PROJECT CONDITIONS

- A. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into remainder of building.

1.04 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- C. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. Coordinate completion and clean-up of work of separate sections.
- E. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

- A. Verify locations of all items prior to starting work.
- B. Promptly notify The Architect and Owner of any discrepancies discovered.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and systems arrangements are as shown.
 - 2. Report discrepancies to Architect & Owner before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.

2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- D. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- E. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- F. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- G. Clean existing systems and equipment.
- H. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- I. Do not begin new construction in alterations areas before demolition is complete.
- J. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.10 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.

1. Provide copies to Architect and Owner.
- B. Notify Architect when work is considered ready for Substantial Completion.
- C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
- D. Owner will occupy all of the building as specified in Section 01 1000.
- E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- F. Notify Owner when work is considered finally complete.
- G. Complete items of work determined by Architect or Owner's final inspection.

3.12 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 02 4100

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements and finishes for alteration purposes.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2009.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location of dumpster, etc.
 - 2. Include a summary of safety procedures.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCOPE AND PROCEDURES

- A. Remove construction and finishes as indicated.
- B. Carefully saw cut concrete and sawcut or tooth out CMU where indicated and as required to accommodate new construction.
- C. Completely remove ceilings where indicated, and modify existing ceilings that are to remain to accommodate relocated walls, in such a way that modified ceiling doesn't show the signs of having being modified. Coordinate with electrical and HVAC work.
- D. Completely remove existing tile finishes where they now exist in spaces that are to be renovated in preparation for new finishes.
- E. Where items are indicated to removed and reinstalled, carefully remove and store them for reinstallation. If items are damaged during the work, provide new items that match those that were removed.
- F. Protect existing finishes that are to remain, and repair any that are damaged during construction operations to like new condition.

- G. Protect existing mechanical, plumbing, and electrical systems that are to remain, and maintain them in operation so that the operation of the facility is not interrupted throughout construction, except as specifically authorized.
- H. Phase demolition work to match phased construction work as indicated, so that facility may maintain operations throughout the demolition and construction process.
- I. Take necessary measures to prevent contamination of other spaces not being renovated with dust, water, or debris during operations.

3.02 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave spaces in clean condition, ready for subsequent work.

END OF SECTION

SECTION 03 3000

CONCRETE FOR PATCHING SLABS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete reinforcement.
- B. Joint devices associated with concrete work.
- C. Concrete curing.

1.02 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- E. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- F. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2011a.
- H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012a.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.
- J. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.
- K. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999 (Reapproved 2008).
- L. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Samples: Submit samples of underslab vapor retarder to be used.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
 - 1. Mesh Size and Wire Gage: As indicated on drawings.

- B. Dowels: Provide galvanized steel or stainless dowels, if needed to tie concrete patches into existing slabs, and epoxy for anchoring dowels.

2.02 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
- B. Fine and Coarse Aggregates: ASTM C 33.
- C. Water: Clean and not detrimental to concrete.
- D. Fiber Reinforcement: At Contractor's option, provide Alkali-resistant polypropylene complying with ASTM C1116/C1116Min lieu of metal reinforcing.

2.03 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
 - 2. Products:
 - a. Insulation Solutions, Inc; Viper VaporCheck II 15-mil (Class A): www.insulationsolutions.com.
 - b. Stego Industries, LLC; Stego Wrap Vapor Barrier 15-mil (Class A): www.stegoindustries.com.
 - c. W.R. Meadows, Inc.; PERMINATOR Class A - 15 mils: www.wrmeadows.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059 Type II.

2.05 CURING MATERIALS

- A. Moisture-Retaining Sheet: ASTM C171. CURING COMPOUNDS MAY NOT BE USED.

2.06 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
- C. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
 - 2. Water-Cement Ratio: Maximum 40 percent by weight.
 - 3. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 - 4. Maximum Slump: 3 inches.
 - 5. Maximum Aggregate Size: 5/8 inch.

PART 3 EXECUTION

3.01 PREPARATION

- A. Compact subgrade below slab after any excavation to achieve proper density prior to placement of vapor barrier and concrete materials.

- B. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- C. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.02 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Owner not less than 24 hours prior to commencement of placement operations.
- D. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.04 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Concrete that is placed to patch slabs shall be smooth and level to provide a proper substrate for thin-set tile finish. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.05 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - 2. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Cover concrete with moisture-retarding cover, such as polyethylene film after placement.

3.07 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 04 2000

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete Block.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.

1.02 REFERENCE STANDARDS

- A. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a.
- D. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- E. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2011.
- F. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- G. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2012.
- H. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- I. ASTM C476 - Standard Specification for Grout for Masonry; 2010.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated on the drawings for specific locations.
 - 2. Non-Loadbearing Units: ASTM C129.
 - a. Hollow block, as indicated.
 - b. Lightweight.

2.02 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91, Type S.
- B. Mortar Aggregate: ASTM C144.
- C. Grout Aggregate: ASTM C404.
- D. Water: Clean and potable.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers of Joint Reinforcement and Anchors:
 - 1. Blok-Lok Limited; Product ____: www.blok-lok.com.
 - 2. Hohmann & Barnard, Inc (including Dur-O-Wal brand); Product ____: www.h-b.com.
 - 3. WIRE-BOND: www.wirebond.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- C. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A 82/A 82M steel wire, mill galvanized to ASTM A 641/A 641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- D. Wall Ties: Corrugated formed sheet metal, 7/8 inch wide by 0.05 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.

2.04 LINTELS

- A. Precast Concrete Lintels: thickness for wall indicated.

2.05 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification. Provide Type N or S.
- B. Grout: ASTM C476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- C. Mixing: Use mechanical batch mixer or and comply with referenced standards, providing proper mix ratios is not using pre-mixed mortar, and proper amount of water. Allow mix to properly flake before use.

PART 3 EXECUTION

3.01 EXAMINATION AND COORDINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Coordinate with door frame installation for inclusion of anchors
- E. Tooth new masonry into existing where working new into existing walls. Where walls abut existing walls perpendicularly, anchor new walls to existing with masonry anchors or wall ties mortared into place to create a secure and permanent bond.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:

1. Bond: Running.
2. Mortar Joints: Concave.

3.04 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar and mortar smears as work progresses.
- D. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- E. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- F. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

3.05 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Lap joint reinforcement ends minimum 6 inches.
- D. Fasten anchors to existing walls (where new walls will abut) as masonry is laid. Build anchors into walls as they go up.

3.06 LINTELS

- A. Install precast concrete lintels over openings.
- B. Maintain minimum 4 inch bearing on each side of opening.

3.07 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

3.08 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

3.09 CUTTING AND FITTING

- A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.10 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

END OF SECTION

SECTION 08 1213

HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated steel frames for non-steel doors.

1.02 REFERENCE STANDARDS

- A. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- B. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2011).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- D. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.
- E. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Frames with Integral Casings:
 - 1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com.
 - 2. Windsor Republic Doors; Product : www.republicdoor.com.
 - 3. Steelcraft, an Ingersoll Rand brand; Product : www.steelcraft.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 STEEL DOOR FRAMES - GENERAL REQUIREMENTS

- A. Refer to Door and Frame Schedule on the drawings for frame sizes, finishing, door hardware to be installed, and other variations, if any.
- B. Door Frame Type: Provide steel door frames with integral casings, for field finishing.
- C. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified.
- D. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

2.03 STEEL DOOR FRAMES WITH INTEGRAL CASINGS

- A. Finish: Factory primed, for field finishing.
- B. Interior Door Frames, Non-Fire-Rated: Knock-down type.
 - 1. Grade: Comply with frame requirements specified in ANSI A250.8 for Level 1, 18 gage
 - 2. Galvanized: All components hot-dipped zinc-iron alloy-coated (galvannealed) per ASTM A653/A653M, with manufacturer's standard coating thickness.
 - 3. Finish: Factory primed, for field finishing.

2.04 ACCESSORY MATERIALS

- A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- B. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.

2.05 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.02 INSTALLATION

- A. Install frames in accordance with manufacturer's instructions and recommendations and as follows.
- B. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- C. Coordinate frame anchor placement with wall construction.
- D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Coordinate installation of hardware.

3.03 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

END OF SECTION

SECTION 08 1416

FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. WDMA I.S.1-A - Architectural Wood Flush Doors; Window and Door Manufacturers Association; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Specimen warranty.
- D. Samples: Submit two samples of door veneer, 6 x 6 inch in size illustrating wood grain, stain color, and sheen.
- E. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood Veneer Faced Doors:
 - 1. Graham Wood Doors: www.grahamdoors.com.

2. Eggers Industries; Product : www.eggersindustries.com.
3. Haley Brothers; Product : www.haleybros.com.
4. Marshfield DoorSystems, Inc; Product : www.marshfielddoors.com.

2.02 DOORS AND PANELS

- A. All Doors: See drawings for locations and additional requirements.
 1. Quality Level: Custom Grade, Extra Heavy Duty performance, in accordance with WDMA I.S.1-A.
 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 1. Provide solid core doors at all locations.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.

2.04 DOOR FACINGS

- A. Wood Veneer Facing for Transparent Finish: Species and finish to match existing doors, veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match; unless otherwise indicated.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 1. Exception: Doors to be field finished.
- E. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:
 1. Transparent:
 - a. System - 1, Lacquer, Nitrocellulose.
 - b. Stain: As selected by Architect.
 - c. Sheen: Flat.
- B. Factory finish doors in accordance with approved sample.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

- A. Conform to specified quality standard for fit and clearance tolerances.
- B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION

SECTION 08 7100

DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood doors.

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 1416 - Flush Wood Doors.
- C. Section 08 7110 - Basis of Design Door Hardware - Hager.

1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition; (ADA Standards for Accessible Design).
- B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- C. BHMA A156.1 - American National Standard for Butts and Hinges; Builders Hardware Manufacturers Association, Inc.; 2006 (ANSI/BHMA A156.1).
- D. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; Builders Hardware Manufacturers Association; 2011 (ANSI/BHMA A156.2).
- E. BHMA A156.4 - American National Standard for Door Controls - Closers; Builders Hardware Manufacturers Association, Inc.; 2008 (ANSI/BHMA A156.4).
- F. BHMA A156.7 - American National Standard for Template Hinge Dimensions; Builders Hardware Manufacturers Association; 2003 (ANSI/BHMA A156.7).
- G. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders; Builders Hardware Manufacturers Association, Inc.; 2010 (ANSI/BHMA A156.8).
- H. BHMA A156.18 - American National Standard for Materials and Finishes; Builders Hardware Manufacturers Association, Inc.; 2006 (ANSI/BHMA A156.18).
- I. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; Door and Hardware Institute; 1993; also in WDHS-1/WDHS-5 Series, 1996.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products onto which door hardware will be installed.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

- B. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with 5 years of experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year warranty for door closers.

PART 2 PRODUCTS

2.01 MANUFACTURERS- BASIS OF DESIGN

- A. Hager Companies products as specified in Section 08 7110, for hinges, locks, closers, and other items specified: www.hagerco.com.
- B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOOR HARDWARE - GENERAL

- A. Provide all hardware specified or required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.
- B. Provide all items of a single type of the same model by the same manufacturer.
- C. Provide products that comply with the following:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. ADA Standards for Accessible Design.
 - 3. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
- D. Finishes: All door hardware the same finish unless otherwise indicated.
 - 1. Primary Finish: Satin chrome plated over nickel on brass or bronze, 626 (approx US26D), except provide stainless steel hinges
 - 2. Finish Definitions: BHMA A156.18.
 - 3. Exceptions:
 - a. Where base metal is specified to be different, provide finish that is an appearance equivalent according to BHMA A156.18.

2.03 HINGES

- A. Hinges: Provide hinges on every swinging door.
 - 1. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
 - 2. Provide ball-bearing hinges at all doors having closers.
 - 3. Provide hinges in the quantities indicated.
 - 4. Provide non-removable pins on exterior outswinging doors.
- B. Butt Hinges: Comply with BHMA A156.1 and A156.7; standard weight, unless otherwise indicated.
- C. Manufacturers - Hinges:
 - 1. Assa Abloy McKinney: www.assaabloydss.com.
 - 2. Bommer Industries, Inc: www.bommer.com.
 - 3. Hager Companies: www.hagerco.com.
 - 4. Stanley Black & Decker: www.stanleyblackanddecker.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.04 LOCKS AND LATCHES

- A. Locks: Provide a privacy lock for every restroom door, and passage elsewhere.
 - 1. Hardware Sets indicate locking functions required for each door.
- B. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.05 CYLINDRICAL LOCKSETS

- A. Locking Functions: As defined in BHMA A156.2, and as follows:
 - 1. Passage: No locking, always free entry and exit.
 - 2. Privacy: F76, emergency tool unlocks.
 - 3. Lever Design: sloped return, similar to Hager "Archer"
- B. Manufacturers - Cylindrical Locksets:
 - 1. Assa Abloy Corbin Russwin, Sargent, or Yale: www.assaabloydss.com.
 - 2. Best Access Systems, division of Stanley Security Solutions: www.bestlock.com.
 - 3. Hager Companies: www.hagerco.com.
 - 4. Schlage: www.schlage.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.06 CLOSERS

- A. Closers: Complying with BHMA A156.4.
 - 1. Provide surface-mounted, door-mounted closer at restroom that is compliant with ADA force requirements.
- B. Manufacturers - Closers:
 - 1. Assa Abloy Corbin Russwin, Norton, Rixson, Sargent, or Yale: www.assaabloydss.com.
 - 2. DORMA Group North America: www.dorma-usa.com/usa.
 - 3. Hager Companies: www.hagerco.com.
 - 4. LCN: www.lcnclosers.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.07 STOPS AND HOLDERS

- A. Stops: Complying with BHMA A156.8; provide a stop for every swinging door, unless otherwise indicated.
 - 1. Provide wall stops, unless otherwise indicated.
- B. Manufacturers - Wall and Floor Stops/holders:
 - 1. Assa Abloy McKinney: www.assaabloydss.com.
 - 2. Hager Companies: www.hagerco.com.
 - 3. Hiawatha, Inc: www.hiawathainc.com.
 - 4. Triangle Brass Manufacturing Co., Inc: www.trimcobbw.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.08 PROTECTION PLATES AND ARCHITECTURAL TRIM

- A. Protection Plates:
 - 1. Kickplate: 8" height stainless steel. Provide on push side of every door with closer, except storefront and all-glass doors.
- B. Clothes Hook: Provide single coat hook similar to Hager 901P
- C. Manufacturers - Protection Plates and Architectural Trim:
 - 1. Assa Abloy McKinney: www.assaabloydss.com.
 - 2. Hager Companies: www.hagerco.com.
 - 3. Hiawatha, Inc: www.hiawathainc.com.

4. Triangle Brass Manufacturing Co., Inc: www.trimcobbw.com.
5. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Mounting heights for hardware from finished floor to center line of hardware item: As listed in Schedule, unless otherwise noted:
 1. For wood doors: Comply with DHI "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 2. Wood doors: See Section 08 1416.

3.03 ADJUSTING

- A. Adjust hardware for smooth operation.

3.04 CLEANING

- A. Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

- A. Protect finished Work under provisions of Section 01 7000.
- B. Do not permit adjacent work to damage hardware or finish.

3.06 SCHEDULE - See Drawings

END OF SECTION

SECTION 09 2116

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. Cementitious backing board.
- D. Gypsum wallboard.
- E. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 9005 - Joint Sealers: Acoustic sealant.
- C. Section 09 3000 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS

- A. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 2012.1.
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2012.1.
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2011a.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2011.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
- H. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- I. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2010a.
- J. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 1999 (Reapproved 2010).
- K. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets; 2008b.
- L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
- M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.

- N. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
1. Studs: "C" shaped with flat or formed webs with knurled faces.
 2. Runners: U shaped, sized to match studs.
 3. Spacing of framing members: 16" O.C., unless otherwise indicated.
 4. Ceiling Channels: C shaped.
 5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
- B. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- C. Partition Head To Structure Connections: Anchor top of partition to structure above with braces to prevent any lateral movement of partition, and to make it rigid.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. American Gypsum: www.americangypsum.com.
 2. CertainTeed Corporation: www.certainteed.com.
 3. Georgia-Pacific Gypsum: www.gpgypsum.com.
 4. National Gypsum Company: www.nationalgypsum.com.
 5. Temple-Inland Inc: www.templeinland.com.
 6. USG Corporation: www.usg.com.
 7. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Moisture-resistant paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold-resistant board is required at all locations.
 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.
- C. Backing Board For Tile: One of the following products:
1. Application: Surfaces behind tile in all areas.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 5/8 inch.
 - b. Products:
 - 1) Custom Building Products; Wonderboard.
 - 2) National Gypsum Company; PermaBase Brand Cement Board.
 - 3) National Gypsum Company; PermaBase Flex Brand Cement Board.
 - 4) USG Corporation; Durock Brand Cement Board.
 - 5) Substitutions: See Section 01 6000 - Product Requirements.
4. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 5/8 inch.
 - b. Products:
 - 1) James Hardie Building Products, Inc; Hardibacker Cement Board.

2.04 ACCESSORIES

- A. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless otherwise indicated.
 1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.
- B. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 1. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
- C. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.
- D. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 1. Level ceiling system to a tolerance of 1/1200.
- C. Studs: Space studs at 16 inches on center.
 1. Extend partition framing above ceiling and brace to structure above to achieve rigidity.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install 1 1/2 " Z-furring where indicated at masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place through flange at maximum 16 inches on center. work around treated wood blocking required for grab bars and/or for other accessories.
- F. Blocking: Install wood blocking for support of:

1. Toilet partitions.
2. Toilet accessories.

3.03 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- D. Installation on Metal Framing: Use screws for attachment of all gypsum board.
- E. Installation on Wood Framing: For non-rated assemblies, install as follows:
 1. Single-Layer Applications: Screw attachment.
- F. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.05 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.06 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 3000

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Stone thresholds.
- E. Ceramic accessories.
- F. Ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Provision of tile backer board.

1.03 REFERENCE STANDARDS

- A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2012.1.
- B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2012.1.
- C. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar; 2012.1.
- D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex Portland Cement Mortar; 2012.1.
- E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2012.1.
- F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2012.1.
- G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 2012.1.
- H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 2012.1.
- I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2012.1.
- J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2012.1.
- K. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 2012.1.
- L. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior glue plywood) Latex-Portland Cement Mortar; 2012.1.

- M. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2012.1.
- N. ANSI A118.4 - American National Standard Specifications for Latex-Portland Cement Mortar; 2012.1.
- O. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2012.1.
- P. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2012.1.
- Q. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- R. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Samples: Provide samples of all tile materials for approval to show type and color.
- D. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Tile: 10 square feet of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

- A. Maintain one copy of The Tile Council of North America Handbook and ANSI A108 Series/A118 Series on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum 5 years of documented experience.
- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.07 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Construct tile mock-up where indicated on the drawings, incorporating all components specified for the location.
 - 1. Approved mock-up may remain as part of the Work.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers: All products by the same manufacturer.
 - 1. American Olean: www.americanolean.com.
 - 2. Dal-Tile Corporation: www.daltile.com.
 - 3. Summitville Tiles, Inc: www.summitville.com.

- 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Porcelain Floor Tile: as indicated
- C. Glazed Wall Tile: as indicated
- D. Decorative Tile Band: as indicated

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
 - 1. Corner Shelf for shower - similar to Dal-Tile BA780, color as selected
- B. Ceramic Trim: Matching bullnose ceramic shapes in sizes coordinated with field tile.
 - 1. Applications: Use in the following locations:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - 2. Manufacturer: Same as for tile.
- C. Thresholds: Marble, gray, honed finish; 2 inches wide by full width of wall or opening; 1/2 inch thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.
 - 1. Applications: Provide at the following locations:
 - a. At doorways where tile terminates.
 - b. At entry into accessible showers

2.03 SETTING MATERIALS

- A. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
 - 1. Application(s): Use this type of bond coat where indicated and where no other type of bond coat is indicated.
 - 2. Products:
 - a. ARDEX Engineered Cements; ARDEX X 77 MICROTEC: www.ardexamericas.com.
 - b. AVM Industries, Inc; Thin-Set 780: www.avmindustries.com.
 - c. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com.
 - d. Merkrete, by Parex USA, Inc; Merkrete 720 Marble Pro: www.merkrete.com.
 - e. ProSpec, an Oldcastle brand; Permalastic System: www.prospec.com.
 - f. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

- A. Urethane-modified Grout: Provide Bostik TruColor grout or approved equal.
- B. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 - 1. Applications: Between tile and plumbing fixtures, and at control joints - located over concrete joints.
 - 2. Color: Match grout color

2.05 THICK-BED MATERIALS

- A. Mortar Bed Materials: Portland cement, sand, latex additive, and water.
 - 1. Products:
 - a. LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com.
 - b. Merkrete, by Parex USA, Inc.; Merkrete Underlay C: www.merkrete.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.06 THIN-SET ACCESSORY MATERIALS

- A. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Type: Fluid-applied.
 - 2. Material: Self-Curing liquid rubber polymer
 - 3. Products:
 - a. LATICRETE International, Inc; Hydro Barrier: www.laticrete.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- B. Leveling at Walls: Provide skim coat of mortar as required to smooth out CMU surfaces that are not adequately uniform prior to application of tile bond coat materials.
- C. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board (specified in Section 09 2116) in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Smooth CMU wall surfaces with mortar materials to acceptable level of uniformity and allow to cure prior to installation of tile and tile bond coat.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and The Tile Council of North America Handbook recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install thresholds where indicated.

- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep control joints free of adhesive or grout. Apply sealant to joints.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints.
- L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with The Tile Council of North America Handbook Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, install in accordance with The Tile Council of North America Handbook Method F122, with latex-Portland cement grout.
 - 2. Install indicated grout materials in accordance with manufacturer's recommendations.

3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over interior concrete substrates, install in accordance with The Tile Council of North America Handbook Method F112, bonded, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with The Tile Council of North America Handbook Method F121.
- B. Waterproofing Membrane: Install as recommended by manufacturer.
- C. Mortar Bed Thickness: minimum 1 inch, unless otherwise indicated. Slope mortar bed to drain at showers, and install in accordance with ADA requirements for slope

3.06 INSTALLATION - SHOWERS AND BATHTUB WALLS

- A. At tiled shower receptors install in accordance with The Tile Council of North America Handbook Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls for stud walls, and W202 for masonry walls, except as modified herein.
- B. Grout with standard grout as specified above.
- C. Seal joints between tile work and other work with sealant specified in Section 07 9005.

3.07 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with The Tile Council of North America Handbook Method W244, using membrane at showers.
- B. Over interior concrete and masonry install in accordance with The Tile Council of North America Handbook Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.08 CLEANING

- A. Clean tile and grout surfaces.

3.09 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 5100

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.02 REFERENCE STANDARDS

- A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.
- B. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 6x6 inch in size illustrating material and finish of acoustical units.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: 60 sq ft of each type and size.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc: www.armstrong.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. **Basis of Design:** USG; Product Mars Clima Plus: www.usg.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Acoustical Units - General: ASTM E1264, Class A.
- C. Acoustical Panels: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
 - 1. Size: 24 x 24 inches.
 - 2. Thickness: 3/4 inches.
 - 3. NRC Range: .70 to .75, determined as specified in ASTM E1264.
 - 4. Edge: Reveal edge.
 - 5. Surface Color: White.
 - 6. Surface Pattern: Match texture of Mars Clima Plus or non-directional fissured.

2.02 SUSPENSION SYSTEM(S)

- A. Manufacturers:
 - 1. Same as for acoustical units.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

- B. Suspension Systems - General: ASTM C635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- C. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; intermediate-duty.
 - 1. Profile: Tee; 15/16 inch wide face.

2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 - 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- G. Do not eccentrically load system or induce rotation of runners.
- H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:

1. Make field cut edges of same profile as factory edges.

3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 9000

PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints, stains, varnishes, and other coatings.
- C. Scope: Finish all interior surfaces in spaces being renovated that are exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
 - 1. Where door frames or walls within a renovated space are being painted, paint the other side of the door frames also, and paint the entire wall where the wall extends out of a space that is being renovated into an adjacent space.
 - 2. Mechanical and Electrical:
 - a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. Paint interior surfaces of air ducts and convectors and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - c. Paint dampers exposed behind louvers, grilles, and convectors and baseboard cabinets to match face panels.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
 - 6. Floors, unless specifically so indicated.
 - 7. Ceramic and other tiles.
 - 8. Glass.
 - 9. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 3. VOC of paint products to be provided.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

1.05 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface when painting.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Manufacturers of Paint Materials:
 - 1. Base Manufacturer: Sherwin-Williams www.sherwin-williams.com.
- C. Other Acceptable Manufacturers:
 - 1. Duron, Inc: www.duron.com.
 - 2. Glidden Professional: www.gliddenprofessional.com.
 - 3. Benjamin Moore & Co: www.benjaminmoore.com.
 - 4. PPG Architectural Finishes, Inc: www.ppgaf.com.
- D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
 - 1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that meet or exceed the performance for odor and VOC content of the Base Manufacturer materials indicated, and also comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
- D. Colors: As indicated on drawings, or if not indicated, as selected by the Architect.
 - 1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP - All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete masonry, wood, uncoated steel, shop primed steel, and galvanized steel.
 - 1. Two top coats and one coat primer, except just two top coats over previously painted surfaces whose surface is acceptable as a substrate for the new coatings.
 - 2. Satin: MPI gloss level 4; use this sheen at all locations, except at door frames
 - 3. Semi-Gloss: MPI gloss level 5; use this sheen for door frames.
 - 4. Top Coat Product(s):
 - a. Sherwin-Williams ProMar 200 Zero VOC Interior Latex.
 - 5. Primer(s): As recommended by manufacturer of top coats. Unless otherwise indicated, provide Sherwin-Williams ProMar 200 Zero-VOC Wall Primer where primer is indicated. For other applications, provide:
 - a. Concrete Masonry: Sherwin-Williams Loxon Concrete and Masonry Primer

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- I. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 PROTECTION

- A. Touch-up damaged coatings after Substantial Completion.

END OF SECTION

SECTION 10 2113.19

PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid plastic toilet compartments.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- C. Product Data: Provide data on panel construction, hardware, and accessories.
- D. Samples: Submit two samples of partition panels, 6 x 6 inch size illustrating panel finish, color, and sheen.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Plastic Toilet Compartments:
 - 1. **Basis of Design Product:** Global Partitions Solid Plastic (HDPE) Toilet Partitions www.globalpartitions.com
 - 2. AmpcoProducts, Inc: www.ampco.com.
 - 3. Metpar Corp: www.metpar.com.
 - 4. Scranton Products (Santana/Comtec/Capital): www.scrantonproducts.com.
 - 5. Substitutions: Section 01 6000 - Product Requirements.

2.02 COMPONENTS

- A. Toilet Compartments: Solid molded high density polyethylene (HDPE) plastic panels, doors, and pilasters, floor-mounted headrail-braced.
 - 1. Color: Global Partitions #9235 Cream.
- B. Urinal screens, consisting of panel anchored to wall with continuous brackets.

2.03 ACCESSORIES

- A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with satin finish, 3 in high, concealing floor fastenings.
 - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Hollow anodized aluminum tube, 1 x 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.
- C. Pilaster Brackets: Polished stainless steel.
- D. Wall Brackets: Continuous type, polished stainless steel.
- E. Hardware: Polished stainless steel:
 - 1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.

2. Door Latch: Slide type with exterior emergency access feature.
3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
4. Coat hook with rubber bumper; one per compartment, mounted on door.
5. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 10 2800

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accessories for toilet rooms and showers.
- B. Grab bars.

1.02 RELATED REQUIREMENTS

- A. Section 10 2113.19 - Plastic Toilet Compartments.

1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition; (ADA Standards for Accessible Design).
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.
- C. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2010.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- F. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011e1.
- G. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.
- H. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Toilet Accessories:
 - 1. **Basis of Design Products: American Specialties, Inc:** www.americanspecialties.com.A & J Washroom Accessories Inc: www.ajwashroom.com.
 - 2. Bradley Corporation: www.bradleycorp.com.
 - 3. Bobrick Washroom Equipment, Inc. www.bobrick.com
 - 4. Substitutions: Section 01 6000 - Product Requirements.
- B. All items of each type to be made by the same manufacturer.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269, Type 304 or 316.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Mirror Glass: Float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- F. Adhesive: Two component epoxy type, waterproof.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.
- H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

- A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

2.04 TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, ASI # 7305-2.
- B. Framed Mirror: Provide stainless angle framed mirror similar to ASI # 0600-A
- C. Framed Mirror with Shelf: Provide stainless steel angle framed mirror with shelf, similar to ASI #0605-A
- D. Electric Hand Dryer:
 - 1. Basis of Design: Excel Dryer, Inc. - Exlerator, Model XL-SB, with recess kit where indicated.
 - 2. Operation: Automatic, sensor-operated.
 - 3. Voltage: 110 - 120 volts.
 - 4. Air Velocity: 16000 lfm (81.28 m/sec).
 - 5. Warranty: 5 year.
 - 6. Cover Material: Stainless steel.
 - 7. Finish: Brushed Stainless.
- E. Grab Bars: Stainless steel, nonslip grasping surface finish.
 - 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1 1/2 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting with snap flange cover, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.
 - d. Products: ASI # 3800 series

- F. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
 - 1. Product: # 0852 manufactured by ASI.

2.05 SHOWER AND TUB ACCESSORIES

- A. Shower Curtain Rod: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for concealed mounting.
 - 1. Product: # 1214 manufactured by ASI, with ASI # 1200-SHU hooks
- B. Shower Curtain:
 - 1. Material: Opaque vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
 - 2. Product: # 1200-V manufactured by ASI.
- C. Folding Shower Seat: Wall-mounted recessed; welded tubular seat frame, structural support members, hinges and mechanical fasteners of Type 304 stainless steel, L-shaped, right hand seat.
 - 1. Seat: Phenolic or polymeric composite one-piece seat or seat slats, of ivory color.
 - 2. Size: ADA compliant.
 - 3. Product: # 8206 manufactured by ASI.
- D. Robe Hook: Heavy-duty stainless steel, single hook, satin finish.
 - 1. Product: # 8425 manufactured by ASI.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Coordinate with other work to assure that blocking is provided in framed or furred walls where accessories are to be mounted.

3.02 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings

END OF SECTION

SECTION 12 3600

COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sinks molded into countertops.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ANSI Z124.3 - American National Standard for Plastic Lavatories; 2005.
- B. ISSFA-2 - Classification and Standards for Solid Surfacing Material; International Solid Surface Fabricators Association; 2001 (2007).
- C. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- D. PS 1 - Structural Plywood; 2009.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation.
- D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabricator shall have a minimum of three years of experience fabricating similar countertops/sinktops as are indicated in these documents, and shall be acceptable to the Owner.
- B. Installer Qualifications: Fabricator shall install.

PART 2 PRODUCTS

2.01 COUNTERTOP ASSEMBLIES

- A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
 - 1. Flat Sheet Thickness: 1/4 inch, minimum.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISSFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Provide Corian "Sorrel" solid surface material.
 - b. Sinks and Bowls: Integral castings; minimum 3/4 inch wall thickness; comply with ANSI Z124.3. Corian Bone color.
 - 3. Other Components Thickness: 1/2 inch, minimum.
 - 4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; radiused edge.

5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
6. Skirt under top: As indicated on drawings - approximately 3" high.
7. Concealment panels: Provide high pressure laminate-clad plywood panels for concealment of the plumbing below the sink. Panels shall be through-fastened and removable, and shall include return panels at the waste receptacle that may be non-removable.
8. Waste Hole: Provide hole through counter as indicated, to allow waste to go into receptacle below counter, and line (finish) with 1" min. depth solid surface material in counter material.

2.02 ACCESSORY MATERIALS

- A. Vanity Support Brackets: Provide Rakks EHV-1818 vanity support brackets and anchors as recommended by the manufacturer to secure brackets to CMU walls.
- B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 1. Join lengths of tops using best method recommended by manufacturer.
 2. Fabricate to overhang fronts and ends of splash 1 inch except where top butts against cabinet or wall.
 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 FABRICATION & INSTALLATION

- A. Countertops shall be shop-fabricated under controlled conditions to assure premium workmanship. All joints shall be indistinguishable upon completion. Sinks shall be tightly seamed to counter material to create a uniform appearance, and holes shall be provided to accommodate plumbing fixtures.
- B. Coordinate work with plumbers and tile work to assure an integrated installation.
- C. Install countertops before tile, or in recesses left in tile work, so that tile can be finished to the counters/splashes, unless otherwise authorized.

- D. Securely attach countertop supports to walls using recommended anchors. Install countertops to brackets/supports. Make flat surfaces level; shim where required. Install skirts and splashes and panels concealing plumbing under counters using screws with washers to allow them to be removed.

3.03 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

3.04 CLEANING

- A. Clean countertop surfaces thoroughly with approved materials.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 22 0553

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tags.
- B. Pipe Markers.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; The American Society of Mechanical Engineers; 2007.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Piping: Pipe markers.
- B. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 TAGS

- A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
- B. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.03 PIPE MARKERS

- A. Comply with ASME A13.1.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install tags with corrosion resistant chain.
- B. Install plastic pipe markers in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 22 0719

PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.

1.02 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus; 2010.
- B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007.
- C. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007.
- D. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2011.
- E. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2012.
- F. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2010.
- I. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.06 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

- A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER

- A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 - 1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum service temperature: 850 degrees F.
 - 3. Maximum moisture absorption: 0.2 percent by volume.
- B. Insulation: ASTM C547 and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket.
 - 1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum service temperature: 650 degrees F.
 - 3. Maximum moisture absorption: 0.2 percent by volume.
- C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.
- D. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- E. Vapor Barrier Lap Adhesive:
 - 1. Compatible with insulation.
- F. Insulating Cement/Mastic:
 - 1. ASTM C195; hydraulic setting on mineral wool.
- G. Fibrous Glass Fabric:
 - 1. Cloth: Untreated; 9 oz/sq yd weight.
 - 2. Blanket: 1.0 lb/cu ft density.
 - 3. Weave: 5x5.
- H. Indoor Vapor Barrier Finish:
 - 1. Cloth: Untreated; 9 oz/sq yd weight.
 - 2. Vinyl emulsion type acrylic, compatible with insulation, black color.
- I. Insulating Cement:
 - 1. ASTM C449/C449M.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534 Grade 3; use molded tubular material wherever possible.
 - 1. Minimum Service Temperature: -40 degrees F.
 - 2. Maximum Service Temperature: 220 degrees F.
 - 3. Connection: Waterproof vapor barrier adhesive.
- B. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.04 JACKETS

- A. PVC Plastic.
 - 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F.
 - b. Maximum Service Temperature: 150 degrees F.
 - c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil.
 - e. Connections: Brush on welding adhesive.
 - 2. Covering Adhesive Mastic:
 - a. Compatible with insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Glass fiber insulated pipes conveying fluids below ambient temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- C. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- D. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- E. Inserts and Shields:
 - 1. Application: Piping 1-1/2 inches diameter or larger.
 - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 - 3. Insert location: Between support shield and piping and under the finish jacket.
 - 4. Insert configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 5. Insert material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- F. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 8400.

END OF SECTION

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SECTION 22 1005

PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, valves, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.

1.02 RELATED REQUIREMENTS

- A. Section 22 0553 - Identification for Plumbing Piping and Equipment.
- B. Section 22 0719 - Plumbing Piping Insulation.

1.03 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2012 (ANSI B16.18).
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers; 2001 (R2010).
- C. ASME B31.9 - Building Services Piping; The American Society of Mechanical Engineers; 2011 (ANSI/ASME B31.9).
- D. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2009.
- E. ASTM B32 - Standard Specification for Solder Metal; 2008.
- F. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2010.
- G. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2009.
- H. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2005 (Reapproved 2011).
- I. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2011.
- J. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2004 (Reapproved 2009).
- K. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2012.
- L. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.
- M. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings; 1996 (Reapproved 2010).
- N. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2008.
- O. AWWA C651 - Disinfecting Water Mains; American Water Works Association; 2005 (ANSI/AWWA C651).
- P. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.; 2009.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

PART 2 PRODUCTS

2.01 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Pipe: ASTM A74 extra heavy weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. PVC Pipe: ASTM D2665 or ASTM D3034.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.02 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.
- B. PVC Pipe: ASTM D2729.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Copper Pipe: ASTM B42, hard drawn.
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
 - 2. Joints: ASTM B 32, alloy Sn95 solder.

2.04 WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.
 - 3. Mechanical Press Sealed Fittings: Double pressed type, NSF 61 approved or certified, utilizing EPDM, non toxic synthetic rubber sealing elements..

2.05 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
 - 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 - 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Size Over 1 Inch:
 - 1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 - 2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.06 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.

1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.

2.07 BALL VALVES

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 0719.
- C. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- D. Pipe Hangers and Supports:
 1. Install in accordance with ASME B31.9.

3.04 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.
- B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Ensure Ph of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

END OF SECTION

SECTION 22 4000

PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.
- C. Showers.

1.02 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers: Seal fixtures to walls and floors.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 PRODUCTS (SEE PLUMBING FIXTURE AND FITTING DESCRIPTION ON PLUMBING DRAWINGS)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install components level and plumb.
- B. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 9005, color to match fixture.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

- A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 23 0713

DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Duct insulation.

1.02 RELATED REQUIREMENTS

- A. Section 23 3100 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
- B. ASTM C553 - Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2011.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2010.
- E. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.
- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.05 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

- A. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, NFPA 255, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

- A. Insulation: ASTM C553; flexible, noncombustible blanket.
 - 1. 'K' value: 0.36 at 75 degrees F, when tested in accordance with ASTM C518.
 - 2. Maximum Service Temperature: 1200 degrees F.
 - 3. Maximum Water Vapor Sorption: 5.0 percent by weight.
- B. Vapor Barrier Jacket:
 - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.

2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
 3. Secure with pressure sensitive tape.
- C. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that ducts have been tested before applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 SCHEDULES (provide insulation in accordance with 2009 VUSBC, minimum 2" thickness)

END OF SECTION

SECTION 23 3100

HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.

1.02 RELATED REQUIREMENTS

- A. Section 23 0713 - Duct Insulation: External insulation and duct liner.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2008.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- C. SMACNA (DCS) - HVAC Duct Construction Standards; 2005.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

- A. All Ducts: Galvanized steel, unless otherwise indicated.
- B. Low Pressure Supply (Heating Systems): 1 inch w.g. pressure class, galvanized steel.
- C. Low Pressure Supply (System with Cooling Coils): 1 inch w.g. pressure class, galvanized steel.
- D. General Exhaust: 1/2 inch w.g. pressure class, galvanized steel.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA HVAC Duct Construction Standards.

2.04 MANUFACTURED DUCTWORK AND FITTINGS

- A. Flexible Ducts: Black polymer film supported by helically wound spring steel wire.
 - 1. Pressure Rating: 4 inches WG positive and 0.5 inches WG negative.
 - 2. Maximum Velocity: 4000 fpm.
 - 3. Temperature Range: -20 degrees F to 175 degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA HVAC Duct Construction Standards.
- B. Install in accordance with manufacturer's instructions.
- C. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- D. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

SECTION 23 3700

AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Registers/grilles.

1.02 REFERENCE STANDARDS

- A. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; Air Movement and Control Association International, Inc.; 2012.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

1.04 QUALITY ASSURANCE

- A. Test and rate louver performance in accordance with AMCA 500-L.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS (SEE DRAWINGS FOR REQUIREMENTS)

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

END OF SECTION

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SECTION 23 8101

TERMINAL HEAT TRANSFER UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electric heaters.

1.02 RELATED REQUIREMENTS

- A. Section 26 2717 - Equipment Wiring: Electrical characteristics and wiring connections. Installation of room thermostats. Electrical supply to units.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS (SEE DRAWINGS FOR PRODUCT DESCRIPTION)

PART 3 EXECUTION

4.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install equipment exposed to finished areas after walls and ceiling are finished and painted. Do not damage equipment or finishes.
- C. Protection: Provide finished cabinet units with protective covers during balance of construction.

4.02 CLEANING

- A. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.

END OF SECTION

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SECTION 26 0519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Nonmetallic-sheathed cable.
- C. Armored cable.
- D. Metal-clad cable.
- E. Wiring connectors.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2001 (Reapproved 2007).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010.
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2009).
- E. ASTM B800 - Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes - Annealed and Intermediate Temps; 2005 (Reapproved 2011).
- F. ASTM B801 - Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy Wire for Subsequent Covering of Insulation; 2007.
- G. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- H. NECA 104 - Recommended Practice for Installing Aluminum Building Wire and Cable; National Electrical Contractors Association; 2006 (NECA/AA 104).
- I. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); National Electrical Contractors Association; 2006.
- J. NECA 121 - Standard for Installing Nonmetallic-Sheathed Cable (Type NM-B) and Underground Feeder and Branch-Circuit Cable (Type UF); National Electrical Contractors Association; 2007.
- K. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; 2009 (ANSI/NEMA WC 70/ICEA S-95-658).
- L. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.

- M. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- N. UL 4 - Armored Cable; Current Edition, Including All Revisions.
- O. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- P. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- Q. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- R. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- S. UL 493 - Thermoplastic-Insulated Underground Feeder and Branch-Circuit Cables; Current Edition, Including All Revisions.
- T. UL 719 - Nonmetallic-Sheathed Cables; Current Edition, Including All Revisions.
- U. UL 854 - Service-Entrance Cables; Current Edition, Including All Revisions.
- V. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Armored cable is permitted only as follows:
 - 1. Where not otherwise restricted, may be used:
 - a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
 - 1) Maximum Length: 6 feet.
 - b. Where concealed in hollow stud walls, above accessible ceilings, and under raised floors for branch circuits up to 20 A.
 - 1) Exception: Provide single conductor building wire in raceway for circuit homerun from first outlet to panelboard.
 - 2. In addition to other applicable restrictions, may not be used:
 - a. Where not approved for use by the authority having jurisdiction.
 - b. Where exposed to damage.

- c. For damp, wet, or corrosive locations.
- E. Metal-clad cable is permitted only as follows:
 - 1. Where not otherwise restricted, may be used:
 - a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
 - 1) Maximum Length: 6 feet.
 - b. Where concealed in hollow stud walls, above accessible ceilings, and under raised floors for branch circuits up to 20 A.
 - 1) Exception: Provide single conductor building wire in raceway for circuit homerun from first outlet to panelboard.
 - 2. In addition to other applicable restrictions, may not be used:
 - a. Where not approved for use by the authority having jurisdiction.
 - b. Where exposed to view.
 - c. Where exposed to damage.
 - d. For damp, wet, or corrosive locations.

2.02 ALL CONDUCTORS AND CABLES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- C. Provide new conductors and cables manufactured not more than one year prior to installation.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- E. Comply with NEMA WC 70.
- F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- H. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
- I. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - 2. Control Circuits: 14 AWG.
- J. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- K. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.

- 4) Neutral/Grounded: White.
- b. Equipment Ground, All Systems: Green.
- c. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
 - a. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 ARMORED CABLE

- A. Description: NFPA 70, Type AC cable listed and labeled as complying with UL 4, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN.
- E. Grounding: Combination of interlocking armor and integral bonding wire.
- F. Armor: Steel, interlocked tape.

2.05 METAL-CLAD CABLE

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Grounding: Full-size integral equipment grounding conductor.
- F. Armor: Steel, interlocked tape.

2.06 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as shown on the drawings.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 - 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 - 2. When circuit destination is indicated and routing is not shown, determine exact routing required.
 - 3. Arrange circuiting to minimize splices.
 - 4. Include circuit lengths required to install connected devices within 10 ft of location shown.
 - 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 - 6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
- B. Install products in accordance with manufacturer's instructions.
- C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- D. Install armored cable (Type AC) in accordance with NECA 120.
- E. Install metal-clad cable (Type MC) in accordance with NECA 120.
- F. Installation in Raceway:
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
 - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- G. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- H. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- I. Terminate cables using suitable fittings.
 - 1. Armored Cable (Type AC):
 - a. Use listed fittings and anti-short, insulating bushings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
 - 2. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- J. Install conductors with a minimum of 12 inches of slack at each outlet.

- K. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- L. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
- M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
 - 1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
 - 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
- N. Insulate ends of spare conductors using vinyl insulating electrical tape.
- O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with Section 01 4000.
- B. Inspect and test in accordance with NETA STD ATS, except Section 4.
- C. Perform inspections and tests listed in NETA STD ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
- D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.

2. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
3. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
4. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
5. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 0519:
 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as shown on the drawings.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.
- C. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01 4000.

B. Inspect and test in accordance with NETA STD ATS except Section 4.

C. Perform inspections and tests listed in NETA STD ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

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SECTION 26 0529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 26 0534 - Conduit: Additional support and attachment requirements for conduits.
- C. Section 26 0537 - Boxes: Additional support and attachment requirements for boxes.
- D. Section 26 5100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2011.
- D. MFMA-4 - Metal Framing Standards Publication; Metal Framing Manufacturers Association; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

1.05 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
- D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Comply with MFMA-4.
- E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: Also comply with Section 26 0534.
- I. Box Support and Attachment: Also comply with Section 26 0537.
- J. Interior Luminaire Support and Attachment: Also comply with Section 26 5100.
- K. Secure fasteners according to manufacturer's recommended torque settings.
- L. Remove temporary supports.
- M. Identify independent electrical component support wires above accessible ceilings (only where specifically indicated or permitted) with color distinguishable from ceiling support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

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SECTION 26 0534

CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Aluminum rigid metal conduit (RMC).
- C. Intermediate metal conduit (IMC).
- D. PVC-coated galvanized steel rigid metal conduit (RMC).
- E. Flexible metal conduit (FMC).
- F. Electrical metallic tubing (EMT).
- G. Rigid polyvinyl chloride (PVC) conduit.
- H. Conduit fittings.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC) and armored cable (Type AC), including uses permitted.
- C. Section 26 0526 - Grounding and Bonding for Electrical Systems.
 - 1. Includes additional requirements for fittings for grounding and bonding.
- D. Section 26 0529 - Hangers and Supports for Electrical Systems.
- E. Section 26 0537 - Boxes.
- F. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
- B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
- C. ANSI C80.5 - American National Standard for Electrical Rigid Aluminum Conduit (ERAC); 2005.
- D. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- F. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); National Electrical Contractors Association; 2006.
- G. NECA 102 - Standard for Installing Aluminum Rigid Metal Conduit; National Electrical Contractors Association; 2004.
- H. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); National Electrical Contractors Association; 2003.
- I. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).

- J. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; National Electrical Manufacturers Association; 2005.
- K. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; National Electrical Manufacturers Association; 2003.
- L. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association; 2004.
- M. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- N. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
- O. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- P. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.
- Q. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- R. UL 651 - Schedule 40 and 80 Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- S. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.
- T. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 - 5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- D. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- E. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- F. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- G. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
 - 1. Maximum Length: 6 feet.

2.02 CONDUIT REQUIREMENTS

- A. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling a mandrel through them.
- B. Fittings for Grounding and Bonding: Also comply with Section 26 0526.
- C. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- D. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
- E. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 1/2 inch (16 mm) trade size.
 - 2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
 - 3. Control Circuits: 1/2 inch (16 mm) trade size.
 - 4. Flexible Connections to Luminaires: 3/8 inch (12 mm) trade size.
- F. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.
- B. Fittings:

1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use aluminum.
3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.
 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.06 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.
- B. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil.
- C. PVC-Coated Fittings:
 1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
 2. Non-Hazardous Locations: Use fittings listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.
 4. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil.
- D. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil.

2.07 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.

2.08 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.
 3. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.09 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2

and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

- B. Fittings:
 - 1. Manufacturer: Same as manufacturer of conduit to be connected.
 - 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install aluminum rigid metal conduit (RMC) in accordance with NECA 102.
- E. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- F. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by the manufacturer.
- G. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- H. Conduit Routing:
 - 1. When conduit destination is indicated and routing is not shown, determine exact routing required.
 - 2. Conceal all conduits unless specifically indicated to be exposed.
 - 3. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Mechanical equipment rooms.
 - c. Within joists in areas with no ceiling.
 - 4. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 5. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
 - 6. Arrange conduit to provide no more than 150 feet between pull points.
- I. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 - 4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
- J. Connections and Terminations:

1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 5. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 6. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- K. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- L. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings or approved flexible connections to prevent damage to enclosed conductors or connected equipment.
- M. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation.
1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- N. Provide grounding and bonding in accordance with Section 26 0526.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.
- D. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

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SECTION 26 0537

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 08 3100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- C. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- D. Section 26 0529 - Hangers and Supports for Electrical Systems.
- E. Section 26 0534 - Conduit:
 - 1. Conduit bodies and other fittings.
- F. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- G. Section 26 2726 - Wiring Devices:
 - 1. Wall plates.
 - 2. Additional requirements for locating boxes for wiring devices.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical Contractors Association; 2010.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 1).
- E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 2).
- F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.
- G. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

- K. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.
- L. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
 - 4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
 - 5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
 - 6. Coordinate the work with other trades to preserve insulation integrity.
 - 7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
 - 8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 BOXES

- A. General Requirements:
 - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 - 3. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
 - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 - 3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit, or exposed intermediate metal conduit (IMC) is used.
 - 4. Use cast aluminum boxes where aluminum rigid metal conduit is used.
 - 5. Use nonmetallic boxes where exposed rigid PVC conduit is used.
 - 6. Use suitable concrete type boxes where flush-mounted in concrete.
 - 7. Use suitable masonry type boxes where flush-mounted in masonry walls.
 - 8. Use raised covers suitable for the type of wall construction and device configuration where required.

9. Use shallow boxes where required by the type of wall construction.
 10. Do not use "through-wall" boxes designed for access from both sides of wall.
 11. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 12. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 13. Nonmetallic Boxes: Comply with NEMA OS 2, and list and label as complying with UL 514C.
 14. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 15. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
 16. Wall Plates: Comply with Section 26 2726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 3. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide separate boxes for emergency power and normal power systems.
- E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- H. Box Locations:
 1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
 2. Unless dimensioned, box locations indicated are approximate.
 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 26 2726.

4. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 5. Fire-Resistance-Rated Walls: Install flush-mounted boxes such that the required fire-resistance will not be reduced.
- I. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
- J. Install boxes plumb and level.
- K. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- L. Install boxes as required to preserve insulation integrity.
- M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- O. Close unused box openings.
- P. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- Q. Provide grounding and bonding in accordance with Section 26 0526.

3.03 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 0553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- B. Section 26 2726 - Wiring Devices: Device and wallplate finishes; factory pre-marked wallplates.

1.03 REFERENCE STANDARDS

- A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2007.
- B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2007.
- C. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
 - 2. Do not install identification products until final surface finishes and painting are complete.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.
- B. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
- C. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
 - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.

2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 - a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
 3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 1. Surface-Mounted Equipment: Enclosure front.
 2. Flush-Mounted Equipment: Inside of equipment door.
 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 4. Elevated Equipment: Legible from the floor or working platform.
 5. Interior Components: Legible from the point of access.
 6. Conduits: Legible from the floor.
 7. Boxes: Outside face of cover.
 8. Conductors and Cables: Legible from the point of access.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing, or epoxy cement.
 1. Do not use adhesives on exterior surfaces except where substrate can not be penetrated.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 26 5100

INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. Ballasts.
- C. Lamps.

1.02 RELATED REQUIREMENTS

- A. Section 26 0537 - Boxes.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; National Electrical Contractors Association; 2006.
- C. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; National Electrical Contractors Association; 2006.
- D. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

1. Lamps: Include rated life, color temperature, color rendering index (CRI), and initial and mean lumen output.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

2.02 BALLASTS

- A. All Ballasts:
 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

2.03 LAMPS

- A. All Lamps:
 1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
 2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
 3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.

4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect to be inconsistent in perceived color temperature.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Recessed Luminaires:
 1. Install trims tight to mounting surface with no visible light leakage.
- F. Install accessories furnished with each luminaire.
- G. Bond products and metal accessories to branch circuit equipment grounding conductor.
- H. Emergency Lighting Units:
 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- I. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.06 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION